

FILE

**AMERICAN TRANSMISSION SYSTEMS, INCORPORATED
A FIRSTENERGY COMPANY**

LETTER OF NOTIFICATION

**PERRY-ASHTABULA-ERIE WEST 345 kV
TRANSMISSION LINE REBUILD AND
ASHTABULA SUBSTATION EXPANSION PROJECT**

OPSB CASE NO.: 19-1939-EL-BLN

November 26, 2019

American Transmission Systems, Incorporated
76 South Main Street
Akron, Ohio 44308

PUCO

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**LETTER OF NOTIFICATION
PERRY-ASHTABULA-ERIE WEST 345 kV TRANSMISSION LINE REBUILD AND
ASHTABULA SUBSTATION EXPANSION PROJECT**

The following information is being provided in accordance with the requirements in the Ohio Administrative Code (OAC) Chapter 4906-6 for the review of Accelerated Certificate Applications. Based upon the requirements found in Appendix A to OAC Rule 4906-1-01, this Project qualifies for Submittal to the Ohio Power Siting Board (“OPSB”) as a Letter of Notification application.

4906-6-05: ACCELERATED APPLICATION REQUIREMENTS

4906-6-05: Name and Reference Number

Name of Project: Perry-Ashtabula-Erie West 345 kV Transmission Line
Rebuild and Ashtabula Substation Expansion Project
 (“Project”)

4906-6-05 (B)(1): Brief Description of Project

American Transmission Systems, Incorporated (“ATSI”), a FirstEnergy company, proposes the first phase of a two-phase project that will eliminate a 3-terminal line and convert an existing substation into a 6-breaker ring bus. This Project includes:

- The installation of an approximately 700-foot-long temporary transmission line bypass to keep the 345 kV transmission line from Perry Substation to Erie West Substation energized during the below-referenced rebuild.
- The rebuilding of the existing 1.3-mile-long Perry-Ashtabula-Erie West 345 kV Transmission Line Tap to Ashtabula 345 kV Substation and converting the transmission line from a tap configuration into a 345 kV double-circuit transmission line ultimately creating the Ashtabula-Perry 345 kV and Ashtabula-Erie West 345 kV Transmission Lines. Once the rebuild is complete, the east circuit (future Ashtabula-Erie West 345 kV Transmission Line) will be

energized. The bypass will stay in place to maintain a 3-terminal connection until the second phase is complete.

- The expansion of the existing Ashtabula 345 kV Substation by an additional 2.22 acres to facilitate the installation of new equipment to convert the existing substation to a 6-breaker ring bus and adding a second 345/138 kV transformer. The additional area needed represents a 74.8 percent expansion of the substation.

The second phase of the work will be the subject of a separate filing in 2020 and will include:

- The reconductoring/rebuilding the Ashtabula–Leroy Center Q1, Q2, and Q4 138 kV Transmission Lines and a portion of the Ashtabula–Leroy Center Q3 138 kV Transmission Line (from Ashtabula Substation to Stacy Substation).
- The removal of the temporary by-pass which will split the line creating the Ashtabula-Perry 345 kV and Ashtabula-Erie West 345 kV Transmission Lines.

The Project includes the installation of an approximately 700-foot-long temporary transmission line bypass on four (4) multi-pole wood structures between the existing Perry-Ashtabula-Erie West 345 kV Transmission Line structures, in the existing west-east transmission corridor. This temporary bypass will keep the 345 kV transmission line from Perry Substation to Erie West Substation energized during the rebuild and maintain a 3-terminal connection at the Ashtabula 345 kV Substation. The transmission line bypass will be removed at the completion of the second phase of the project.

The transmission line portion of the proposed Project will include rebuilding of the existing Perry-Ashtabula-Erie West 345 kV Transmission Line Tap to Ashtabula 345 kV Substation and converting this tap into a 345 kV Loop. Eight (8) existing single circuit lattice towers will be replaced with double-circuit steel monopole structures on drilled foundations in approximately the same locations as the existing structures. In

addition, one (1) existing wood H-frame structure will be removed, one (1) new single-circuit steel monopole structure on drilled foundation will be installed at the north end of the Project to support connecting the new Ashtabula-Erie West 345 kV Transmission Line to the Ashtabula Substation, and one (1) additional double-circuit steel monopole structure on drilled foundation will be installed at the south end of the Project to support converting the existing tap to a loop configuration.

Finally, the substation portion of the proposed Project will expand the existing Ashtabula 345 kV Substation by an additional 2.22 acres to facilitate the installation of new equipment in the substation for a six (6) breaker ring bus. This represents a 74.8 percent expansion of the substation. To accommodate the addition of this new expansion area, approximately 1025 linear feet of additional fence will be installed.

The Project is located in Ashtabula Township, Ashtabula County, Ohio.

The general location of the proposed Project is shown in Exhibits 1 and 2. Exhibit 1 is a partial copy of the United States Geologic Survey, Ashtabula County, Ohio, Quad Maps. Exhibit 2 provides a partial copy of ESRI aerial imagery. The general layout of the proposed Project, along with the construction footprint, are shown in Exhibit 3.

4906-6-05 (B)(1): Letter of Notification Requirements

The Project falls within Item (2)(a) and Item (4)(b) of the Application Requirement Matrix for Electric Power Transmission Lines, in Appendix A of OAC Rule 4906-1-01. These sections state that an applicant may use the Letter of Notification application process if the Project is for:

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

(a) Two miles or less.

- (4) *Constructing additions to existing electric power transmission stations or converting distribution stations to transmission stations where:*

(b) There is a greater than twenty percent expansion of the fenced area.

This Project meets requirement (2)(a) because it involves adding new circuits on existing structures and replacing structures with a different type of structures for approximately 1.3 miles. This Project also meets requirement (4)(b) because the existing Ashtabula 345 kV Substation will be expanded by approximately 96,705 square feet to a total post-Project size of 225,650 square feet. This represents an approximate 74.8 percent increase in the footprint of the substation.

4906-6-05 (B)(2): Need for the Project

ATSI needs to remove the three-terminal line connection on the Perry-Ashtabula-Erie West 345 kV line. This will be accomplished by expanding the existing Ashtabula 345 kV Substation, rebuilding the existing 345 kV transmission line tap to a double circuit 345 kV transmission line, and reconductoring/rebuilding the Ashtabula–Leroy Center Q1, Q2, and Q4 138 kV Transmission Lines and a portion of the Ashtabula–Leroy Center Q3 138 kV Transmission Line (from Ashtabula Substation to Stacy Substation) in Ashtabula, Ohio. Due to restrictions on construction, outage schedules, and the need to minimize service disruptions, the improvements required to complete the removal of the three terminal connection cannot be completed in a single project and must be broken into two phases:

1. Eliminate the three terminal 345 kV transmission line configuration at Ashtabula Substation.
2. Reconductor/Rebuild the Ashtabula-Leroy Center 138 kV Transmission Lines.

This application is for the first of these two interrelated projects.

A three terminal line configuration is when there exists three independent line exits from different substations that support system network power flows and connect at a common node on the system. The most common line configuration on the Bulk Electric System would be a two terminal line which has a single line that terminates at two independent substations. Three terminal line configurations increase the complexity of the line protection due to the fault current flow from a third terminal affecting the voltage and current present at the other two terminals. Three-terminal line configurations are considered sub-optimal and are not consistent with current transmission system standards of operation or ATSI's internal engineering standards. Generally, eliminating three terminal line configurations improves reliability by simplifying the Transmission Protection scheme, improving relay coordination and reducing the likelihood of misoperations. Furthermore, the three terminal line elimination will reduce the mileage of transmission line exposure, and in this case, provide for additional resiliency and operational flexibility with two 345 kV sources into the Ashtabula 345/138 kV substation which further supports and strengthens the 138 kV system.

In order to eliminate the three terminal line configuration in this case, ATSI will need to improve multiple elements of the electrical system in the project area broken into two phases. The first phase improvements include: (1) rebuilding the existing 345 kV line tap to a double circuit 345 kV transmission line loop/network line; (2) expanding the Ashtabula Substation into a six breaker 345 kV ring bus; and (3) adding a second 345/138 kV transformer to the Ashtabula Substation. The second phase improvements include: (1) reconductoring/rebuilding the thermally overloaded and aged copper conductor on the Ashtabula-Leroy Center Q1, Q2, and Q4 138 kV Transmission Lines and (2) the reconductoring/rebuilding a portion of the Ashtabula-Leroy Center Q3 138 kV Transmission Line.

The Ashtabula Substation expansion to a 345 kV ring bus will allow the existing three-terminal line to be removed. With the rebuild of the existing 345 kV transmission line to a double circuit looped configuration, the substation expansion is required to provide

the terminal end connections to loop/network the rebuilt Perry-Ashtabula-Erie West 345 kV Transmission Line and provide additional connections for two 345/138 kV transformers (one existing and one new transformer). At the completion of both phases of the project, the new line names will be the Ashtabula-Perry and Ashtabula-Erie West 345 kV Transmission Lines.

Although the primary benefit of the Project is to improve system protection and coordination, system reliability, operating flexibility, and system resiliency by removing the three-terminal configuration, the substation expansion also supports future load growth in the area for new and existing customers. The proposed project creates two 345 kV sources and transformation at the substation which strengthens 138 kV system short circuit for industrial customer equipment operation, improves system power quality, and improves the overall system protection coordination, reliability, resiliency, and operational flexibility for system restoration and maintenance. The ability to support future load growth in the immediate Project area is supported by ATSI's planning for a new industrial load of 96 MWs (the Project solution was presented to PJM during the western sub-regional RTEP meeting on July 24, 2019) that will need transmission service from the Ashtabula 138 kV Substation and the added system support from this Project.

The construction of the second phase of the overall project, the reconductoring of the Ashtabula-Leroy Center Q1, Q2, and Q4 138 kV Transmission Lines and a portion of the Ashtabula-Leroy Center Q3 138 kV Transmission Line is necessary due to significant overloads (ranging from 100.4% to 147.5%) on all four Ashtabula-Leroy Center 138 kV Transmission Lines with the 345 kV system reconfiguration as identified by FirstEnergy and PJM. This reconductoring represents a significant planning challenge because of restrictions on construction, outage schedules, and the need to minimize service disruptions. The recondutring of the Ashtabula-Leroy Center 138 kV Transmission Lines may need to include structure(s) replacement depending on a complete structural analysis to determine the final overall scope of work (analysis is to be completed at the beginning of 2020). A complete structural analysis

based on FirstEnergy's design criteria is required to determine if the existing physical structures and their components are able to handle the new loading after reconductoring. Due to the number of circuits, the overall miles of reconductoring, outage coordination, and the need to avoid significant service disruptions, the reconductoring cannot be completed at the same time as the first phase of this project. Consequently, until the reconductoring/ rebuilding work can be completed for the Ashtabula-Leroy Center Q1, Q2, Q3 and Q4 138 kV Transmission Lines, a temporary bypass configuration will be utilized at the existing three terminal line point to facilitate the 345 kV transmission line rebuild and maintain the continuity of the existing three-terminal line by energizing only one of the new double circuit 345 kV lines until the second phase (reconductoring) is complete.

The Perry-Ashtabula-Erie West 345 kV Three-Terminal Line Elimination Project was presented to PJM during the PJM TEAC meeting on March 7, 2019; a Supplemental RTEP number will be provided once assigned by PJM. The scheduled in-service date for this Project (phase one) is December 31, 2020.

4906-6-05 (B)(3): Location of the Project Relative to Existing or Proposed Lines

The location of the Project relative to existing or proposed lines is shown in the ATSI Transmission Network Map, included as part of the confidential portion of the FirstEnergy Corp 2019 Long Term Forecast Report. This map was submitted to the PUCO in Case No. 19-0806-EL-FOR under OAC Rule 4901:5-5:04 (C). This map is incorporated by reference only. This map shows ATSI's 345 kV and 138 kV transmission lines and transmission substations including the Ashtabula Substation and the Perry-Ashtabula-Erie West 345 kV Transmission Line. The Project area is located approximately 1 1/2 inches (11" X 17" printed version) from the right edge of the map and 1/2 inches (11" X 17" printed version) from the bottom of the map. The general location of the Project is shown in Exhibits 1 and 2. The Project layout is shown in Exhibit 3.

4906-6-05 (B)(4): Alternatives Considered

There were no practical alternatives for the three-terminal elimination project and therefore none were considered. If no action is taken, the possibility of the simultaneous outage of three or more elements on the system would remain as well as the risk of system misoperations, longer system restoration times, and a limited ability to provide the required transmission service to existing and future customers.

4906-6-05 (B)(5): Public Information Program

ATSI will issue a public notice in a newspaper of general circulation in the Project area within 7 days of filing this Letter of Notification application. The notice will comply with OAC Rules 4906-6-08(A) (1) through (6). In addition to the public notice, ATSI will mail letters explaining the Project to affected landowners and tenants within and contiguous to the planned expansion area. ATSI has also established a project website: https://www.firstenergycorp.com/about/transmission_projects/ohio.html .

ATSI's manager of External Affairs will advise local officials of features and the status of the proposed Project as necessary.

Finally, during all phases of this Project, ATSI will maintain the transmission projects hotline at 1-800-589-2873 or via email at: transmissionprojects@firstenergycorp.com where the public may ask questions or leave comments on the Project for ATSI.

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

Construction for the substation expansion is anticipated to begin on February 3, 2020. The proposed in-service date for the Project is December 31, 2020.

4906-6-05 (B)(7): Area Map

Exhibit 1 and 2 depict the general location of the Project. Exhibit 1 provides a partial copy of the United States Geologic Survey, Ashtabula County, Ohio, Quad Map. Exhibit 2 provides a partial copy of ESRI aerial imagery.

4906-6-05 (B)(8): Property Owner List

The Project is located on new and existing right-of-way. The property information for this Project is listed below in Table 1 and was obtained through the Ashtabula County Auditor's website.

Table 1. List of Affected Property Owners

Parcel Number	Property Owner	Property Address	Easement Status
03-000-00-140-00	FirstEnergy Generation	2133 Lake SR 531 E. Rd Ashtabula OH 44004	Will be Obtained
03-000-00-140-02 03-000-00-140-03 03-000-00-183-00 03-000-00-182-00 03-000-00-180-00 03-000-00-181-00 03-000-00-177-00 03-000-00-176-00 03-000-00-175-00 03-000-00-154-00 03-000-00-153-00	Illuminating Company	2133 Lake SR 531 E. Rd, Ashtabula OH 44004	Owned in Fee
03-000-00-195-00	New York Central Lines & LLC	Ashtabula OH 44004	Previously Obtained
03-052-00-005-00	Sure Fire Group LLC	North Ridge USR 20 Rd, Ashtabula OH 44004	Will be Obtained

4906-6-05 (B) (9): TECHNICAL FEATURES OF THE PROJECT**4906-6-05 (B)(9)(a): Operating Characteristics**

The equipment and facilities described below will be located within the expanded fenced area of the Ashtabula 345 kV Substation.

- 345/138 kV Transformer – (1)
- 345-kV Gas Circuit Breaker – (6)
- 345-kV Capacitive Voltage Transformer (“CCVT”) – (12)
- 345-kV Wave Trap - (2)
- 345-kV Switches – (14)
- Control Enclosure (58’ x 28’) with Twenty New Relay Panels – (1)
- Firewall – (2)
- 138-kV Gas Circuit Breaker – (1)
- 138-kV Capacitive Voltage Transformer (“CCVT”) – (3)
- 138-kV Switch – (1)
- 138-kV Station Service Voltage Transformer (“SSVT”) – (1)

The equipment and facilities described below are associated with the rebuild of the Perry-Ashtabula-Erie West 345 kV Transmission Line Tap into a double-circuit.

Voltage: 345 kV
Conductors: 954 kcmil 48/7 ACSR (bundle)
Static Wire: 7#8 Alumoweld and OPGW
Insulators: Porcelain/Glass Suspension
ROW Width: 150 feet
Structure Types: DC Tangent Steel Monopole (Exhibit 4) – (6) required
DC DE Steel Monopole (Exhibit 5) – (3) required
SC DE Steel Monopole (Exhibit 6) – (1) required
Temporary 2-Pole Wood – (1) required
Temporary 3-Pole Wood – (3) required

4906-6-05 (B)(9)(b): Calculated Electric and Magnetic Field

As no part of the expanded substation as well as the transmission line centerline is within 100 feet of an occupied residence or institution, Electric and Magnetic Field (“EMF”) calculations have not been made.

4906-6-05 (B)(9)(c): Estimated Cost

The estimated capital cost for Project is approximately \$26,000,000 to be paid by ATSI.

4906-6-05 (B)(10): SOCIAL AND ECOLOGICAL IMPACTS

4906-6-05 (B)(10)(a): Land Uses

The Project is located in Ashtabula Township, Ashtabula County Ohio. Based on the US Bureau of Census estimates the 2018 population of Ashtabula Township was 20,131 and the 2018 population of Ashtabula County was 97,493.

The Project area is in a heavy manufacturing district. As the proposed Project only involves the expansion of an existing substation, addition of a second circuit, and replacing existing structures within the existing transmission corridor, no changes or impacts to the current land use are anticipated.

4906-6-05 (B)(10)(b): Agricultural Land

Agricultural district land does not exist within the Project footprint.

4906-6-05 (B)(10)(c): Archaeological or Cultural Resources

A search of Ohio Historic Preservation Office's ("OHPO") National Register of Historic Places ("NRHP") online database was conducted to identify the existence of any significant archaeological or cultural resource sites within 0.5 mile of the Project area. A map of the results of the search is shown in Exhibit 7. The OHPO database includes all Ohio listings on the NRHP, including districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture.

The results of the search indicate that there are no Listed NRHP properties and no OHPO eligible properties identified within 0.5 mile of the Project's potential disturbance area.

The OHPO database also includes listing of the Ohio Archaeological Inventory ("OAI"), the Ohio Historic Inventory ("OHI"), previous cultural resource surveys, and the Ohio Genealogical Society ("OGS") cemetery inventory. No OAI listed archeological resources have been previously inventoried within 0.5 mile of the Project area. Three (3) OHI listed structural resources are located within 0.5 mile of the Project area and are shown in Table 2.

Table 2. List of OHI Listed Structural Resources

OHI Number	Present Name	Historic Use	County	Municipality
ATB0025203	Ashtabula Generating Plant AB	Energy Facility	Ashtabula	Ashtabula Twp.
ATB0025303	Ashtabula C Generating Plant	Energy Facility	Ashtabula	Ashtabula Twp.
ATB0026403	Lakeshore Park Pavilion	N/A	Ashtabula	Ashtabula Twp.

No previous archaeological resource surveys were conducted within 0.5 mile of the Project area. There are no OAI sites located within 0.5 mile of the Project's potential disturbance area. No OSG cemeteries are located within 0.5 mile of the Project area.

As proposed, the Project involves expansion of the substation fence within previously disturbed area as well as addition of a second circuit and replacing existing structures within the existing corridor, no changes or impacts to archaeological and cultural resources are anticipated.

4906-6-05 (B)(10)(d): Local, State and Federal Government Requirements

The Project will require the development of a Storm Water Pollution Prevention Plan because planned earthwork will include the disturbance of more than 1 acre. This plan will be developed in accordance with the Ohio Environmental Protection Agency (OEPA) National Pollution Discharge Elimination System (NPDES) General Permit OCH000004 – Stormwater Discharges Associated with Construction Activity (General Permit). Submittal of a Notice of Intent (NOI) to the OEPA is required for coverage under the General Permit. Consultation with appropriate county officials will be conducted if warranted during the development of the SWPPP to ensure compliance with any county regulations.

Temporary impacts to wetlands and streams have been minimized to the maximum extent practicable. Permanent impacts to delineated wetlands as a result of structure placement will not exceed thresholds that would require pre-construction authorization from the U.S. Army Corps of Engineers. No delineated wetlands or streams will be permanently impacted by construction activities. Therefore, the Project will not require pre-construction authorization pursuant to Section 404 of the Clean Water Act or a Section 401 Water Quality Certification from the OEPA. There are no additional known local, state, or federal requirements that must be met prior to commencement of construction on the Project.

Table 3 shows the list of government agency requirements and the application status at the time of filing.

Table 3. List of Government Agency Requirements to be Secured Prior to Construction

Agency	Permit Requirement	Status
Ohio Environmental Protection Agency (OEPA)	General NPDES Construction Storm Water Permit	Will Be Filed
Ashtabula County, Ohio, Soil and Water Conservation District, and Ashtabula Township	Storm Water Pollution Prevention Plan (SWP3) – Review Application	Will Be Filed if required

4906-6-05 (B)(10)(e): Endangered, Threatened, and Rare Species Investigation

As part of the investigation, a request was submitted to the Ohio Department of Natural Resources-Division of Wildlife (“ONDR”) to research the presence of any endangered, threatened, or rare species within the Project area. The ODNR response received on December 19, 2018, is attached as Exhibit 8.

The ODNR response indicated that the Project is within the range of the federally and state endangered Indiana Bat (*Myotis sodalis*).

The ONDR’s response also indicated records of the following aquatic species within one mile of the Project area:

- Great lakes crayfish (*Orconectes propinquus*) - state species of concern.
- Channel Darter (*Percina copelandi*) - state threatened fish.
- Clubshell (*Pleurobema clava*) - state endangered and federally endangered mussel.
- Snuffbox (*Epioblasma triquetra*) - state endangered and federally endangered mussel.
- Black Sandshell (*Ligumia recta*) - state threatened mussel.
- Northern brook lamprey (*Ichtyomyzon fossor*) - state endangered fish.

The ODNR comments indicate that the Project is not likely to impact these species due to location, and that no in-water work is proposed in a perennial stream.

The ONDR’s response also indicated records of the following species within one mile of the Project area:

- Eastern massasauga (*Sistrurus catinatus*) - state endangered species and a federally threatened snake species.
- Smooth greensnake (*Opheodrys vernalis*) - state endangered species.
- Spotted Turtle (*Clemmys guttata*) - state threatened species.

The ODNR comments indicate that this Project is not likely to impact these species due to location, the type of habitat at the Project site and surrounding area, and the type of work proposed,

The ONDR's response also indicated records of the following bird species within one mile of the Project area:

- Northern harrier (*Circus cyaneus*) - state endangered bird.
- Upland Sandpiper (*Bartramia longicauda*) - state endangered bird.

The ODNR's comments indicate that the Project is not likely to impact these species due to location, the type of habitat at the Project site, and the type of work proposed.

The ODNR's response also indicated that the Project area is within the range of the Kirtland's Warbler (*Setophaga kirtlandii*) state endangered bird¹ and the Piping Plover (*Charadrius melodus*), a state endangered and federally endangered bird. These species do not nest in the state but do utilize stopover habitat as they migrate through the region. ODNR indicated that since no tree removal was proposed, the Project is not likely to impact these species. However, it has since been determined that some tree clearing will be required to facilitate the Project within the vicinity of structure 13009. This tree clearing will occur in February 2020. As the Piping Plover migrates in March² and Kirtland's Warbler in early Spring³, the Project is not anticipated to negatively affect these species.

As part of the investigation, a request for comments was submitted to the United States Fish and Wildlife Services ("USFWS"). The USFWS's November 1, 2018 response is attached as Exhibit 9.

The USFWS response indicates that due to the Project type, size and location there are no adverse effects anticipated to federally endangered, threatened, proposed, or candidate species.

¹ Kirtland's Warbler federally delisted as of October 2019.
<https://www.fws.gov/Midwest/endangered/birds/Kirtland/index.html>

² <https://www.fws.gov/plover/facts.html>

³ <https://www.fws.gov/verobeach/MSRPPDFs/Kirtlandswarbler.pdf>

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

As part of its investigation, requests were submitted to the ONDR and USFWS to research the presence of any unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forest, national wildlife refuges, or other protected natural areas within one mile of the Project area.

The ODNR's December 19, 2018 response, attached as Exhibit 8 indicated that there is one (1) area of ecological concern. The area of ecological concern is the Ashtabula State Scenic River. The Project area is approximately 1.4 miles away from the nearest part of Ashtabula River; therefore, the Project will have no effect on the Ashtabula River.

The USFWS's response on November 1, 2018, attached as Exhibit 9, indicated that there are no records of any areas of ecological concern within one (1) mile of the proposed Project area.

As part of the investigation, ATSI hired Jacobs Engineering Group, Inc. ("Jacobs") to conduct a wetland and stream assessment of the Project area. The Jacobs investigation focused on an approximately 121-acre study area around the proposed Project centerline, access roads, substation expansion area and additional workspace areas.

During the study, Jacobs identified 10 PEM Category 1 wetlands, 1 PEM/POW Category 1 wetland, and 1 PEM Category 2 wetland totaling approximately 27.83 acres delineated within the study area. Three streams identified within the Project survey corridor including two perennial streams and one ephemeral stream. A map of the delineated wetland and streams is shown in Appendix A.

Table 4-1: Detailed Delineated Wetland Table

Wetland ID	Location		Wetland Type ¹	Area (ac) ²	ORAM Score/Category
	Latitude	Longitude			
Wetland AEWP-01	41.906100	-80.767900	PEM	0.85	19 / Category 1
Wetland AEWP-02	41.900100	-80.764100	PEM	0.93	25 / Category 1
Wetland AEWP-03	41.896700	-80.762900	PEM	8.73	25 / Category 1
Wetland AEWP-04	41.891300	-80.760000	PEM	4.53	33.5 / Category 2

Wetland ID	Location		Wetland Type ¹	Area (ac) ²	ORAM Score/Category
	Latitude	Longitude			
Wetland AEW-05	41.890100	-80.758800	PEM	1.64	13.5 / Category 1
Wetland AEW-06	41.885900	-80.759900	PEM	9.11	24.5 / Category 1
Wetland AEW-07a	41.905000	-80.767600	PEM	0.31	28.5/ Category 1
Wetland AEW-07b	41.905000	-80.768400	POW	0.22	28.5/ Category 1
Wetland AEW-08	41.901700	-80.766600	PEM	0.05	13.5/ Category 1
Wetland AEW-09	41.905200	-80.769100	PEM	0.25	12/ Category 1
Wetland AEW-10	41.905600	-80.769400	PEM	0.14	9.5/ Category 1
Wetland AEW-11	41.906100	-80.770100	PEM	0.18	11.5/ Category 1
Wetland AEW-12	41.905300	-80.771300	PEM	0.89	11.5/ Category 1
WETLAND ACREAGE WITHIN STUDY AREA				27.83	
¹ Cowardin et al. 1979.					
² This acreage only corresponds to the area delineated within the environmental survey area.					

Table 4-2: Detailed Delineated Stream Table

Stream ID	Waterbody Name ¹	Location		Flow Regime ²
		Latitude	Longitude	
Stream AEW-01	UNT to Fields Brook	41.892900	-80.761100	Perennial
Stream AEW-02	Fields Brook	41.893500	-80.761200	Perennial
Stream AEW-03	UNT to Fields Brook	41.886800	-80.759900	Ephemeral
¹ UNT = unnamed tributary.				
² Flow regime is defined as perennial, intermittent, or ephemeral. This determination was interpreted using field observations and USGS topographic maps as appropriate.				

Structure placement has been designed to minimize permanent wetland impacts to the maximum extent practicable. A construction access plan has been developed to avoid or minimize the temporary disturbance of jurisdictional wetland and streams to the maximum extent practicable by utilizing existing access routes throughout the Project area. If any streams or wetlands must be crossed during construction, appropriate Best Management Practices (“BMPs”) such as temporary bridging with construction matting, will be implemented to avoid impacts. All construction activities will be implemented in accordance with all relevant construction storm water permit requirements. All applicable permits will be secured before construction.

4906-6-05(B)(10)(g): Other Information

Construction and operation of the proposed Project will be in accordance with the requirements specified in the latest revision of the National Electrical Safety Code as

adopted by the PUCO and will meet all applicable safety standards established by the Occupational Safety and Health Administration.

No other or unusual conditions are expected that will result in significant environmental, social, health or safety impacts.

4906-6-07: Documentation of Letter of Notification Application Transmittal and Availability for Public Review

This Letter of Notification application is being provided concurrently to the following officials of Ashtabula Township and Ashtabula County, Ohio.

Ashtabula County

Ms. Kathryn L. Wittington,
Board President
Ashtabula Co. Commissioners
25 West Jefferson Street
2nd Floor Old Courthouse
Jefferson, OH 44047

Ms. Janet Discher,
Ashtabula County Administrator
Ashtabula Co. Commissioners
25 West Jefferson Street
2nd Floor Old Courthouse
Jefferson, OH 44047

Mr. J. P. Ducro IV,
Board Vice-President
Ashtabula Co. Commissioners
25 West Jefferson Street
2nd Floor Old Courthouse
Jefferson, OH 44047

Ms. Janice Switzer, Director
Ashtabula County Planning
Commission
25 West Jefferson Street
1st Floor Old Courthouse
Jefferson, OH 44047

Mr. Casey R. Kozlowsky
Ashtabula County Commissioner
25 West Jefferson Street
2nd Floor Old Courthouse
Jefferson, OH 44047

Mr. Tim Martin, P.E., P.S.
Ashtabula County Engineer
186 East Satin Street Courthouse
Jefferson, OH 44047

Ashtabula Township

Mr. Steve McClure, Chairman
Trustee, Ashtabula Township
2718 North Ridge Road East
Ashtabula, OH 44004

Mr. Joseph J. Pete
Trustee, Ashtabula Township
2718 North Ridge Road East
Ashtabula, OH 44004

Ms. Bambi Paulchel,
Vice-Chairman
Trustee, Ashtabula Township
2718 North Ridge Road East
Ashtabula, OH 44004

Mr. Robert S. Dille
Fiscal Officer,
Trustee, Ashtabula Township
2718 North Ridge Road East
Ashtabula, OH 44004

Libraries

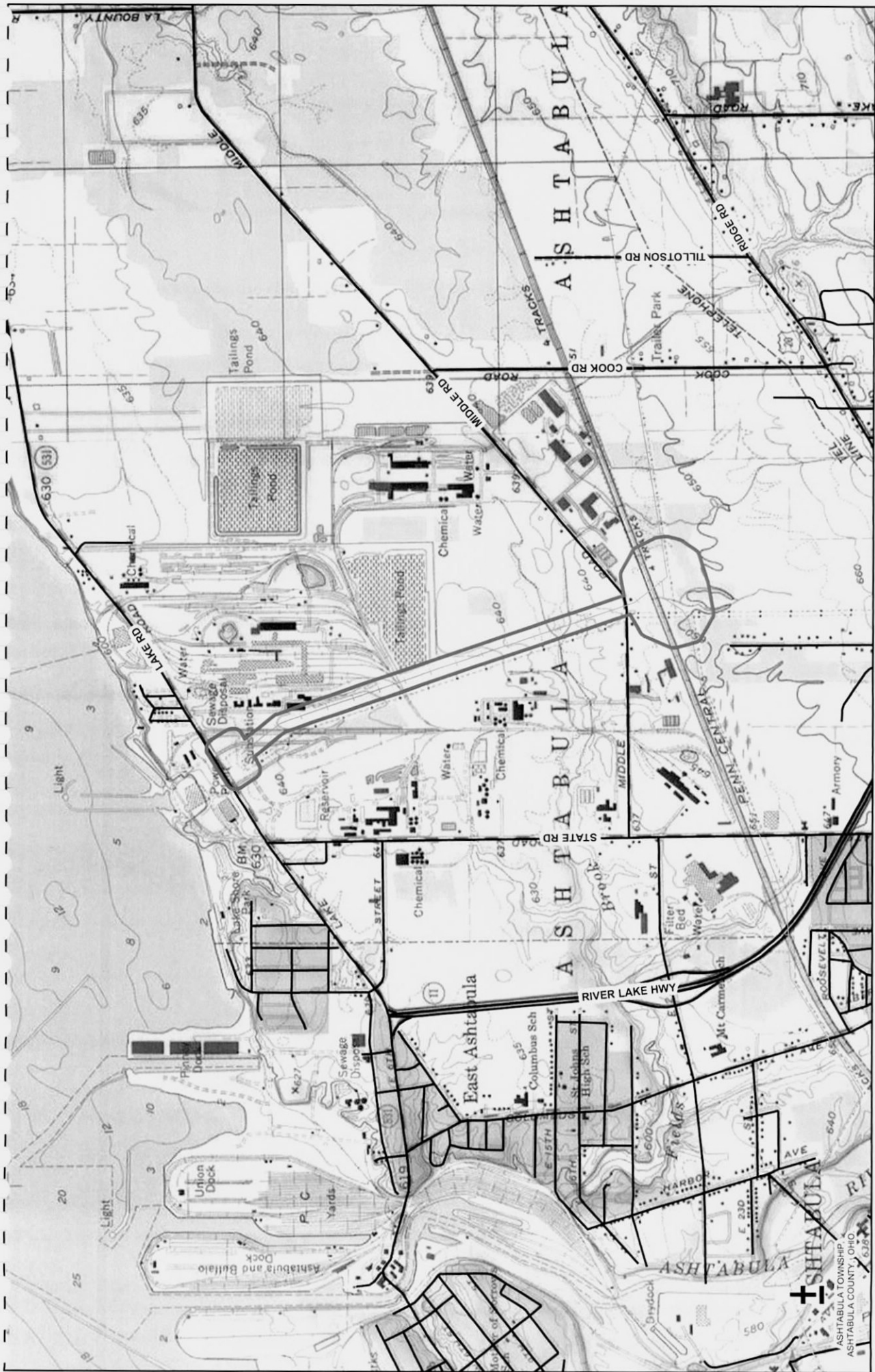
Mr. Joe Zappitello, Director
Harbor-Topky Memorial Library
1633 Walnut Boulevard
Ashtabula, OH 44004

Mr. William J. Tokarczyk, Director
Ashtabula County District Library
4335 Park Avenue,
Ashtabula, OH 44004

Copies of the transmittal letters to these officials have been included with the transmittal letter submitting this Letter of Notification application to the Ohio Power Sitting Board and are being provided to meet the requirement of OAC Rule 4906-6-07 (B) to submit proof of compliance with the notice requirement to local officials found in OAC Rule 4906-6-07 (A)(1).

Information concerning this Letter of Notification application is also posted at the link below and describes how to request an electronic or paper copy of this Letter of Notification application. The link to the website is being provided to meet the requirement of OAC 4906-6-07 Rule (B) and to provide the Board with proof of compliance with the notice requirements in OAC 4906-6-Rule 07 (A)(3).

https://www.firstenergycorp.com/about/transmission_projects/ohio/perry-ashtabula-erie-west-project.html



LEGEND: Project Area Perry-Erie West-Ashtabula 345 kV Road	EXHIBIT 1	FirstEnergy
Perry-Ashtabula-Erie West345 kV Transmission Line Rebuild and Ashtabula Substation Expansion Project		Reference: USGS Topographical Overlay, ODOT Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet Projection: Lambert Conformal Conic, Units: Foot US



ASHTABULA TOWNSHIP
ASHTABULA COUNTY, OHIO

EXHIBIT 2	
Perry-Ashtabula-Erie West 345 kV Transmission Line Rebuild and Ashtabula Substation Expansion Project	

LEGEND:

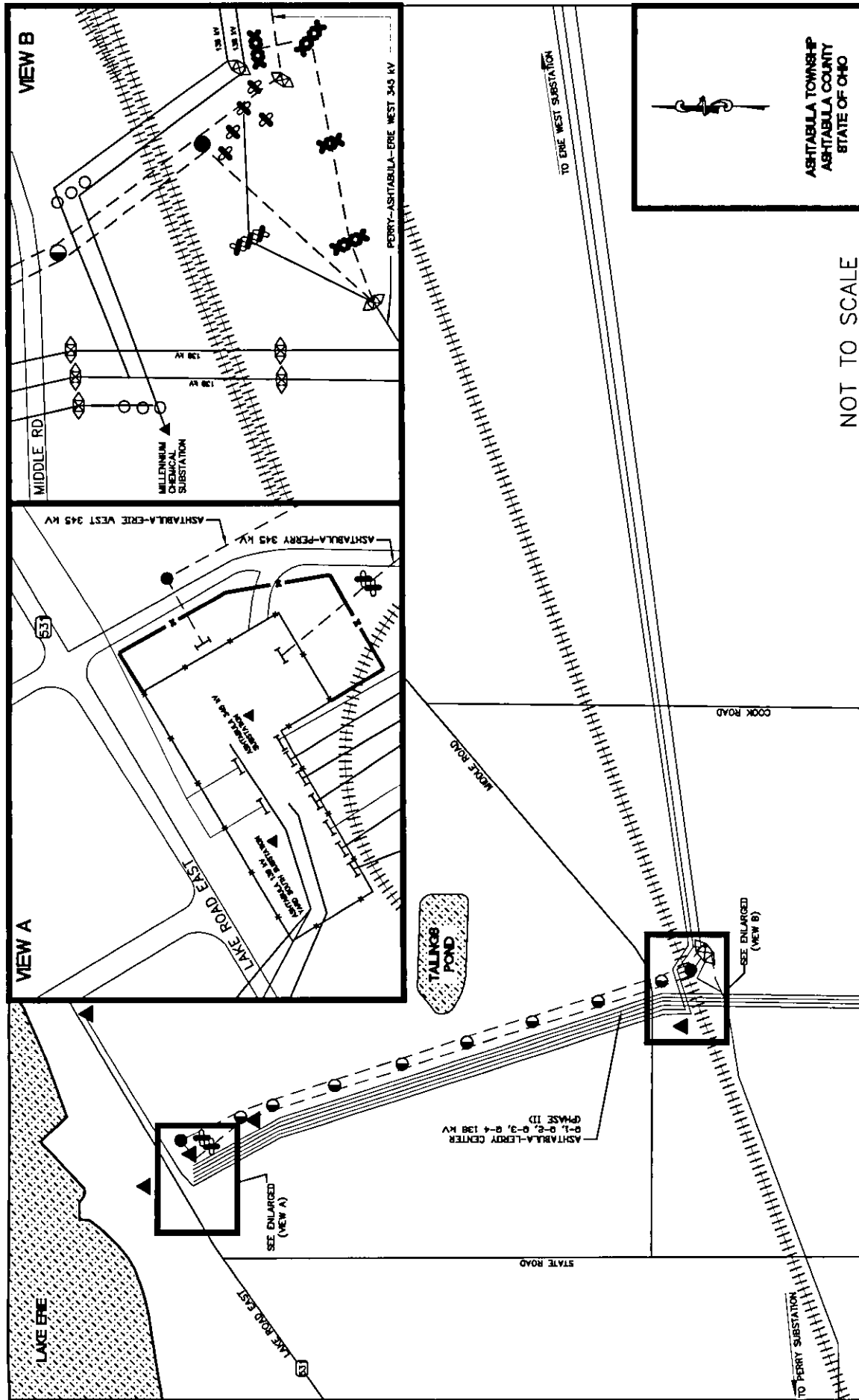
- Project Area
- Perry-Erie West-Ashtabula 345 kV
- Road

0 1,000 2,000 4,000
Feet

Reference:
ESRI Aerial Imagery, ODOT

Coordinate System:
NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Projection: Lambert Conformal Conic, Units: Foot US

LAKE ERIE
Ashtabula



LEGEND

	EXISTING SUBSTATION		EXISTING STEEL LATTICE TOWER STRUCTURE TO REMAIN
	SUBSTATION FENCE LINE		EXISTING STEEL MONOPOLE STRUCTURE TO REMAIN
	PROPOSED SUBSTATION EXPANSION FENCE LINE		EXISTING STEEL LATTICE TOWER STRUCTURE TO BE REPLACED WITH SINGLE STEEL MONOPOLE STRUCTURE
	NEW CONDUCTOR		NEW STEEL MONOPOLE STRUCTURE
	EXISTING CONDUCTOR		EXISTING MULTI-POLE WOOD STRUCTURE TO BE REMOVED
	EXISTING ROADS		NEW TEMPORARY MULTI-POLE WOOD STRUCTURE
	RAILROAD		EXISTING POND/LAKE

ATSI[®]
American Transmission Systems, Inc.
A SUBSIDIARY OF THE AT&T GROUP

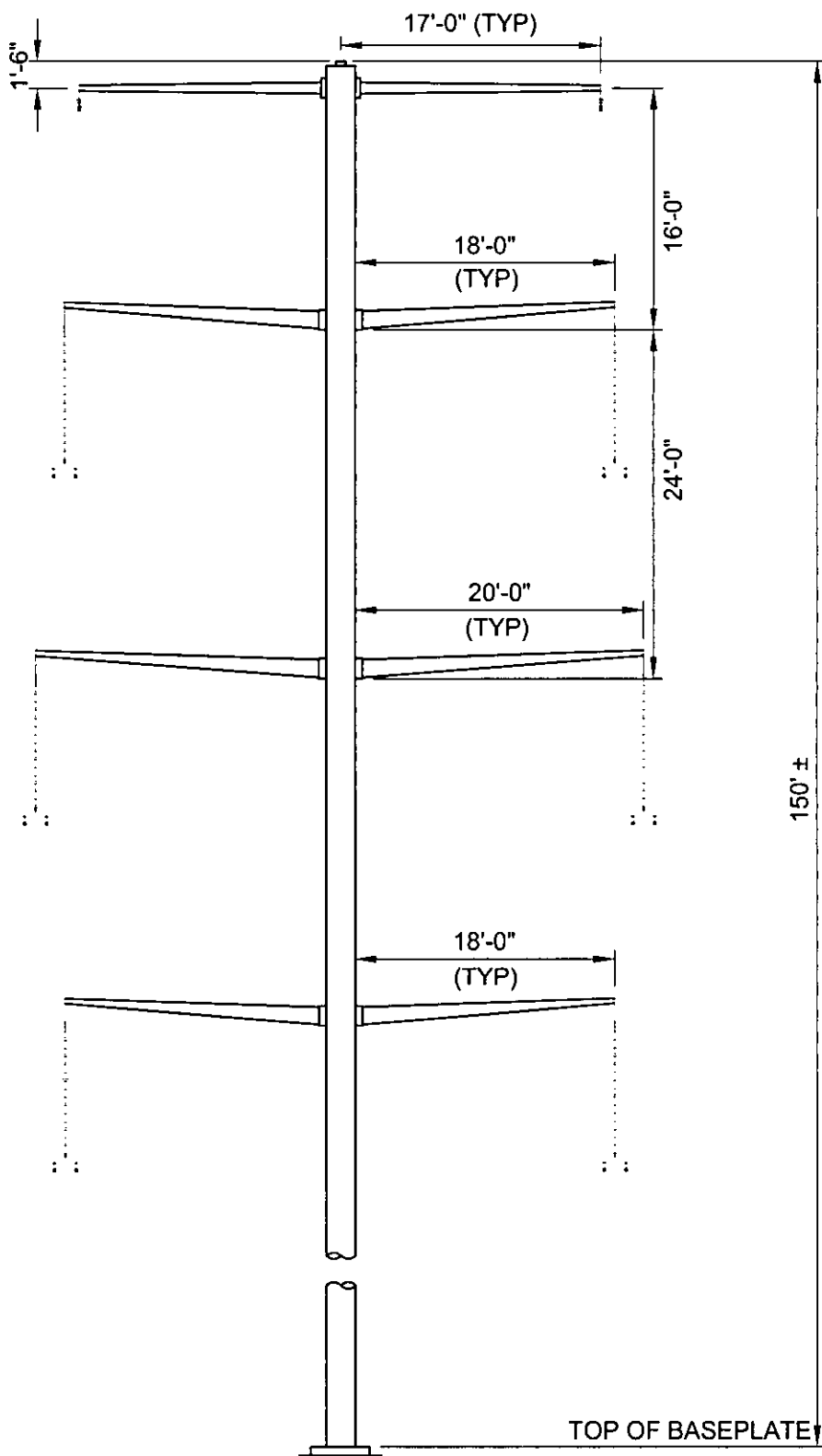
NOT TO SCALE

PERRY-ASHTABULA-ERIE WEST 345 KV
TRANSMISSION LINE REBUILD AND
ASHTABULA SUBSTATION EXPANSION PROJECT

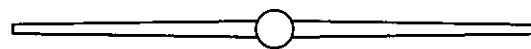
ASHTABULA TOWNSHIP
ASHTABULA COUNTY
STATE OF OHIO

GENERAL LAYOUT

EXHIBIT 3



ELEVATION VIEW



TYPICAL SECTION

ATSI.

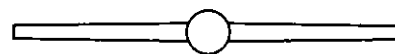
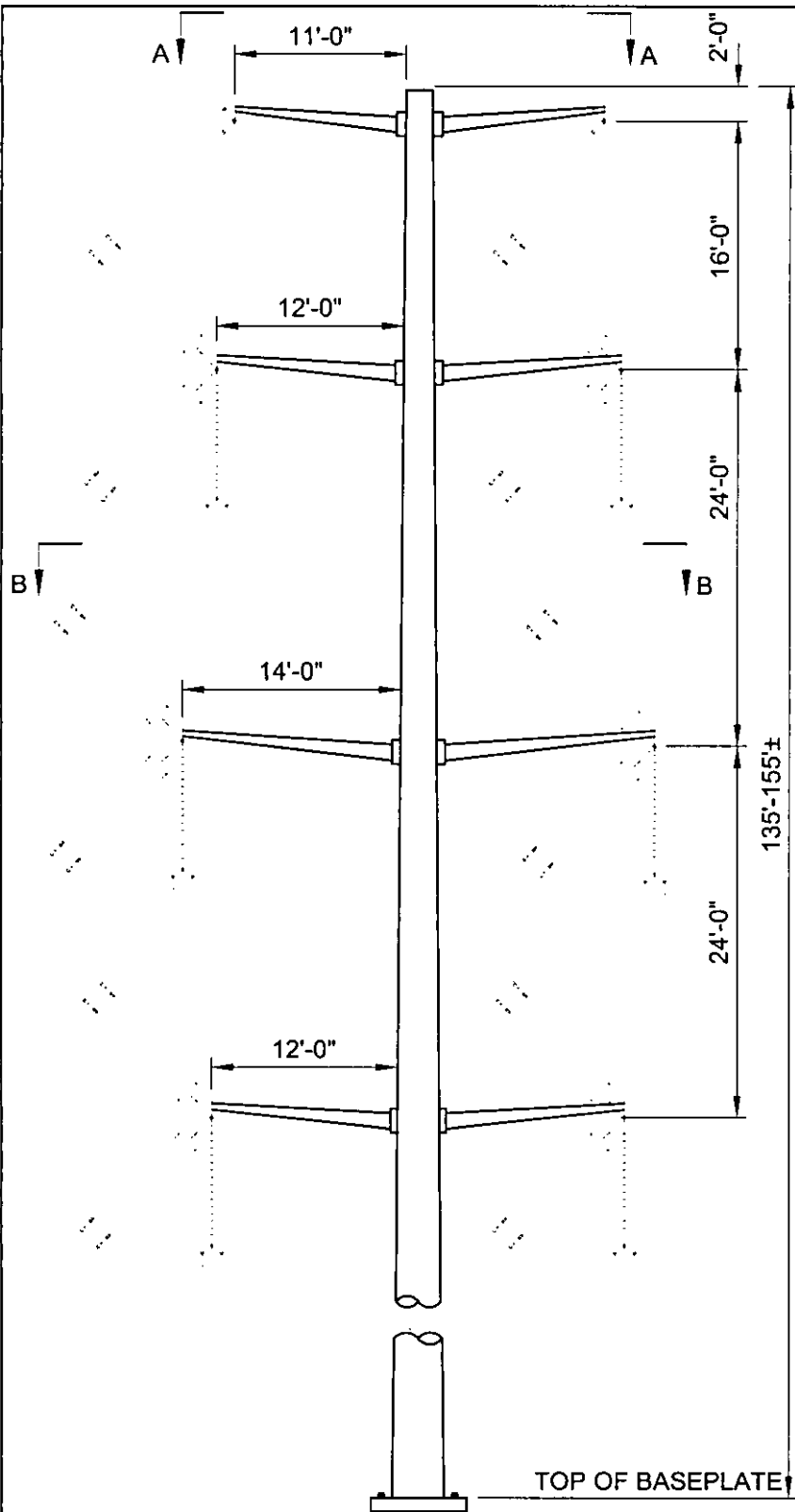
American Transmission Systems, Inc.
a subsidiary of TransEnergy Corp.

PERRY-ASHTABULA-ERIE WEST 345 kV
TRANSMISSION LINE REBUILD AND
ASHTABULA SUBSTATION EXPANSION PROJECT

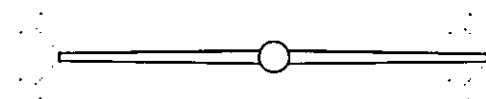
345 kV STEEL MONOPOLE
DOUBLE-CIRCUIT TANGENT STRUCTURE

EXHIBIT 4

NOT TO SCALE



SECTION A-A



SECTION B-B

ELEVATION VIEW

TOP OF BASEPLATE

ATSI

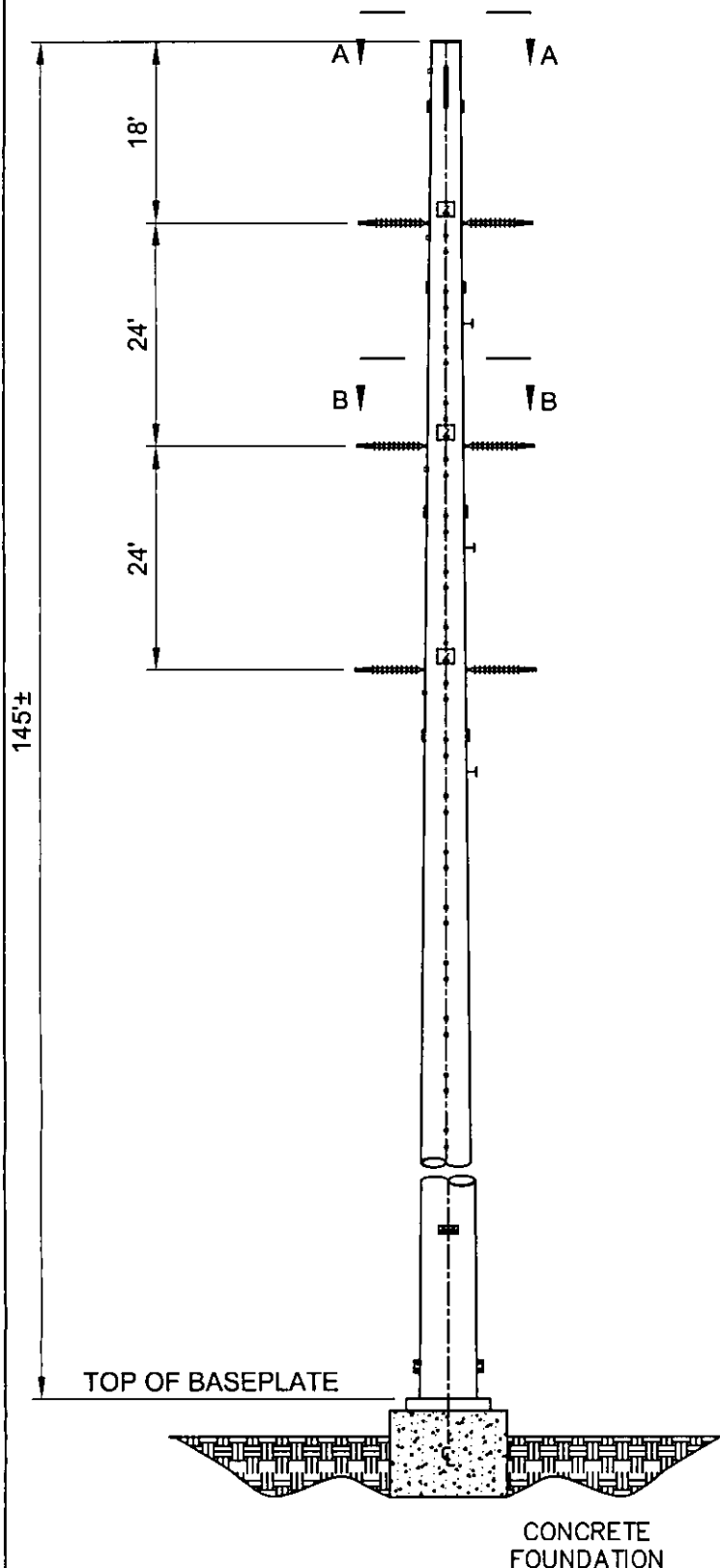
American Transmission Systems, Inc.
a subsidiary of Trillium Corp.

PERRY-ASHTABULA-ERIE WEST 345 kV
TRANSMISSION LINE REBUILD AND
ASHTABULA SUBSTATION EXPANSION PROJECT

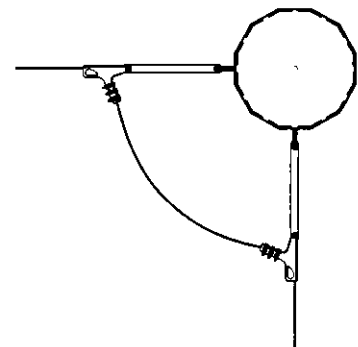
345 kV STEEL MONOPOLE
DOUBLE-CIRCUIT DEADEND STRUCTURE

EXHIBIT 5

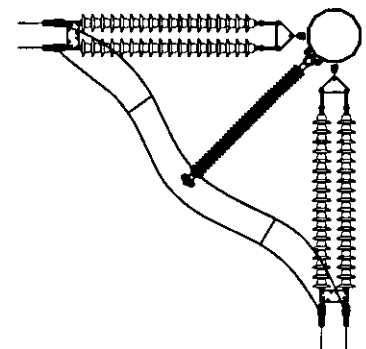
NOT TO SCALE



ELEVATION VIEW



SECTION A-A



SECTION B-B

ATSI.

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

PERRY-ASHTABULA-ERIE WEST 345 kV
TRANSMISSION LINE REBUILD AND
ASHTABULA SUBSTATION EXPANSION PROJECT

345 kV STEEL MONOPOLE
SINGLE-CIRCUIT DEADEND STRUCTURE

EXHIBIT 6

NOT TO SCALE

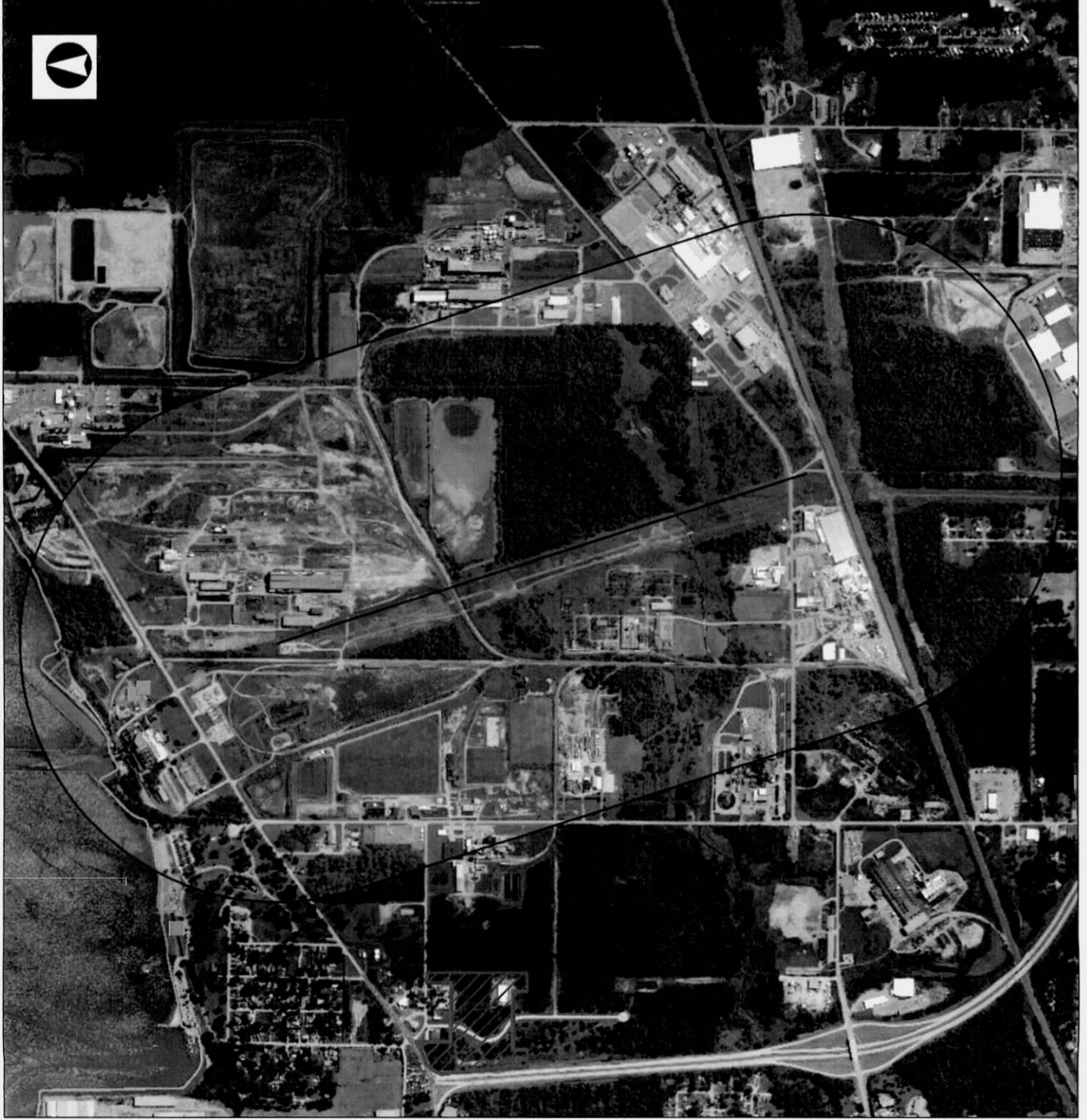
Legend

- NR Listings**
- Listed
 - National Historic Landmark
 - Delisted
- NR Determinations of Eligibility**
- Historic Structures
 - Historic Bridges
 - Historic Tax Credit Projects
 - OGS Cemeteries
- Confident**
- Not Confident
- Dams**
- UTM Zone Split
 - NR Boundaries
 - Phase1
 - Phase2
 - Phase3
 - Historic Previously Surveyed
- 0 0.30 0.61 Miles
- 1: 24,000

Copyright/Disclaimer

This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION

Datum: [Datum]
Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere





Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

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

December 19, 2018

Ben Otto
Jacobs
400 E. Business Way, Suite 400
Cincinnati, Ohio 45241

Re: 18-1162; Ashtabula 345 kV Transmission Line Rebuild Project

Project: The Project consists of replacing existing steel lattice towers of the 345kV electric transmission line with steel lattice towers within the existing and maintained 350 to 450- foot wide right-of-way (ROW).

Location: The proposed project is in the City of Ashtabula, Ashtabula 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 the following records at or within a one-mile radius of the project area:

Great lakes crayfish (*Orconectes propinquus*), State species of concern
Channel darter (*Percina copelandi*), State threatened
Ashtabula State Scenic River

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. This information is provided to inform you of features present within your project area and vicinity. Additional comments on some of the features may be found in pertinent sections below.

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 project is within the vicinity of records for the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. Presence of the Indiana bat has been established in the area, and therefore additional summer surveys would not constitute presence/absence in the area. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniata*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, and the black sandshell (*Ligumia recta*), a state threatened mussel. The DOW understands that there is no in-water work proposed in a perennial stream, therefore, this project is not likely to impact these species.

The project is within the range of the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, and the channel darter (*Percina copelandi*), a state threatened fish. The DOW understands that there is no in-water work proposed in a perennial stream, therefore, 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 a 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 present at the project site and within the vicinity of 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 smooth greensnake (*Opheodrys vernalis*), a state endangered species. This species is primarily a prairie inhabitant, but also found in marshy meadows and roadside ditches. Due to the location, the type of habitat present at the project site and within the vicinity of 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 also is 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 present at the project site and within the vicinity of 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 northern harrier (*Circus cyaneus*), 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. Due to the location, the type of habitat present at the project site, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the piping plover (*Charadrius melodus*), a state endangered and federally endangered bird, and the Kirtland's warbler (*Setophaga kirtlandii*), a state endangered and federally endangered bird. These species do not nest in the state but do utilize stopover habitat as they migrate through the region. The DOW understands that there is no tree removal proposed, therefore, this project is not likely to impact these species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). Due to the location, the type of habitat present at the project site, and the type of work proposed, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. 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 John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

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

From: susan_zimmermann@fws.gov <susan_zimmermann@fws.gov> **On Behalf Of** Ohio, FW3
Sent: Thursday, November 01, 2018 1:51 PM
To: ben.otto@jacobs.com
Cc: Ruggiero, Augustine (Jirousek, Michael J.) <aruggiero@firstenergycorp.com>
Subject: [EXTERNAL] Jacobs (First Energy) Ashtabula 345 kV Transmission Line Rebuild, Ashtabula Co.



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# 03E15000-2019-TA-0200

Dear Mr. Otto,

We have received your recent correspondence requesting information about the subject proposal. There are no Federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area.

FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project, type, size, and location, we do not anticipate adverse effects to federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the U.S. Fish and Wildlife Service should be initiated to assess any potential impacts.

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,

A handwritten signature in black ink, appearing to read 'Scott Pruitt'.

Scott Pruitt
Acting Field Office Supervisor

Wetland and Waterbody Delineation Report

**Ashtabula-Erie West-Perry 345 kV Transmission Line
Rebuild and Substation Expansion Project**

Ashtabula County, Ohio

Prepared for



November 2019

JACOBS

Jacobs Engineering Group, Inc.
1880 Waycross Road
Cincinnati, OH 45242

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3-1	Mapped Soil Units (<i>Follows text</i>)
3-2	Mapped National Wetland Inventory Features (<i>In text</i>)
4-1	Detailed Delineated Wetland Table (<i>Follows text</i>)
4-2	Detailed Delineated Stream Table (<i>Follows text</i>)
4-3	Wetland Summary Table (<i>In text</i>)

Figures

1	Overview Map
2-A to 2-E	Soils Map Units, NHD Streams, NWI Wetlands, and FEMA Floodplain Map
3-A to 3-E	Delineated Features Map

Appendices

A	U.S. Army Corps of Engineers (USACE) Wetland Determination Forms
B	Ohio Rapid Assessment Method for Wetlands (ORAM) Forms
C	Primary Headwater Habitat Evaluation Index (HHEI) and Qualitative Habitat Evaluation Index (QHEI) Stream Datasheets
D	Representative Photographs

Acronyms and Abbreviations

ATSI	American Transmission Systems Inc.
CWA	Clean Water Act
ESC	Environmental Survey Corridor
°F	Fahrenheit
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
FirstEnergy	FirstEnergy Corporation
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
JACOBS	Jacobs Engineering Group, Inc
kV	Kilovolt
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	Obligate wetland
OEPA	Ohio Environmental Protection Agency
OHWM	Ordinary High-Water Mark
ORAM	Ohio Rapid Assessment Method
PEM	Palustrine emergent
PFO	Palustrine forested
PHWH	Primary Headwater Habitat
Project	Ashtabula-Erie-West Perry 345kV Transmission Line Rebuild and Substation Expansion Project
PSS	Palustrine scrub-shrub
QHEI	Qualitative Habitat Evaluation Index
ROW	Right-of-way
TNW	Traditionally navigable water
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1 Introduction

This wetland and waterbody delineation report (Report) summarizes the results of the wetland and waterbody delineation surveys conducted in Ashtabula County, Ohio by Jacobs Engineering Group, Inc. (Jacobs), for American Transmission Systems Inc. (ATSI), a subsidiary of FirstEnergy Corporation (FirstEnergy). ATSI is proposing to replace existing metal H-frame structures associated with the 1.3-mile long Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project (Project). This Project begins approximately 1.2 miles northeast of East Ashtabula, Ohio, at the existing Ashtabula Substation in Ashtabula County, near the intersection of OH State Route 531 and Alpine Drive Road and extends in a southern direction to Structure 13009 just south of the existing Conrail railroad track, south of Middle Road (Figure 1). Additionally, the Project includes an expansion of the existing Ashtabula Substation and an approximately 0.9 mile 100-foot wide access road from North Ridge Road north to Structure 13009.

Jacobs conducted environmental surveys for the Project on August 28-29, October 30, and December 27, 2018. The environmental survey corridor (ESC) included the existing 400- to 500-foot right-of-way (ROW), potential access routes, a substation expansion area, and temporary laydown yards totaling approximately 121 acres.

This wetland and waterbody delineation report contains the following components:

- Figure 1 provides an overview map of the ESC overlain on ArcGIS Online USA topographic maps.
- Figures 2-A to 2-E show U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) mapped soil units, the location of National Wetland Inventory (NWI) polygons, national hydrography dataset (NHD) streams, and Federal Emergency Management Agency (FEMA) 100-year floodplain and floodway information. Table 3-1 lists the soils types identified within the ESC and Table 3-2 lists the NWI wetland types identified within the ESC.
- Figures 3-A to 3-F provide the location of all features mapped during the delineation by Jacobs biologists within the ESC. This includes all wetlands, wetland and upland data points, and waterbodies. Tables 4-1 (wetlands) and 4-2 (streams), provides detailed information for all delineated features within the ESC and follows the text section. Table 4-3 (in text) provides summary information for all the wetland delineated within the ESC.
- U.S. Army Corps of Engineers (USACE) wetland determination field data forms are in Appendix A.
- Ohio Rapid Assessment Method for Wetlands (ORAM) two-page forms are in Appendix B.
- Qualitative Habitat Evaluation Index (QHEI) stream data forms for each stream identified with a drainage area of 1 square mile or greater and Primary Headwater Habitat (PHWH) Evaluation Index (HHEI) stream data forms for each stream identified with a drainage area less than 1 square mile are in Appendix C.
- Representative photographs for all delineated features within the ESC are in Appendix D.

2 Background Information

This section describes the ESC and methodology used during the wetland and waterbody delineation field surveys.

2.1 Project Area

The Project is located within Ashtabula County, Ohio. The ESC begins at the Ashtabula Substation approximately 1.2 miles northeast of East Ashtabula along OH State Route 531 (41.907306°, -80.768426°) and extends in a southern direction terminating south of the Conrail railroad crossing south of Middle Road (41.888476°, -80.759331°); an access road extends from US Highway 20 (N Ridge Road E) north to the Project area. The ESC crosses the Ashtabula North USGS 7.5-minute topographic map (USGS, 1988). The ESC is approximately 1.3-miles long and 400-500 feet wide, with an additional 0.9 miles of 100-foot wide access road and contains several temporary construction laydown yard areas.

Review of the USGS 7.5-minute topographic maps of the area indicates that multiple streams drain the ESC, including Fields Brook and unnamed tributaries of this waterway. Topographic relief is limited to relatively flat with little elevation changes ranging between 611 feet and 688 feet above sea level throughout the ESC (Figure 1).

Land use and natural communities observed within the ESC includes old and fallow fields, scrub shrub, railroad ROWs, industrial, commercial, urban development, and palustrine emergent (PEM) wetlands, in addition to the previously identified waterbodies.

2.1.1 Annual Precipitation

Recent rainfall data for Ashtabula, Ohio was reviewed prior to completing the environmental survey to determine if climatic conditions were normal at the time of the survey. Ashtabula, Ohio was the nearest weather station with both historical and recent precipitation records. Rainfall recorded in Ashtabula, Ohio was below normal for four months, and normal for four months in 2018 through August. This data suggests climatic conditions were generally drier than normal for 2018 leading up to the ecological survey. This was taken into consideration during the delineation.

TABLE 2-1: Recent Precipitation Data

Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project

2018 Precipitation Data	Jan	Feb	Mar	Apr	May	June	July	August	Total
Monthly Mean ^{1,2}	1.92	1.68	2.29	2.97	3.7	6.59	4.18	3.39	26.72
Monthly Precipitation Totals ^{1,2}	M ³ 2	1.21	1.93	1.43	3.26	3.9	4.05	2	17.78
Monthly climatic condition	Normal	Normal	Below Normal	Below Normal	Normal	Below Normal	Normal	Below Normal	

¹Monthly weather summary and precipitation totals from weather station Ashtabula County AP, OH (NOAA, 2018)

²Displayed in inches

³M = missing data (NOAA, 2018); 2 inches reported by Weather Underground (Weather Underground, 2018)

2.1.2 Drainage Basins

The ESC is within the Southern Lake Erie – Ashtabula-Chagrin (04110003) 8-digit Hydrologic Unit Codes (HUC). The ESC crosses two 12-digit HUCs: Lower Ashtabula River (041100030105) and Town of North Kingsville-Frontal Lake Erie (041201010606).

2.1.3 Traditional Navigable Waters

The U.S. Environmental Protection Agency (EPA) and USACE assert jurisdiction over “all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce including all waters which are subject to the ebb and flow of the tide” (USACE and USEPA, 2008). These waters are considered traditionally navigable waters (TNW). All the streams and wetlands within the ESC (see Section 4.1 for more detail) drain into the Ashtabula River or directly into Lake Erie, both TNWs (USACE, 2018).

3 Wetland and Waterbody Delineation

3.1 Desktop Review

Prior to conducting the field investigations, Jacobs reviewed the following resources to identify the potential for wetlands within the ESC:

- Aerial photo-based maps (ArcGIS Online, World Imagery Map, 2017)
- Topographic maps (ArcGIS Online, USA Topo Maps, 2017)
- NRCS Web Soil Survey (NRCS, 2018)
- NWI shapefile (USFWS, 2018)
- National Hydrography Dataset (NHD) (USGS, 2018)

According to the NRCS soil survey of Ashtabula County (NRCS, 2018), 12 soil map units are crossed by the ESC. Of the 12 soil map units, one is listed as predominantly hydric, one is listed as predominantly non-hydric, and the remaining 10 units are listed as not hydric (Figures 2-A to 2-E; Table 3-1). NRCS data indicated that predominantly non-hydric soils and not hydric soils comprise 96 percent of the ESC.

Generally, hydric soils are those soils that indicate through their color and structure that they have experienced dominantly reducing (i.e. oxygen poor) conditions. Oxygen-poor conditions result from inundation and/or saturation by water. Partially hydric soils have both hydric and non-hydric soil components identified in the mapped soil unit.

NWI data was obtained from the USFWS for review of potential wetlands that may occur within the ESC. The NWI data (USFWS, 2018) identifies the type of wetland or open water present at a location using the USFWS classification system (Cowardin et al., 1979). The NWI data indicated that 12 NWI features (approximately 16.46 acres) are within the ESC (Figures 3-A to 3-F); three PEM wetland features (PEM1A), one palustrine scrub/shrub feature, two palustrine forest- palustrine scrub-shrub (PFO1/SS1A, PFO1/SS1C) features, two palustrine scrub/shrub-palustrine emergent (PFO1/EM1A, PFO1/EM1C) features, one palustrine unconsolidated bottom feature (PUBGx), and three riverine unconsolidated bottom (R5UBH) features (USFWS, 2018). The presence of an NWI feature is not a definitive indicator that a wetland or waterbody is present. The information on NWI maps is obtained largely from aerial interpretation, may be outdated, and is only sporadically field-checked. Additional detail regarding the mapped NWI wetlands within the ESC is provided in Table 3-2.

TABLE 3-2: Mapped National Wetland Inventory Features

Ashtabula-Erie West-Perry 34 5kV Transmission Line Rebuild and Substation Expansion Project

Wetland Type ¹	Mapped NWI Features ²	Acreage within ESA
PEM1A	3	5.33
PFO1/SS1A	1	0.33
PFO1/SS1C	1	0.41
PSS1/EM1A	1	1.51
PSS1/EM1C	1	8.36
PSS1A	1	0.50
PUBGx	1	0.53
R5UBH	3	1.17
Overall Total	12	18.14

¹Cowardin et al. 1979.

²USFWS, 2018

As shown on the FEMA floodplain panels (Figures 2-A to 2-E), the ESC does not cross any FEMA-mapped 100-year floodplains (FEMA, 2017).

3.2 Field Survey Methodology

Jacobs biologists surveyed the ESC on August 28-29, October 30, and December 27, 2018, by walking the corridor and evaluating for wetlands and other waters of the U.S. The boundaries of each wetland and waterbody within the ESC were delineated and recorded using handheld global positioning system (GPS) units. For waterbodies identified within the Project area, the ordinary high-water mark (OHWM) was used as the jurisdictional boundary.

Wetland and stream data was recorded on USACE Regional Supplement wetland determination data forms, Ohio Rapid Assessment Method forms, Qualitative Habitat Evaluation Index (QHEI) forms, and Headwater Habitat Evaluation Index (HHEI) form, respectively. All other land use, habitat, and other supplemental data was collected in a field notebook during the environmental survey.

3.2.1 Wetland Delineation

Wetland boundaries were field-delineated according to the routine onsite methodology described in the Technical Report Y-87-1 *Corps of Engineers' Wetlands Delineation Manual* and subsequent guidance documents (USACE, 1987) and according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE, 2012). Wetland delineation data was recorded on the USACE Regional Supplement wetland determination data forms. Representative wetland and upland data points were recorded during the wetland delineation to determine the presence/absence of wetlands and/or document upland conditions within the Project area. Upland data points were determined not to be within wetlands because they did not have positive indicators of one or more of the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

3.2.1.1 Soils

Jacobs biologists examined soils using a hand auger to extract soil cores, which were examined for hydric soil characteristics. A *Munsell Soil Color Chart* (Kollmorgen Corporation, 1988) was used to identify the hue, value, and chroma of the matrix and concentrations/depletions of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (USACE, 1987). In sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are considered to be hydric soils.

3.2.1.2 Hydrology

The 1987 *Manual* requires that an area be inundated or saturated to the surface for an absolute minimum of five percent of the growing season. Areas saturated between five percent and 12.5 percent of the growing season may or may not be wetlands, while areas saturated over 12.5 percent of the growing season fulfill the hydrology requirements for wetlands. The *Regional Supplement* states that the growing season dates are determined through onsite observations of the following indicators of biological activity in a given year; (1) above-ground growth and development of vascular plants, and/or (2) soil temperature (12-in. depth is 41 degree Fahrenheit (°F) or higher) as an indicator of soil microbial activity. Therefore, the beginning of the growing season in a given year is indicated by whichever condition occurs earlier, and the end of the growing season by whichever persists later.

The soils and ground surface were examined by Jacobs biologists for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the 1987 *Manual* and the *Regional Supplement*. Evidence indicating wetland hydrology

typically includes primary indicators such as surface water, saturation, water marks, drift deposits, water-stained leaves, sediment deposits and oxidized rhizospheres on living roots; and secondary indicators such as, drainage patterns, geomorphic position, micro-topographic relief, and a positive Facultative (FAC)-neutral test (USACE, 2012).

3.2.1.3 Vegetation

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb and woody vine) and an indicator status of obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and/or upland (UPL) was assigned to each plant species based on the 2016 National List of Plant Species that Occur in Wetlands. An area is determined to have hydrophytic vegetation when, under normal circumstances, 50 percent or more of the composition of the dominant species are OBL, FACW and/or FAC species. Vegetation of an area was determined to be non-hydrophytic when more than 50 percent of the composition of the dominant species was FACU and/or UPL species. In addition to the dominance test, the FAC-Neutral test and prevalence tests are used to determine if a wetland has a predominance of hydrophytic vegetation.

Wetland quality was evaluated using the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001). Categorization was conducted in accordance with the latest quantitative score calibration (OEPA, 2000). Wetlands are scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between "Categories 1 and 2" from 30 to 34.9 and between "Categories 2 and 3" from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower category (Mack, 2001).

According to recent guidance from the USEPA and USACE, wetlands that are adjacent to or have a significant nexus to TNWs are regulated under Sections 401 and 404 of the CWA (USEPA and USACE, 2008). A significant nexus must meet criteria that indicate the wetland provides biological, physical, or chemical benefits to the TNW. A significant nexus includes consideration of both hydrologic and ecologic factors. All streams and wetlands in the ESC drain into either the Ashtabula River or Lake Erie (see Section 4.1 for more detail), both TNWs (USACE, 2018).

3.2.2 Stream Assessment

Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. Per USACE guidance, the OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE, 2005). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

During the field survey, functional stream assessments were conducted using the methods described in the OEPA's Methods for Assessing Habitat in Flowing Waters: Using OEPA's *Qualitative Habitat Evaluation Index* (OEPA, 2006) and in the OEPA's Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams (OEPA, 2009). The Qualitative Habitat Evaluation Index (QHEI), is used to characterize larger streams (drainage areas greater than 1 square mile), while the Primary Headwater Habitat Evaluation Index (HHEI) is appropriate for first-order and second-order headwater streams (drainage areas less than 1 square mile).

4 Field Survey Results

Jacobs biologists conducted environmental surveys on August 28-29, October 30, and December 27, 2018. A total of 13 wetlands and three streams were delineated within the ESC. The features identified within the ESC are displayed and identified on the Wetlands and Waterbodies Delineation Map (Figures 3-A to 3-F).

Detailed information for wetland and waterbody features within the ESC is provided in Tables 4-1 and 4-2, (follows text) respectively. Jacobs defaults to the USACE for the final determination of hydrologic connectivity and jurisdiction.

4.1 Wetlands

Thirteen wetlands totaling 27.83 acres, ranging in size from 0.05 to 8.73 acres, were delineated within the ESC and are depicted in Figures 3-A to 3-F. The reported wetland acreage only corresponds to areas delineated within the ESC as some wetlands extended beyond the survey boundary. Twelve of the wetlands were identified as PEM (palustrine emergent) wetlands and one was identified as a POW (palustrine open-water) wetland. Detailed information for each delineated wetland within the ESC is provided in Table 4-1 (follows text), and a summary of the delineated wetlands is provided in Table 4-3 below.

TABLE 4-3: Wetland Summary Table

Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project

Wetland Type	ORAM Category			Number of Wetlands	Acreage within ESA ¹
	Category 1	Category 2	Category 3		
PEM	11	1	0	12	27.61
POW	1	0	0	1	0.22
Totals	12	1	0	13	27.83

¹This acreage only corresponds to the area delineated within the environmental survey corridor.

Additionally, Jacobs commonly separates wetlands where there is an obvious change between Cowardin wetland types. This split results in each wetland section being assessed independently; however, Jacobs recognizes that the split wetland components are part of a larger wetland complex. Completed USACE wetland and upland determination forms are provided in Appendix A. Representative photographs were taken of each wetland type during the field survey and are provided in Appendix D.

4.1.1 Wetland ORAM Results

A total of 12 Category 1 wetlands and one Category 2 wetland were identified within the ESC. No Category 3 wetlands were identified within the ESC. Table 4-3 provides additional summary information regarding wetlands identified within the ESC. Completed ORAM forms are included in Appendix B.

Eleven of the Category 1 wetlands were classified as PEM wetlands and one was classified as a POW wetland. These wetlands were classified as Category 1 wetlands based on the ORAM scores (ranging from 9.5 to 28.5). Generally, these wetlands scored low due to a variety of factors such as small size, intensity of surrounding land use, narrow buffer areas, disturbance to soils and hydrology, the lack of second growth vegetation, and the presence of invasive species.

One Category 2 wetland, classified as a PEM wetland, was identified within the ESC. This wetland was classified as a Category 2 wetland based on the ORAM score of 33.5. The Category 2 wetland exhibited a large wetland area (3 to 10 acres), wide upland buffers, and low to moderately high intensive surrounding land use (e.g. young second growth forest, residential, new fallow field), and had habitat and hydrology generally recovered or recovering from previous manipulation due to clearcutting, mowing, and other disturbances.

No high-quality Category 3 wetlands were identified within the ESC.

4.2 Streams

A total of three streams, totaling 1,336 linear feet, were identified within the ESC as shown in Figures 3-A to 3-F. Two of the streams were identified as perennial streams and one was identified as an ephemeral stream. One stream was assessed using the HHEI methodology (drainage area less than 1 mi²) and the other two streams were assessed using the QHEI methodology (drainage area greater than 1 mi²). Completed QHEI and HHEI forms are provided in Appendix C. Representative photographs were taken of each stream during the field survey and are provided in Appendix D.

4.2.1 QHEI Results

Two streams, totaling 882 linear feet, within the ESC were evaluated using the QHEI methodology. Both stream habitats assessed were Poor Warmwater streams. Detailed information for each delineated stream within the ESC is provided in Table 4-2 (follows text).

4.2.2 HHEI Results

One headwater stream, totaling 454 linear feet, within the ESC were evaluated using the HHEI methodology. This stream was classified as a Class 2 stream. Detailed information for each delineated stream within the ESC is provided in Table 4-2 (follows text).

5 Conclusion

Jacobs conducted an environmental survey of the Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project on August 28-29, October 30, and December 27, 2018. A total of thirteen wetlands and three streams were delineated within the ESC. Twelve of the wetlands totaling 27.61 acres were identified as PEM wetlands and one 0.22-acre wetland was identified as a POW wetland. Twelve of the wetlands were identified as Category 1 wetlands and one wetland was identified as a Category 2 wetland. No Category 3 wetlands were identified within the ESC.

The three streams totaling 1,336 linear feet identified within the ESC include two perennial streams and one ephemeral stream. One stream was assessed using the HHEI methodology (drainage area less than 1 mi²) and classified as a Class 2 stream. Two streams were assessed using the QHEI methodology (drainage area greater than 1 mi²) and were each classified as Poor Warmwater streams.

Jacobs defaults to the USACE for the final determination of hydrologic connectivity and jurisdiction. Further coordination with the USACE is recommended prior to the submittal of any permit or construction activities.

The results of the environmental resource survey described in this report conducted by Jacobs are limited to what was identified within the ESC and depicted in Figures 3-A to 3-F. The information contained in this wetland and waterbody delineation report is for a study area that may be much larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed in this report may likely not constitute the actual impacts of the Project at the time of construction. If permits are determined to be necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

The aquatic resources field survey results presented within this report apply to the site conditions at the time of our assessment. Changes within the environmental survey area that may occur with time due to natural processes or human impacts at the project site or on adjacent properties, could invalidate the findings of this report, especially if Jacobs is unaware and has not had the opportunity to revisit the Project survey area. Additionally, changes in applicable standards and regulations may also occur as a result of legislation or the expansion of knowledge over time. Therefore, the findings of this aquatic resources report may be invalidated, wholly or in part, by changes that are beyond the control of Jacobs.

6 References

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.

Federal Emergency Management Agency (FEMA). 2017. Flood Map Service Center. Accessed September 2018. <https://msc.fema.gov/portal/search#searchresultsanchor>

Kollmorgen Corporation. 1988. Munsell Soil Color Charts. Baltimore, Maryland.

Mack, John J. 2001. Ohio Rapid Assessment Method for Wetlands, Manual for Using Version 5.0. Ohio EPA Technical Bulletin Wetland/2001-1-1. Ohio Environmental Protection Agency, Division of Surface Water, 401 Wetland Ecology Unit, Columbus, Ohio.

Natural Resources Conservation Service (NRCS). 2018. U.S. Department of Agriculture (USDA), Online Web Soil Survey database for Harrison and Belmont Counties, Ohio. <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed July 2018.

National Oceanic and Atmospheric Administration (NOAA). 2018. AgACIS for Ashtabula County – Monthly Summarized Data and WETS Data. <http://agacis.rcc-acis.org/?fips=39007>.

Ohio Environmental Protection Agency (OEPA). 2000. *ORAM v. 5.0 Quantitative Score Calibration*. Columbus, Ohio.

Ohio Environmental Protection Agency (OEPA). 2009. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams. Review Version 2.3.

Ohio Environmental Protection Agency (OEPA). 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). OHIO EPA Technical Bulletin EAS/2006-06-1.

U.S. Army Corps of Engineers (USACE). 1987. Technical Report Y-87-1, *Corps of Engineers' Wetlands Delineation Manual*.

U.S. Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification. <http://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl05-05.pdf>. Accessed July 2018.

U.S. Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/ED TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA). 2008. Memorandum "Revised Guidance on Clean Water Act Jurisdiction Following the Supreme Court Decision in *Rapanos v. U.S. and Carabell v. U.S.*" <https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll5/id/1411>. Accessed July 2018.

United States Army Corps of Engineers (USACE). 2018. Ohio Section 10 Navigable Waterways. Accessed September 2018.

U.S. Fish and Wildlife Service (USFWS). 2018. National Wetlands Inventory. <https://www.fws.gov/wetlands/data/mapper.html>. Accessed September 2018.

U.S. Geological Survey (USGS). 2018. National Hydrography Dataset, Ohio. <https://nhd.usgs.gov/>. Accessed September 2018.

USGS. 1988. North Ashtabula, Ohio, 1:24,000 7.5 Minute Series. Available online at <http://www.earthpoint.us/TopoMap.aspx>. Accessed September 2018

Weather Underground. 2018. Monthly Weather Summary from weather station Ashtabula County Station. Ashtabula, Ohio. https://www.wunderground.com/history/monthly/us/oh/ashtabula/KHZY/date/2018-8?cm_ven=localwx_history. Accessed August 31, 2018.

TABLE 3-1: Mapped Soil Units***Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project***

Symbol	Description	Hydric Classification
BkC	Blakeslee silt loam, 6 to 12 percent slopes	Not Hydric
CoB	Colonie loamy fine sand, 2 to 6 percent slopes	Not Hydric
CtA	Conneaut silt loam, 0 to 2 percent slopes	Not Hydric
EnB	Elnora loamy fine sand, 1 to 5 percent slopes	Not Hydric
HaA	Harbor fine sandy loam, 0 to 3 percent slopes	Not Hydric
HoA	Hornell silt loam, 0 to 2 percent slopes	Not Hydric
HoB	Hornell silt loam, 2 to 6 percent slopes	Not Hydric
OuC	Otisville gravelly sandy loam, 6 to 12 percent slopes	Not Hydric
PaA	Painesville fine sandy loam, 0 to 2 percent slopes	Predominantly Non-hydric
Ud	Udorthents	Not Hydric
Un	Urban land	Not Hydric
WcA	Wick silt loam, 0 to 2 percent slopes, frequently flooded	Predominantly Hydric

Table 4-1: Detailed Delineated Wetland Table

Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project

Wetland ID	Location		Wetland Type ¹	Area (ac) ²	ORAM Score/Category	Map Figure
	Latitude	Longitude				
Wetland AEWP-01	41.906100	-80.767900	PEM	0.85	19 / Category 1	3-A, 3-B
Wetland AEWP-02	41.900100	-80.764100	PEM	0.93	25 / Category 1	3-C
Wetland AEWP-03	41.896700	-80.762900	PEM	8.73	25 / Category 1	3-C
Wetland AEWP-04	41.891300	-80.760000	PEM	4.53	33.5 / Category 2	3-D
Wetland AEWP-05	41.890100	-80.758800	PEM	1.64	13.5 / Category 1	3-D
Wetland AEWP-06	41.885900	-80.759900	PEM	9.11	24.5 / Category 1	3-D, 3-E, 3-F
Wetland AEWP-07a	41.905000	-80.767600	PEM	0.31	28.5/ Category 1	3-A, 3-B
Wetland AEWP-07b	41.905000	-80.768400	POW	0.22	28.5/ Category 1	3-A, 3-B
Wetland AEWP-08	41.901700	-80.766600	PEM	0.05	13.5/ Category 1	3-B, 3-C
Wetland AEWP-09	41.905200	-80.769100	PEM	0.25	12/ Category 1	3-A, 3-B
Wetland AEWP-10	41.905600	-80.769400	PEM	0.14	9.5/ Category 1	3-A, 3-B
Wetland AEWP-11	41.906100	-80.770100	PEM	0.18	11.5/ Category 1	3-A, 3-B
Wetland AEWP-12	41.905300	-80.771300	PEM	0.89	11.5/ Category 1	3-A, 3-B
WETLAND ACREAGE SUBTOTAL				27.83		

¹Cowardin et al. 1979.

²This acreage only corresponds to the area delineated within the environmental survey area.

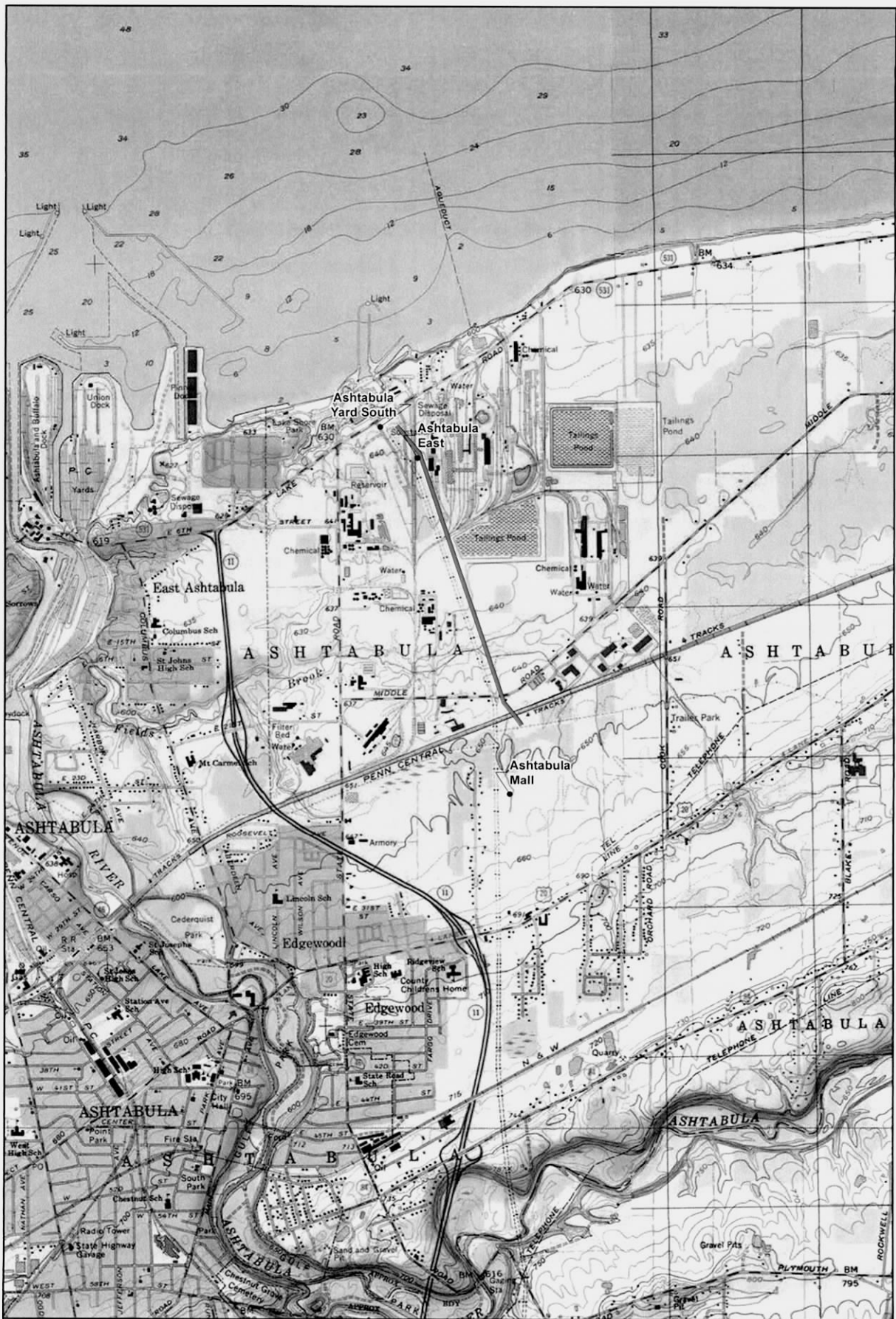
TABLE 4-2: Detailed Delineated Stream Table
Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project

Stream ID	Waterbody Name ¹	Location		Flow Regime ²	Linear Feet ³	Average Width (Feet)		HHEI/QHEI Score	Class/Designation	Map Figure
		Latitude	Longitude			Average OHWM	Average TOB			
Stream AEWP-01	UNT to Fields Brook	41.892900	-80.761100	Perennial	459	5	12	37	Poor Warmwater	3-D
Stream AEWP-02	Fields Brook	41.893500	-80.761200	Perennial	423	10	15	42	Poor Warmwater	3-D
Stream AEWP-03	UNT to Fields Brook	41.886800	-80.759900	Ephemeral	454	3	4	36	Class II	3-D, 3-E
CUMULATIVE STREAM LENGTH					1,336					

¹UNT = unnamed tributary.

²Flow regime is defined as perennial, intermittent, or ephemeral. This determination was interpreted using field observations and USGS topographic maps as appropriate.

³Stream length within the environmental survey area.



LEGEND: • Substation — Ashtabula-Erie West-Perry 345 kV	Locator Map	BASE MAP SOURCE ESRI USA TOPO MAP ASHTABULA NORTH QUADRANGLE 0 1,000 2,000 4,000 FEET	ATSI American Transmission Systems, Inc. A subsidiary of PPL Energy, Inc. Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project FIGURE 1 OVERVIEW MAP <table border="1" style="width: 100%;"> <tr> <td>PN: 708941</td> <td>Date: 11/4/2019</td> </tr> <tr> <td>CREATED BY: RED</td> <td rowspan="2">JACOBS</td> </tr> <tr> <td>REVIEWED BY: BCR</td> </tr> </table>	PN: 708941	Date: 11/4/2019	CREATED BY: RED	JACOBS	REVIEWED BY: BCR
PN: 708941	Date: 11/4/2019							
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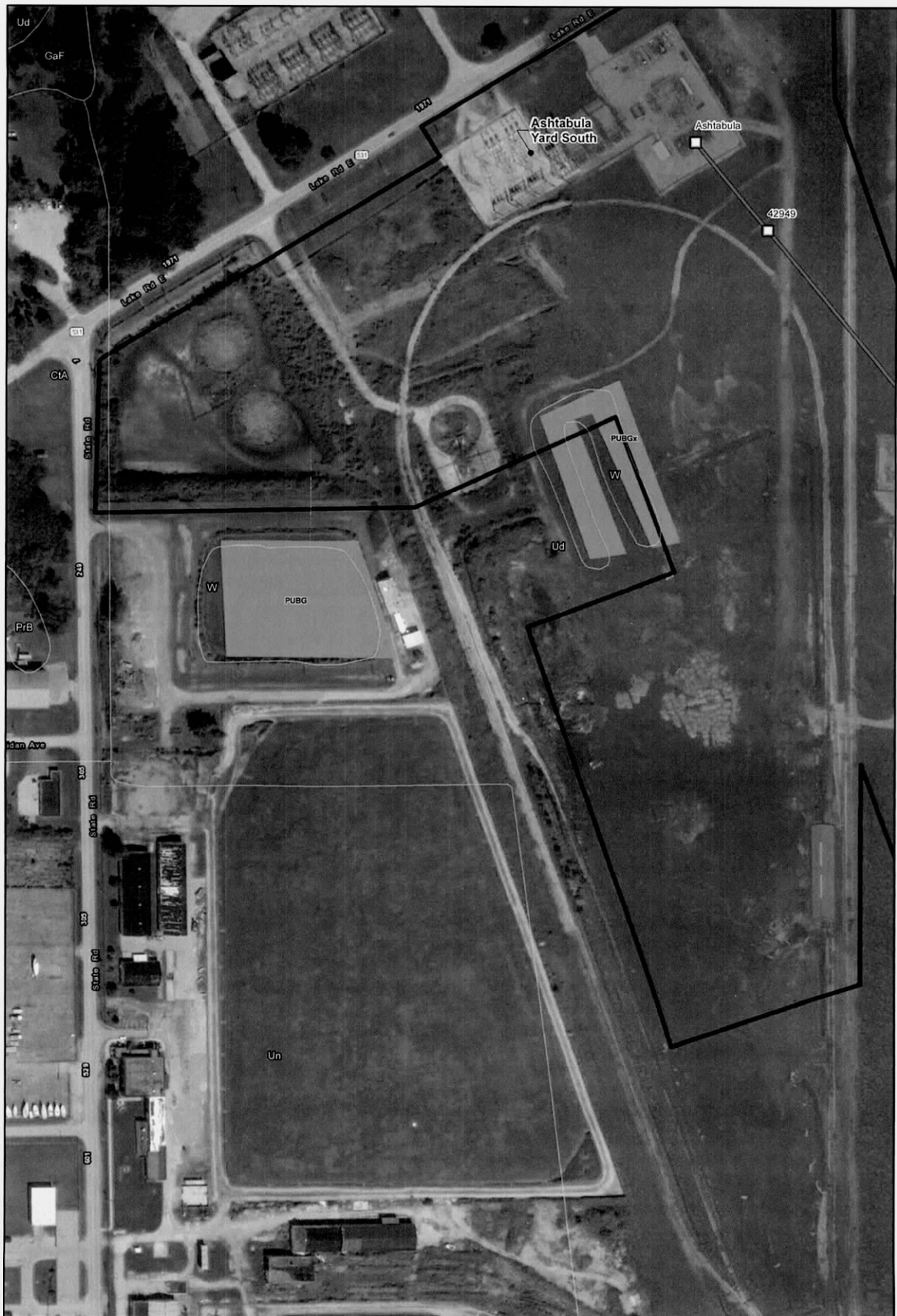
- LEGEND:**
- Substation
 - Existing Structure
 - Proposed Structure
 - Ashtabula-Erie West-Perry 345 kV
 - ▬ Environmental Survey Corridor
 - NHD Stream
 - Soil Unit
 - NWI Wetland
 - ▨ Floodplain



BASE MAP SOURCE:
ESRI WORLD IMAGERY
SOIL UNIT - US DEPARTMENT OF
AGRICULTURE, NATURAL
RESOURCES CONSERVATION
SERVICE

0 100 200 400
FEET

ATSI American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.		Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project
FIGURE 2-A SOILS, NHD, NWI, FLOODPLAIN MAP		
PN: 708941	Date: 11/4/2019	
CREATED BY: RED	REVIEWED BY: BCR	
JACOBS		



LEGEND: ● Substation □ Existing Structure ▣ Proposed Structure ▬ Ashtabula-Erie West-Perry 345 kV ▬ Environmental Survey Corridor ▬ NHD Stream ▬ Soil Unit ▬ NWI Wetland ▬ Floodplain	Locator Map	BASE MAP SOURCE: ESRI WORLD IMAGERY, SOIL UNIT - US DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE 0 100 200 400 FEET	ATSI American Transmission Systems, Inc. A member of The Energy Corp. FIGURE 2- B SOILS, NHD, NWI, FLOODPLAIN MAP PN: 708941 CREATED BY: RED REVIEWED BY: BCR Date: 11/4/2019 JACOBS
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LEGEND:

- Substation
- Existing Structure
- Proposed Structure
- Ashtabula-Erie West-Perry 345 kV
- Environmental Survey Corridor
- NHD Stream
- Soil Unit
- NWI Wetland
- Floodplain

Locator Map



BASE MAP SOURCE:
ESRI WORLD IMAGERY
SOIL UNIT - US DEPARTMENT OF
AGRICULTURE, NATURAL
RESOURCES CONSERVATION
SERVICE



ATSI
American Transmission Systems, Inc.
A subsidiary of FirstEnergy Corp.

Ashtabula-Erie West-Perry
345 kV Transmission Line
Rebuild and Substation
Expansion Project

**FIGURE 2-C
SOILS, NHD, NWI, FLOODPLAIN MAP**

PN: 708941

Date: 11/4/2019

CREATED BY: RED

REVIEWED BY: BCR

JACOBS





- LEGEND:**
- Substation
 - Existing Structure
 - Proposed Structure
 - Ashtabula-Erie West-Perry 345 kV
 - ▬ Environmental Survey Corridor
 - NHD Stream
 - Soil Unit
 - NWI Wetland
 - ▨ Floodplain

Locator Map



BASE MAP SOURCE:
ESRI WORLD IMAGERY
SOIL UNIT - US DEPARTMENT OF
AGRICULTURE, NATURAL
RESOURCES CONSERVATION
SERVICE

0 100 200 400
FEET



ATSI
American Transmission Systems, Inc.
A subsidiary of FirstEnergy Corp.

Ashtabula-Erie West-Perry
345 kV Transmission Line
Rebuild and Substation
Expansion Project

FIGURE 2- E
SOILS, NHD, NWI, FLOODPLAIN MAP

PN: 708941

Date: 11/4/2019

CREATED BY: RED

REVIEWED BY: BCR

JACOBS



LEGEND:

- Substation
- Existing Structure
- Proposed Structure
- Ashtabula-Erie West-Perry 345 kV
- ▬ Environmental Survey Corridor
- NHD Stream
- Soil Unit
- ▨ NWI Wetland
- ▨ Floodplain

Locator Map



BASE MAP SOURCE:
ESRI WORLD IMAGERY
SOIL UNIT - US DEPARTMENT OF
AGRICULTURE, NATURAL
RESOURCES CONSERVATION
SERVICE

0 100 200 400
FEET



ATSI
American Transmission Systems, Inc.
A subsidiary of FirstEnergy Corp.

Ashtabula-Erie West-Perry
345 kV Transmission Line
Rebuild and Substation
Expansion Project

FIGURE 2- F SOILS, NHD, NWI, FLOODPLAIN MAP

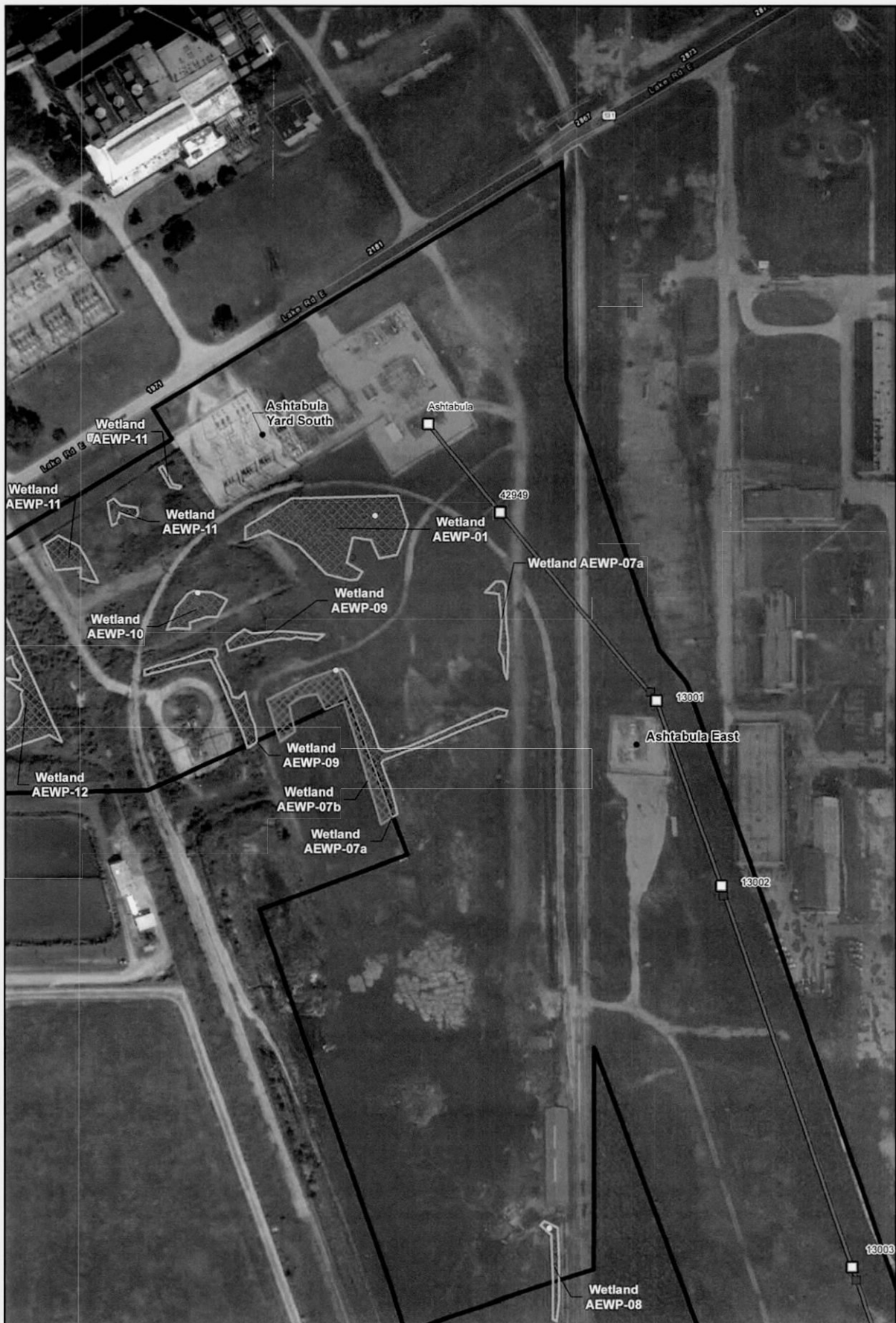
PN: 708941

Date: 11/4/2019

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REVIEWED BY: BCR

JACOBS



LEGEND:

- Substation
- Existing Structure
- Proposed Structure
- Ashtabula-Erie West-Perry 345 kV
- Environmental Survey Corridor
- Upland Data Point
- Wetland Data Point
- Delineated Stream
- ▨ Delineated PEM Wetland
- ▨ Delineated POW Wetland

Locator Map



BASE MAP SOURCE:
ESRI WORLD IMAGERY



0 100 200 400
FEET

ATSI
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Ashtabula-Erie West-Perry
345 kV Transmission Line
Rebuild and Substation
Expansion Project

FIGURE 3-A
DELINEATED FEATURES

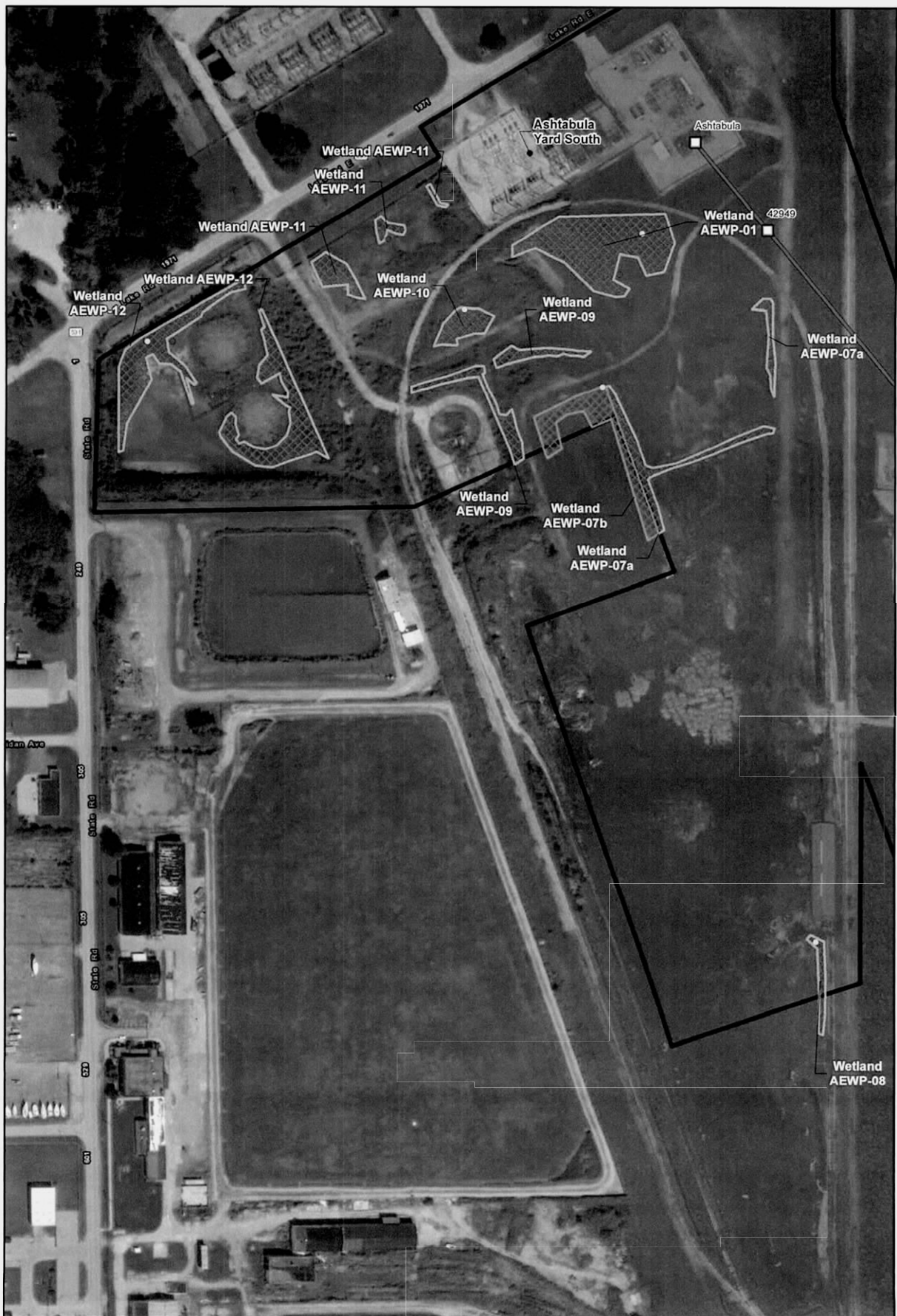
PN: 708941

Date: 11/4/2019

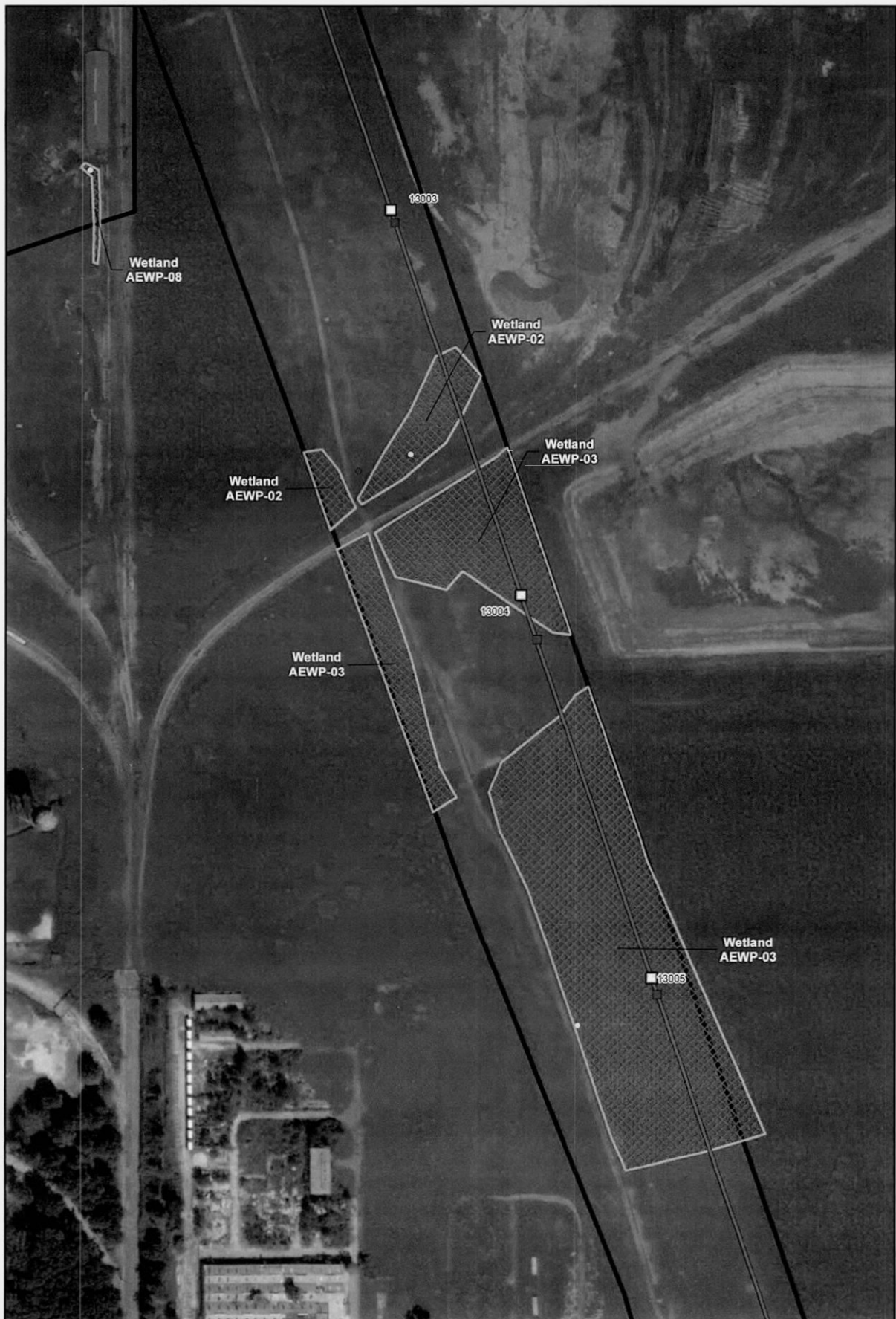
CREATED BY: RED

REVIEWED BY: BCR

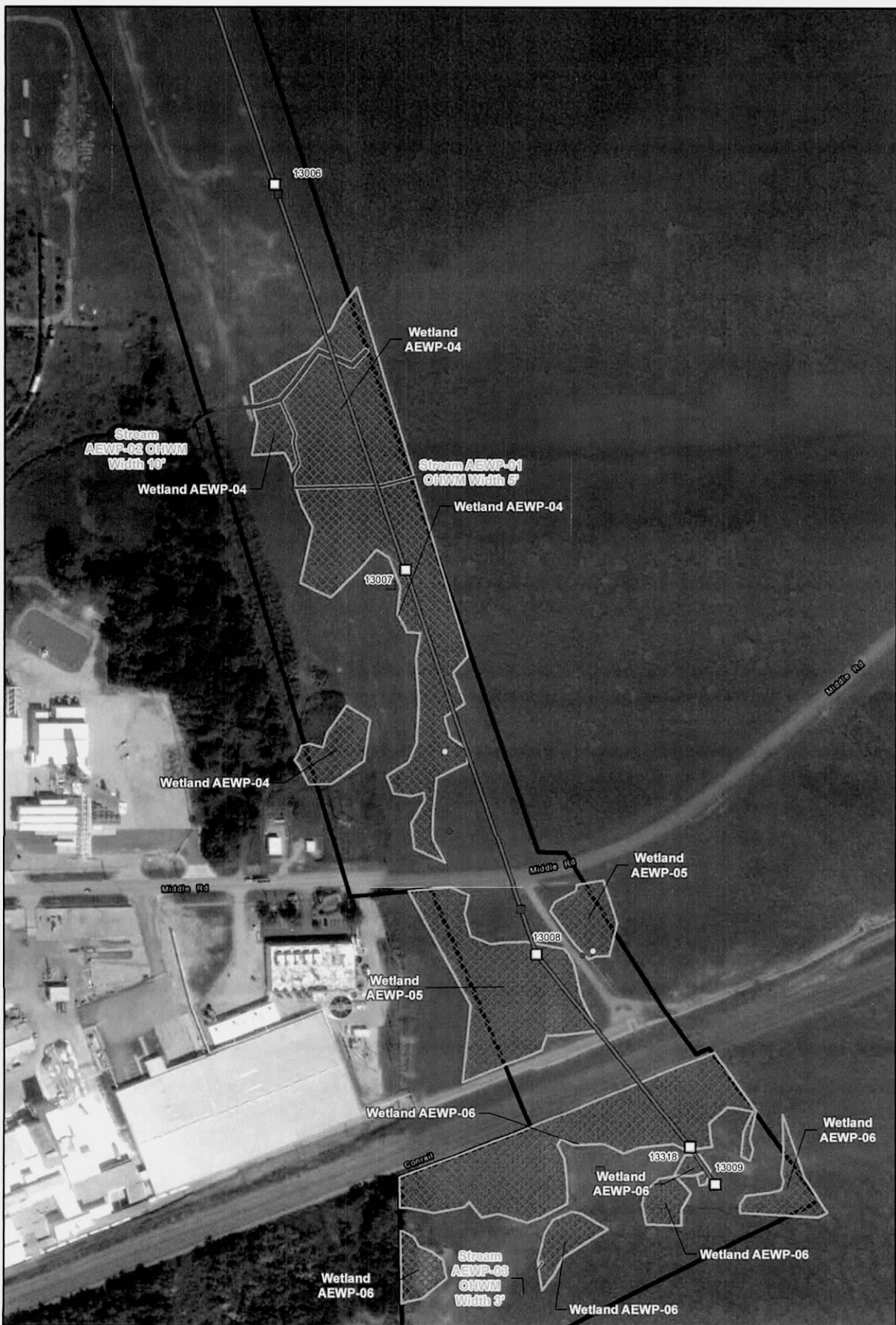
JACOBS



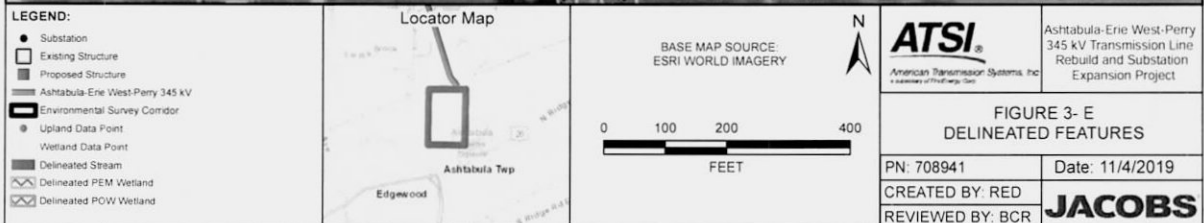
LEGEND: ● Substation □ Existing Structure ■ Proposed Structure — Ashtabula-Erie West-Perry 345 kV ▬ Environmental Survey Corridor ● Upland Data Point ● Wetland Data Point ▬ Delineated Stream ▨ Delineated PEM Wetland ▩ Delineated POW Wetland	Locator Map	BASE MAP SOURCE ESRI WORLD IMAGERY 0 100 200 400 FEET	ATSI American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp. Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project FIGURE 3- B DELINEATED FEATURES <table border="1"> <tr> <td>PN: 708941</td> <td>Date: 11/4/2019</td> </tr> <tr> <td>CREATED BY: RED</td> <td rowspan="2">JACOBS</td> </tr> <tr> <td>REVIEWED BY: BCR</td> </tr> </table>	PN: 708941	Date: 11/4/2019	CREATED BY: RED	JACOBS	REVIEWED BY: BCR
PN: 708941	Date: 11/4/2019							
CREATED BY: RED	JACOBS							
REVIEWED BY: BCR								



LEGEND: ● Substation □ Existing Structure ■ Proposed Structure — Ashtabula-Erie West-Perry 345 kV ▬ Environmental Survey Corridor ● Upland Data Point ● Wetland Data Point ▬ Delineated Stream ▨ Delineated PEM Wetland ▩ Delineated POW Wetland	Locator Map	BASE MAP SOURCE ESRI WORLD IMAGERY 0 100 200 400 FEET	ATSI American Transmission Systems, Inc. A subsidiary of Fluor Corp. Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project FIGURE 3- C DELINEATED FEATURES <table border="1" style="width: 100%;"> <tr> <td>PN: 708941</td> <td>Date: 11/4/2019</td> </tr> <tr> <td>CREATED BY: RED</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">JACOBS</td> </tr> <tr> <td>REVIEWED BY: BCR</td> </tr> </table>	PN: 708941	Date: 11/4/2019	CREATED BY: RED	JACOBS	REVIEWED BY: BCR
PN: 708941	Date: 11/4/2019							
CREATED BY: RED	JACOBS							
REVIEWED BY: BCR								



LEGEND: ● Substation □ Existing Structure ■ Proposed Structure — Ashtabula-Erie West-Perry 345 kV ▬ Environmental Survey Corridor ● Upland Data Point ○ Wetland Data Point ▬ Delineated Stream ▨ Delineated PEM Wetland ▩ Delineated POW Wetland	Locator Map Ashtabula Tep	BASE MAP SOURCE: ESRI WORLD IMAGERY 0 100 200 400 FEET	ATSI American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp. Ashtabula-Erie West-Perry 345 kV Transmission Line Rebuild and Substation Expansion Project FIGURE 3- D DELINEATED FEATURES <table border="1" style="width: 100%;"> <tr> <td>PN: 708941</td> <td>Date: 11/4/2019</td> </tr> <tr> <td>CREATED BY: RED</td> <td rowspan="2">JACOBS</td> </tr> <tr> <td>REVIEWED BY: BCR</td> </tr> </table>	PN: 708941	Date: 11/4/2019	CREATED BY: RED	JACOBS	REVIEWED BY: BCR
PN: 708941	Date: 11/4/2019							
CREATED BY: RED	JACOBS							
REVIEWED BY: BCR								



Appendix A
U.S. Army Corps of Engineers (USACE)
Wetland Determination Forms

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEW-01
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: w-mdt-8/28/2018-05
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.906057 Long.: -80.768307 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks)
 Are vegetation ☐, soil ☒, or hydrology ☐ significantly disturbed? Are "normal circumstances" ☒ Yes
 Are vegetation ☐, soil ☐, or hydrology ☐ naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? ☒ Yes Hydric soil present? ☒ Yes Wetland hydrology present? ☒ Yes	Is the sampled area within a wetland? ☒ Yes
Remarks: PEM wetland in routinely maintained ROW with soils that appear to be impacted from past industrial activities nearby.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
☐ Surface Water (A1) ☐ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☒ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☒ FAC-Neutral Test (D5)
Field Observations: Surface water present? Yes ☐ No ☒ Depth (inches): Water table present? Yes ☐ No ☒ Depth (inches): Saturation present? Yes ☒ No ☐ Depth (inches): 4 (includes capillary fringe)		Wetland hydrology present? ☒ Y
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Saturated throughout with pockets that appear to get inundated periodically throughout the year.		

VEGETATION - Use scientific names of plants

Sampling Point: w-mdt-8/28/2018-05

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>						80	Y	FACW	
2	<i>Scirpus cyperinus</i>						10	N	FACW	
3	<i>Typha angustifolia</i>						10	N	OBL	
4	<i>Juncus tenuis</i>						10	N	FAC	
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							110	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	110 (A)		220 (B)
Prevalence Index = B/A =			2.00

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-mdt-8/28/2018-05

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEW-02
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: w-mdt-8/28/2018-04
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.900246 Long.: -80.76416 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: PEM1A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks: PEM wetland in routinely maintained ROW and bisected by gravel access road. Soils also appear to be impacted from past industrial activities nearby.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u> </u> Surface Soil Cracks (B6)
<u> </u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Sparsely Vegetated Concave Surface (B8)
<u> </u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u>X</u> Drainage Patterns (B10)
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living	<u> </u> Moss Trim Lines (B16)
<u>X</u> Water Marks (B1)	<u> </u> Roots (C3)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Recent Iron Reduction in Tilled	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Soils (C6)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Other (Explain in Remarks)	<u> </u> Shallow Aquitard (D3)
<u> </u> Water-Stained Leaves (B9)		<u> </u> Microtopographic Relief (D4)
<u>X</u> Aquatic Fauna (B13)		<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>4</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Saturated throughout.

Sampling Point: w-mdt-8/28/2018-04

Eastern Mountains and Piedmont Region

SOIL

Sampling Point: w-mdt-8/28/2018-04

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

[illegible]

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

****Location: PL=Pore Lining, M=Matrix**

Hydric Soil Indicators:

☐ Histisol (A1)	☐ Dark Surface (S7)	☐ 2 cm Muck (A10) (LRR N)
☐ Histic Epipedon (A2)	☐ Polyvalue Below Surface (S8)	☐ Coast Range (A11) (LRR N, MLRA 147, 148)
☐ Black Histic (A3)	☐ (MLRA 147, 148)	☐ Piedmont (A12) (LRR N, MLRA 147, 148)
☐ Hydrogen Sulfide (A4)	☐ Thin Dark Surface (S9)	☐ Very Sandy (A13) (LRR N, MLRA 147, 148)
☐ Stratified Layers (A5)	☐ (MLRA 147, 148)	☐ Other (A14) (LRR N, MLRA 147, 148)
☐ 2 cm Muck (A10) (LRR N)	☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Below Dark Surface (A11) X	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ (LRR N, MLRA 147, 148)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)	☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
☐ Sandy Redox (S5)	☐ Umbric Surface (F13) (MLRA 136, 122)	
☐ Stripped Matrix (S6)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)	
	☐ Red Parent Material (F21) (MLRA 127, 147)	

Indicators for Problematic Hydric Soils:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19,
 (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel
Depth (inches): 6

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-03
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: w-mdt-8/28/2018-03
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.897754 Long.: -80.762905 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland in routinely maintained ROW and bisected by gravel access road. Soils also appear to be impacted from past industrial activities nearby.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<u> </u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Sparsely Vegetated Concave Surface (B8)
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)	<u>X</u> Drainage Patterns (B10)
<u> </u> Water Marks (B1)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Moss Trim Lines (B16)
<u> </u> Sediment Deposits (B2)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Drift Deposits (B3)	<u> </u> Thin Muck Surface (C7)	<u> </u> Crayfish Burrows (C8)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Other (Explain in Remarks)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Iron Deposits (B5)		<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Inundation Visible on Aerial Imagery (B7)		<u> </u> Geomorphic Position (D2)
<u> </u> Water-Stained Leaves (B9)		<u> </u> Shallow Aquitard (D3)
<u>X</u> Aquatic Fauna (B13)		<u> </u> Microtopographic Relief (D4)
		<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>4</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated throughout.

VEGETATION - Use scientific names of plants

Sampling Point: w-mdt-8/28/2018-03

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							120	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

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

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	24	60
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	120	(A)	240 (B)
Prevalence Index = B/A =	<u>2.00</u>		

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

SOIL

Sampling Point: w-mdt-8/28/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEW-04
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio, Jacobs Section, Township, Range: N/A Sampling Point: w-mdt-8/28/2018-02
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%):
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.892573 Long.: -80.760596 Datum: WGS 84
 Soil Map Unit Name: Wick silt loam, 0 - 2 percent slopes, frequently flooded NWI Classification: PFO1/SS1A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

PEM wetland in routinely maintained ROW and bisected by two perennial streams.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☒ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)	
☒ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☒ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)	
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)	
☐ Imagery (B7)		☐ Shallow Aquitard (D3)	
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)	
☒ Aquatic Fauna (B13)		☒ FAC-Neutral Test (D5)	

Field Observations:

Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>1</u>	Wetland hydrology present? <u>Y</u>
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated throughout. Northern portion around perennial streams is inundated.

VEGETATION - Use scientific names of plants

Sampling Point: w-mdt-8/28/2018-02

50/50 Thresholds				
Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0 = Total Cover		

Dominance Test Worksheet				
Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A)				
Total Number of Dominant Species Across all Strata: <u>1</u> (B)				
Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)				

Prevalence Index Worksheet				
Total % Cover of:				
OBL species	<u>0</u>	x 1 =	<u>0</u>	
FACW species	<u>130</u>	x 2 =	<u>260</u>	
FAC species	<u>0</u>	x 3 =	<u>0</u>	
FACU species	<u>0</u>	x 4 =	<u>0</u>	
UPL species	<u>0</u>	x 5 =	<u>0</u>	
Column totals	<u>130</u>	(A)	<u>260</u>	(B)
Prevalence Index = B/A =				<u>2.00</u>

Hydrophytic Vegetation Indicators:				
☒	Rapid test for hydrophytic vegetation			
☒	Dominance test is >50%			
☒	Prevalence index is ≤3.0*			
	Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)			
	Problematic hydrophytic vegetation* (explain)			
*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic				

Definitions of Vegetation Strata:				
Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.				
Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.				
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.				
Woody vines - All woody vines greater than 3.28 ft in height.				

Hydrophytic vegetation present? <u>Y</u>				
--	--	--	--	--

50/50 Thresholds				
Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0 = Total Cover		

Sapling/Shrub Stratum				
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0 = Total Cover		

Herb Stratum				
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		130 = Total Cover		

Woody Vine Stratum				
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1				
2				
3				
4				
5				
		0 = Total Cover		

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

SOIL

Sampling Point: w-mdt-8/28/2018-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-05
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: w-mdt-8/28/2018-01
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.889997 Long.: -80.759412 Datum: WGS 84
 Soil Map Unit Name: Un - Urban land NWI Classification: PEM1A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks:)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland in routinely maintained ROW and bisected by gravel access road.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<u> </u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Surface Soil Cracks (B6)	
<u> </u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Sparsely Vegetated Concave Surface (B8)	
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living	<u>X</u> Drainage Patterns (B10)	
<u> </u> Water Marks (B1)	<u> </u> Roots (C3)	<u> </u> Moss Trim Lines (B16)	
<u> </u> Sediment Deposits (B2)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Dry-Season Water Table (C2)	
<u> </u> Drift Deposits (B3)	<u> </u> Recent Iron Reduction in Tilled	<u> </u> Crayfish Burrows (C8)	
<u> </u> Algal Mat or Crust (B4)	<u> </u> Soils (C6)	<u> </u> Saturation Visible on Aerial Imagery (C9)	
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u> </u> Stunted or Stressed Plants (D1)	
<u> </u> Inundation Visible on Aerial	<u> </u> Other (Explain in Remarks)	<u> </u> Geomorphic Position (D2)	
<u> </u> Imagery (B7)		<u> </u> Shallow Aquitard (D3)	
<u> </u> Water-Stained Leaves (B9)		<u> </u> Microtopographic Relief (D4)	
<u> </u> Aquatic Fauna (B13)		<u>X</u> FAC-Neutral Test (D5)	
Field Observations:		Wetland hydrology present? <u>Y</u>	
Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u>			
Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u>			
Saturation present? Yes <u>X</u> No <u> </u> Depth (inches): <u>3</u>			
(includes capillary fringe)			
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			
Saturated throughout. Appears pockets of wetland get inundated periodically throughout the year.			

VEGETATION - Use scientific names of plants

Sampling Point: w-mdt-8/28/2018-01

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>						100	Y	FACW	
2	<i>Leersia oryzoides</i>						30	N	OBL	
3	<i>Carex vulpinoidea</i>						10	N	OBL	
4	<i>Asclepias incarnata</i>						5	N	OBL	
5	<i>Eupatorium perfoliatum</i>						5	N	FACW	
6	<i>Verbena hastata</i>						5	N	FACW	
7										
8										
9										
10										
11										
12										
13										
14										
15										
							155	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	31	78
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	45	x 1 =	45
FACW species	110	x 2 =	220
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	155 (A)		265 (B)
Prevalence Index = B/A =			1.71

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-mdt-8/28/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEW-06
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/29/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: w-mdt-8/29/2018-01
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.884244 Long.: -80.759796 Datum: WGS 84
 Soil Map Unit Name: Painseville fine sandy loam, 0 - 2 percent slopes NWI Classification: PSS1/EM1C

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland in routinely maintained ROW bisected by gravel road.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☒ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)
☒ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☒ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)
☐ Imagery (B7)		☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)
☒ Aquatic Fauna (B13)		☒ FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>8</u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>2</u>	
(includes capillary fringe)				

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated throughout with pockets that appear to get inundated periodically throughout the year.

VEGETATION - Use scientific names of plants

Sampling Point: w-mdt-8/29/2018-01

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
						0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
						0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>					90	Y	FACW	
2	<i>Typha angustifolia</i>					30	Y	OBL	
3	<i>Scirpus cyperinus</i>					10	N	FACW	
4	<i>Impatiens capensis</i>					5	N	FACW	
5	<i>Solidago canadensis</i>					5	N	FACU	
6	<i>Dichanthelium clandestinum</i>					5	N	FAC	
7									
8									
9									
10									
11									
12									
13									
14									
15									
						145	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
						0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	29	73
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	30	x 1 =	30
FACW species	105	x 2 =	210
FAC species	5	x 3 =	15
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column totals	145 (A)		275 (B)
Prevalence Index = B/A =			1.90

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-mdt-8/29/2018-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-07a/b
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 10/30/2018
 Investigator(s): B. Otto; Jacobs Section, Township, Range: N/A Sampling Point: w-bao-10/30/18-02a/b
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.901901 Long.: -80.771896 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
Linear PEM wetland (Wetland AEWP-07a) fringing a horseshoe shaped open water wetland (Wetland AEWP-07b) within existing transmission line ROW and adjacent to existing Ashtabula substation.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☒ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)
☒ Saturation (A3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Presence of Reduced Iron (C4)	☐ Moss Trim Lines (B16)
☐ Sediment Deposits (B2)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3)	☐ Thin Muck Surface (C7)	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)		☐ Stunted or Stressed Plants (D1)
☐ Inundation Visible on Aerial Imagery (B7)		☒ Geomorphic Position (D2)
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)
☐ Aquatic Fauna (B13)		☐ Microtopographic Relief (D4)
		☒ FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>>36</u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: w-bao-10/30/18-02a

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Cornus alba</i>						5	Y	FACW	
2	<i>Populus deltoides</i>						5	Y	FAC	
3										
4										
5										
6										
7										
8										
9										
10										
							10	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>						30	Y	FACW	
2	<i>Juncus effusus</i>						10	Y	FACW	
3	<i>Scirpus cyperinus</i>						5	N	FACW	
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							45	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 T Wetland AEWP-07a/b

	20%	50%
Tree Str w-bao-10/30/18-02a	0	0
Sapling/Shrub Stratum	2	5
Herb Stratum	9	23
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	55 (A)		115 (B)
Prevalence Index = B/A =			2.09

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-bao-10/30/18-02a/b

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-08
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 10/30/2018
 Investigator(s): B. Otto; Jacobs Section, Township, Range: N/A Sampling Point: w-bao-10/30/18-01
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.901901 Long.: -80.771896 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

Linear PEM wetland within existing transmission line ROW and adjacent to existing substation. Disturbed area as evidenced by the soil profile containing chunks of coal.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present? Yes X No Depth (inches): 4
 Water table present? Yes X No Depth (inches): 4
 Saturation present? Yes X No Depth (inches): 0
 (includes capillary fringe)

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants
Sampling Point: w-bao-10/30/18-01

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		

Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Cornus alba</i>						5	Y	FACW	
2	<i>Populus deltoides</i>						5	Y	FAC	
3										
4										
5										
6										
7										
8										
9										
10										
							10	= Total Cover		

Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>						80	Y	FACW	
2	<i>Juncus effusus</i>						10	N	FACW	
3	<i>Scirpus cyperinus</i>						5	N	FACW	
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							95	= Total Cover		

Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	2	5
Herb Stratum	19	48
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	105	(A)	215 (B)
Prevalence Index = B/A =			2.05

Hydrophytic Vegetation Indicators:

Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-bao-10/30/18-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-09
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 12/27/2018
 Investigator(s): B. Otto; Jacobs Section, Township, Range: N/A Sampling Point: w-bao-12/27/18-01
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.905200 Long.: -80.779100 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil X, or hydrology X significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
Linear PEM wetland adjacent to existing substation within historically disturbed area.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u> </u> Surface Soil Cracks (B6)
<u>X</u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Sparsely Vegetated Concave Surface (B8)
<u>X</u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Drainage Patterns (B10)
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Thin Muck Surface (C7)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Other (Explain in Remarks)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)		<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)		<u> </u> Shallow Aquitard (D3)
<u> </u> Water-Stained Leaves (B9)		<u> </u> Microtopographic Relief (D4)
<u> </u> Aquatic Fauna (B13)		<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>2</u>	
Water table present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>4</u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: w-bao-12/27/18-01

Tree Stratum					Plot Size (30 ft.)		
		Absolute % Cover	Dominant Species	Indicator Status			
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
		0	= Total Cover				

Sapling/Shrub Stratum					Plot Size (15 ft.)		
		Absolute % Cover	Dominant Species	Indicator Status			
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
		0	= Total Cover				

Herb Stratum					Plot Size (5 ft.)		
		Absolute % Cover	Dominant Species	Indicator Status			
1	<i>Phragmites australis</i>	90	Y	FACW			
2	<i>Juncus effusus</i>	10	N	FACW			
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
		100	= Total Cover				

Woody Vine Stratum					Plot Size (30 ft.)		
		Absolute % Cover	Dominant Species	Indicator Status			
1							
2							
3							
4							
5							
		0	= Total Cover				

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>100</u>	x 2 =	<u>200</u>
FAC species	<u>0</u>	x 3 =	<u>0</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column totals	<u>100</u> (A)		<u>200</u> (B)
Prevalence Index = B/A =		<u>2.00</u>	

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-bao-12/27/18-01

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

[illegible]

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
☐ (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-10
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 12/27/2018
 Investigator(s): B. Robertson, B. Otto; Jacobs Section, Township, Range: N/A Sampling Point: w-bcr-12/27/18-02
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.9057 Long.: -80.769401 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland within disturbed landscape adjacent to existing substation. Area is slightly lower than surrounding landscape.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☒ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)
☒ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)
☒ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☐ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)
☐ Imagery (B7)		☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)		☒ Microtopographic Relief (D4)
☐ Aquatic Fauna (B13)		☒ FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>2</u>	
Water table present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: w-bcr-12/27/18-02

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>						90	Y	FACW	
2	<i>Carex tribuloides</i>						20	N	FACW	
3	<i>Juncus effusus</i>						10	N	FACW	
4	<i>Echinochloa muricata</i>						5	N	FACW	
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							125	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	25	63
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	125	x 2 =	250
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	125	(A)	250
Prevalence Index = B/A =			2.00

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-bcr-12/27/18-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-11
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 12/27/2018
 Investigator(s): B. Otto; Jacobs Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.906101 Long.: -80.769996 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
Depressional PEM wetland adjacent to existing substation within historically disturbed area.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☒ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)	
☒ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)	
☒ Saturation (A3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Presence of Reduced Iron (C4)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Thin Muck Surface (C7)	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)		☐ Stunted or Stressed Plants (D1)	
☐ Inundation Visible on Aerial Imagery (B7)		☐ Geomorphic Position (D2)	
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)	
☐ Aquatic Fauna (B13)		☐ Microtopographic Relief (D4)	
		☒ FAC-Neutral Test (D5)	
Field Observations:		Wetland hydrology present? <u>Y</u>	
Surface water present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>2</u>		
Water table present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>4</u>		
Saturation present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>0</u>		
(includes capillary fringe)			
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION - Use scientific names of plants

Sampling Point: w-bao-12/27/18-02

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
		0	= Total Cover		
Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
		0	= Total Cover		
Herb Stratum	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
		100	= Total Cover		
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
		0	= Total Cover		

Tree Stratum 20% 50%

Tree Stratum 0 0

Sapling/Shrub Stratum 0 0

Herb Stratum 20 50

Woody Vine Stratum 0 0

Dominance Test Worksheet

Number of Dominant Species that are OBL, 1 (A)

FACW, or FAC: 1 (B)

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

Percent of Dominant Species that are OBL, 100.00% (A/B)

FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species 0 x 1 = 0

FACW species 100 x 2 = 200

FAC species 0 x 3 = 0

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column totals 100 (A) 200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

☒ Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-bao-12/27/18-02

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Wetland AEWP-12
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 12/27/2018
 Investigator(s): B. Robertson, B. Otto; Jacobs Section, Township, Range: N/A Sampling Point: w-bcr-12/27/18-01
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.905498 Long.: -80.771896 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland within large depressional landform apparently abandoned from previous industrial land use.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☒ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)
☒ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)
☒ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☒ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☒ Geomorphic Position (D2)
☐ Imagery (B7)		☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)
☐ Aquatic Fauna (B13)		☒ FAC-Neutral Test (D5)

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>1</u>	
Water table present?	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u>	No <u> </u>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: w-bcr-12/27/18-01

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Cornus alba</i>						10	Y	FACW	
2										
3										
4										
5										
6										
7										
8										
9										
10										
							10	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Phragmites australis</i>						80	Y	FACW	
2	<i>Juncus tenuis</i>						20	N	FAC	
3	<i>Eupatorium perfoliatum</i>						10	N	FACW	
4	<i>Andropogon virginicus</i>						5	N	FACU	
5	<i>Poa pratensis</i>						5	N	FACU	
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							120	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	2	5
Herb Stratum	24	60
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	20	x 3 =	60
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	130	(A)	300 (B)
Prevalence Index = B/A =			2.31

Hydrophytic Vegetation Indicators:

Rapid test for hydrophytic vegetation

☒ Dominance test is >50%

☒ Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: w-bcr-12/27/18-01

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland see remarks
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.90588786 Long.: -80.76811355 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks:	
Upland data point (Upland AEWP-01,07,09,10,11) for adjacent PEM wetlands.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)	
☐ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)	
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)	
☐ Imagery (B7)		☐ Shallow Aquitard (D3)	
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)	
☐ Aquatic Fauna (B13)		☐ FAC-Neutral Test (D5)	
Field Observations:		Wetland hydrology present? <u>N</u>	
Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>			
Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>			
Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>			
(includes capillary fringe)			
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION - Use scientific names of plants

Sampling Point: upl-mdt-8/28/2018-0

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
						0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
						20	= Total Cover		
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
						90	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
						0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	4	10
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	40	x 5 =	200
Column totals	110 (A)		460 (B)
Prevalence Index = B/A =			4.18

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: upl-mdt-8/28/2018-05

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland AEWP-02, 08
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio, Jacobs Section, Township, Range: _____ Sampling Point: upl-mdt-8/28/2018-04
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.900049 Long.: -80.764516 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No _____ (If no, explain in remarks)
 Are vegetation X, soil X, or hydrology _____ significantly disturbed? Are "normal circumstances" No
 Are vegetation _____, soil _____, or hydrology _____ naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland point for adjacent PEM wetlands. Soil/vegetation recently disturbed.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)	
☐ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)	
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)	
☐ Imagery (B7)		☐ Shallow Aquitard (D3)	
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)	
☐ Aquatic Fauna (B13)		☐ FAC-Neutral Test (D5)	
Field Observations:		Wetland hydrology present? <u>N</u>	
Surface water present? Yes _____ No <u>X</u> Depth (inches): _____			
Water table present? Yes _____ No <u>X</u> Depth (inches): _____			
Saturation present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)			
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION - Use scientific names of plants

Sampling Point: upl-mdt-8/28/2018-0

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Andropogon virginicus</i>						70	Y	FACU	
2	<i>Solidago canadensis</i>						20	Y	FACU	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							90	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

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	90	x 4 =	360
UPL species	0	x 5 =	0
Column totals	90 (A)		360 (B)
Prevalence Index = B/A =			4.00

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: upl-mdt-8/28/2018-04

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland AEWP-03
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: upl-mdt-8/28/2018-03
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.89847429 Long.: -80.76321215 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation X, soil X, or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks:	
Upland point for adjacent PEM wetland. Soil/vegetation recently disturbed.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)
☐ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☐ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)
☐ Imagery (B7)		☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)
☐ Aquatic Fauna (B13)		☐ FAC-Neutral Test (D5)
Field Observations:		Wetland hydrology present? <u>N</u>
Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>		
Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>		
Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> (includes capillary fringe)		
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use scientific names of plants

Sampling Point: upl-mdt-8/28/2018-0

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Andropogon gerardii</i>						70	Y	FAC	
2	<i>Solidago canadensis</i>						20	Y	FACU	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							90	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column totals	90 (A)		290 (B)
Prevalence Index = B/A =			3.22

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: upl-mdt-8/28/2018-03

[illegible]

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland AEWP-04
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: upl-mdt-8/28/2018-02
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.89083189 Long.: -80.75997358 Datum: WGS 84
 Soil Map Unit Name: Painsville fine sandy loam, 0 - 2 percent slopes NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks:	
Upland point for adjacent PEM wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u> </u> Surface Soil Cracks (B6)
<u> </u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Sparsely Vegetated Concave Surface (B8)
<u> </u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Roots (C3)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Recent Iron Reduction in Tilled	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Soils (C6)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial	<u> </u> Other (Explain in Remarks)	<u> </u> Shallow Aquitard (D3)
<u> </u> Imagery (B7)		<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)		<u> </u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)		

Field Observations:				Wetland hydrology present? <u>N</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants
Sampling Point: upl-mdt-8/28/2018-0

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
							0	= Total Cover	
Sapling/Shrub Stratum					Plot Size (15 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Rhamnus cathartica</i>						20	Y	FACU
2									
3									
4									
5									
6									
7									
8									
9									
10									
							20	= Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Solidago canadensis</i>						100	Y	FACU
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
							100	= Total Cover	
Woody Vine Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Rubus sp.</i>						20	Y	
2									
3									
4									
5									
							20	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	4	10
Herb Stratum	20	50
Woody Vine Stratum	4	10

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

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	120	x 4 =	480
UPL species	0	x 5 =	0
Column totals	120	(A)	480 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: upl-mdt-8/28/2018-02

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

[illegible]

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)	☐ Dark Surface (S7)	☐ 2 cm Muck (A10) (LRR N)
☐ Histic Epipedon (A2)	☐ Polyvalue Below Surface (S8)	☐ Coast Range (A11)
☐ Black Histic (A3)	☐ (MLRA 147, 148)	☐ Piedmont (A12)
☐ Hydrogen Sulfide (A4)	☐ Thin Dark Surface (S9)	☐ (MLRA 147, 148)
☐ Stratified Layers (A5)	☐ (MLRA 147, 148)	☐ Very Shallow (A13)
☐ 2 cm Muck (A10) (LRR N)	☐ Loamy Gleyed Matrix (F2)	☐ Other (A14)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ (LRR N, MLRA 147, 148)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)	☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
☐ Sandy Redox (S5)	☐ Umbric Surface (F13) (MLRA 136, 122)	
☐ Stripped Matrix (S6)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)	
	☐ Red Parent Material (F21) (MLRA 127, 147)	

Indicators for Problematic Hydric Soils:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19;
 (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel
Depth (inches): 10

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland AEWP-05
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/28/2018
 Investigator(s): M. Thomayer, T. Qualio; Jacobs Section, Township, Range: N/A Sampling Point: upl-mdt-8/28/2018-01
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.89007899 Long.: -80.7589271 Datum: WGS 84
 Soil Map Unit Name: Urban land NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland point for adjacent PEM wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u> </u> Surface Soil Cracks (B6)
<u> </u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Sparsely Vegetated Concave Surface (B8)
<u> </u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Roots (C3)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Recent Iron Reduction in Tilled	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Soils (C6)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial	<u> </u> Other (Explain in Remarks)	<u> </u> Shallow Aquitard (D3)
<u> </u> Imagery (B7)		<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)		<u> </u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)		

Field Observations:				Wetland hydrology present? <u>N</u>
Surface water present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Water table present?	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	
Saturation present? (includes capillary fringe)	Yes <u> </u>	No <u>X</u>	Depth (inches): <u> </u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: upl-mdt-8/28/2018-0

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Solidago canadensis</i>						60		Y	FACU
2	<i>Andropogon gerardii</i>						20			FAC
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							80	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							0	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	16	40
Woody Vine Stratum	0	0

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

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	60	x 4 =	240
UPL species	0	x 5 =	0
Column totals	80 (A)		300 (B)
Prevalence Index = B/A =			3.75

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is ≤3.0*

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

None. Gravel driveway.

SOIL

Sampling Point: upl-mdt-8/28/2018-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	10YR 3/3	100						Gravel in soil

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

Hydric Soil Indicators:

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8)
☐ (**MLRA 147, 148**)
☐ Thin Dark Surface (S9)
☐ (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (F21) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils:

☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)
☐ Piedmont Floodplain Soils (F19)
☐ (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel
Depth (inches): 6

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland AEWP-06
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 8/29/2018
 Investigator(s): M. Thomayer, T. Qualio, Jacobs Section, Township, Range: N/A Sampling Point: upl-mdt-8/29/2018-01
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 6
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.8772 Long.: -80.7603 Datum: WGS 84
 Soil Map Unit Name: Otisville gravelly sandy loam, 6 - 12 percent slopes NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks:	
Upland point for adjacent PEM wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)	
☐ Saturation (A3)	☐ Oxidized Rhizospheres on Living	☐ Drainage Patterns (B10)	
☐ Water Marks (B1)	☐ Roots (C3)	☐ Moss Trim Lines (B16)	
☐ Sediment Deposits (B2)	☐ Presence of Reduced Iron (C4)	☐ Dry-Season Water Table (C2)	
☐ Drift Deposits (B3)	☐ Recent Iron Reduction in Tilled	☐ Crayfish Burrows (C8)	
☐ Algal Mat or Crust (B4)	☐ Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Stunted or Stressed Plants (D1)	
☐ Inundation Visible on Aerial	☐ Other (Explain in Remarks)	☐ Geomorphic Position (D2)	
☐ Imagery (B7)		☐ Shallow Aquitard (D3)	
☐ Water-Stained Leaves (B9)		☐ Microtopographic Relief (D4)	
☐ Aquatic Fauna (B13)		☐ FAC-Neutral Test (D5)	
Field Observations:		Wetland hydrology present? <u>N</u>	
Surface water present? Yes <u> </u> No <u>X</u>	Depth (inches): <u> </u>		
Water table present? Yes <u> </u> No <u>X</u>	Depth (inches): <u> </u>		
Saturation present? Yes <u> </u> No <u>X</u>	Depth (inches): <u> </u>		
(includes capillary fringe)			
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION - Use scientific names of plants

Sampling Point: upl-mdt-8/29/2018-0

Tree Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Sapling/Shrub Stratum					Plot Size (15 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
							0	= Total Cover		
Herb Stratum					Plot Size (5 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
							40	= Total Cover		
Woody Vine Stratum					Plot Size (30 ft.)			Absolute % Cover	Dominant Species	Indicator Status
1										
2										
3										
4										
5										
							100	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	8	20
Woody Vine Stratum	20	50

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

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	40	x 4 =	160
UPL species	0	x 5 =	0
Column totals	70 (A)		250 (B)
Prevalence Index = B/A =			3.57

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation

☐ Dominance test is >50%

☐ Prevalence index is $\geq 3.0^*$

☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

☐ Problematic hydrophytic vegetation* (explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: upl-mdt-8/29/2018-01

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

[illegible]

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

☐ Histisol (A1)	☐ Dark Surface (S7)	☐ 2 cm Muck (A10) (LRR N)
☐ Histic Epipedon (A2)	☐ Polyvalue Below Surface (S8)	☐ Coast Range (A11)
☐ Black Histic (A3)	☐ (MLRA 147, 148)	☐ Piedmont (A12)
☐ Hydrogen Sulfide (A4)	☐ Thin Dark Surface (S9)	☐ Very Shallow (A13)
☐ Stratified Layers (A5)	☐ (MLRA 147, 148)	☐ Other (A14)
☐ 2 cm Muck (A10) (LRR N)	☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ (LRR N, MLRA 147, 148)	☐ Redox Depressions (F8)	
☐ Sandy Gleyed Matrix (S4)	☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
☐ Sandy Redox (S5)	☐ Umbric Surface (F13) (MLRA 136, 122)	
☐ Stripped Matrix (S6)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)	
	☐ Red Parent Material (F21) (MLRA 127, 147)	

Indicators for Problematic Hydric Soils:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
☐ (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rocky
Depth (inches): 8

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Ashtabula - Erie West - Perry 345 kV T-Line City/County: Ashtabula Report Name: Upland AEWP-12
 Applicant/Owner: FirstEnergy State: Ohio Sampling Date: 12/27/2018
 Investigator(s): B. Robertson, B. Otto; Jacobs Section, Township, Range: N/A Sampling Point: upl-bcr-12/27/18-01
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): flat Slope (%): 1
 Subregion (LRR or MLRA): Lake Erie Glaciated Plat Lat.: 41.905498 Long.: -80.771698 Datum: WGS 84
 Soil Map Unit Name: Udorthents NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" Yes
 Are vegetation , soil , or hydrology naturally problematic? present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u> Hydric soil present? <u>Yes</u> Wetland hydrology present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Remarks: Upland data point within low formerly industrial area, adjacent to PEM wetland.	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)

Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland hydrology present? <u>N</u>
--	--

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:

Sampling Point: upl-bcr-12/27/18-01

Eastern Mountains and Piedmont Region

SOIL

Sampling Point: upl-bcr-12/27/18-01

[illegible]

Appendix B
Ohio Rapid Assessment Method for Wetlands (ORAM) Forms

Site: FirstEnergy Ashtabula 345 kV

Rater(s): M. Thomayer, T. Qualio

Date: 8/28/2018

w-mdt-8/28/2018-05

2 2

max 6 pts. subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

4 6

max 14 pts. subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

9.5 15.5

max 30 pts. subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☒ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☒ filling/grading
- ☒ road bed/RR track
- ☐ dredging
- ☐ other

6.5 22

max 20 pts. subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed

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

22

subtotal this page

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/28/2018
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22

subtotal first page

0	22
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3	19
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max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussucks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

19	GRAND TOTAL (max 100 pts)
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Site: FirstEnergy Ashtabula 345 kV

Rater(s): M. Thomayer, T. Qualio

Date: 8/28/2018

w-mdt-8/28/2018-04

2 2

max 6 pts subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

9 11

max 14 pts subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

9.5 20.5

max 30 pts subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☒ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☒ filling/grading
- ☒ road bed/RR track
- ☐ dredging
- ☐ other

6.5 27

max 20 pts subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed

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

27

subtotal this page

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/28/2018
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27

subtotal first page

0	27
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-2	25
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max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☒ 1 Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

25 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/28/2018
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w-mdt-8/28/2018-03

3	3
max 6 pts	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

9	12
max 14 pts	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

9	21
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed	
☒ ditch	☐ point source (nonstormwater)
☐ tile	☒ filling/grading
☐ dike	☒ road bed/RR track
☐ weir	☐ dredging
☐ stormwater input	☐ other _____

7	28
max 20 pts	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed	
☒ mowing	☒ shrub/sapling removal
☐ grazing	☐ herbaceous/aquatic bed removal
☐ clearcutting	☐ sedimentation
☐ selective cutting	☐ dredging
☐ woody debris removal	☐ farming
☐ toxic pollutants	☐ nutrient enrichment

28
subtotal this page

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/28/2018
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w-mdt-8/28/2018-03

28

subtotal first page

0	28
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3	25
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max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussucks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

25	GRAND TOTAL (max 100 pts)
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Site: FirstEnergy Ashtabula 345 kV

Rater(s): M. Thomayer, T. Qualio

Date: 8/28/2018

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3

3

Metric 1. Wetland Area (size).

max 6 pts

subtotal

Select one size class and assign score.

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

11

14

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

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

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

14.5

28.5

Metric 3. Hydrology.

max 30 pts

subtotal

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☒ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☒ filling/grading
- ☒ road bed/RR track
- ☐ dredging
- ☐ other

7

35.5

Metric 4. Habitat Alteration and Development.

max 20 pts.

subtotal

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed

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

35.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/28/2018
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35.5

subtotal first page

0	35.5
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-2	33.5
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max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☒ 1 Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

33.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/28/2018
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2	2
max 6 pts	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

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1	3
max 14 pts	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

7	10
max 30 pts	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- | | |
|---|--|
| <ul style="list-style-type: none"> ☒ ditch ☐ tile ☐ dike ☐ weir ☐ stormwater input | <ul style="list-style-type: none"> ☐ point source (nonstormwater) ☒ filling/grading ☒ road bed/RR track ☐ dredging ☐ other _____ |
|---|--|

6.5	16.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed

- | | |
|---|---|
| <ul style="list-style-type: none"> ☒ mowing ☐ grazing ☐ clearcutting ☐ selective cutting ☐ woody debris removal ☐ toxic pollutants | <ul style="list-style-type: none"> ☒ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ sedimentation ☐ dredging ☐ farming ☐ nutrient enrichment |
|---|---|

16.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV

Rater(s): M. Thomayer, T. Qualio

Date: 8/28/2018

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16.5

subtotal first page

0

16.5

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3

13.5

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
☒ 1 Emergent
☐ Shrub
☐ Forest
☐ Mudflats
☐ Open water
☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
☐ Moderately high (4)
☐ Moderate (3)
☐ Moderately low (2)
☐ Low (1)
☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 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 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

13.5

GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): M. Thomayer, T. Qualio	Date: 8/29/2018
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4	4
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

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8	12
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

9	21
max 30 pts	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- | | |
|---|---|
| ☒ ditch | ☐ point source (nonstormwater) |
| ☐ tile | ☒ filling/grading |
| ☐ dike | ☒ road bed/RR track |
| ☐ weir | ☐ dredging |
| ☐ stormwater input | ☐ other _____ |

6.5	27.5
max 20 pts	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed

- | | |
|---|---|
| ☒ mowing | ☒ shrub/sapling removal |
| ☐ grazing | ☐ herbaceous/aquatic bed removal |
| ☐ clearcutting | ☒ sedimentation |
| ☐ selective cutting | ☐ dredging |
| ☐ woody debris removal | ☐ farming |
| ☐ toxic pollutants | ☐ nutrient enrichment |

27.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV

Rater(s): M. Thomayer, T. Qualio

Date: 8/29/2018

27.5

subtotal first page

0

27.5

max 10 pts

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3

24.5

max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
☒ 1 Emergent
☐ Shrub
☐ Forest
☐ Mudflats
☐ Open water
☐ Other

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
☐ Moderately high (4)
☐ Moderate (3)
☐ Moderately low (2)
☐ Low (1)
☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 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 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

24.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 10/30/2018
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2	2
max 6 pts	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

w-bao-10/30/18-02

1	3
max 14 pts	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

12	15
max 30 pts	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed	
☐ ditch	☐ point source (nonstormwater)
☐ tile	☒ filling/grading
☐ dike	☒ road bed/RR track
☐ weir	☐ dredging
☒ stormwater input	☐ other

7.5	22.5
max 20 pts	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

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

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

Check all disturbances observed	
☐ mowing	☒ shrub/sapling removal
☐ grazing	☒ herbaceous/aquatic bed removal
☒ clearcutting	☒ sedimentation
☒ selective cutting	☐ dredging
☐ woody debris removal	☐ farming
☐ toxic pollutants	☐ nutrient enrichment

22.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 10/30/2018
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22.5

subtotal first page

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0	22.5
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max 10 pts

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

6	28.5
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max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 1 Vegetated hummocks/tussucks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ 2 Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

28.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 10/30/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

2	2
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

6.5	8.5
max 30 pts	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed	
☐ ditch	☐ point source (nonstormwater)
☐ tile	☒ filling/grading
☐ dike	☒ road bed/RR track
☐ weir	☐ dredging
☐ stormwater input	☐ other _____

7	15.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed	
☐ mowing	☒ shrub/sapling removal
☐ grazing	☐ herbaceous/aquatic bed removal
☒ clearcutting	☐ sedimentation
☒ selective cutting	☐ dredging
☐ woody debris removal	☐ farming
☐ toxic pollutants	☐ nutrient enrichment

15.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV

Rater(s): B. Robertson, B. Otto

Date: 10/30/2018

15.5

subtotal first page

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0

15.5

max 10 pts

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-2

13.5

max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
☒ Emergent
☐ Shrub
☐ Forest
☐ Mudflats
☐ Open water
☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
☐ Moderately high (4)
☐ Moderate (3)
☐ Moderately low (2)
☐ Low (1)
☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

13.5

GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 12/27/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

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1	1
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

9	10
max 30 pts	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- | | |
|--|---|
| ☐ ditch | ☐ point source (nonstormwater) |
| ☐ tile | ☒ filling/grading |
| ☐ dike | ☒ road bed/RR track |
| ☐ weir | ☐ dredging |
| ☒ stormwater input | ☐ other |

5	15
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed

- | | |
|---|---|
| ☐ mowing | ☒ shrub/sapling removal |
| ☐ grazing | ☐ herbaceous/aquatic bed removal |
| ☒ clearcutting | ☒ sedimentation |
| ☒ selective cutting | ☐ dredging |
| ☐ woody debris removal | ☐ farming |
| ☐ toxic pollutants | ☐ nutrient enrichment |

15
subtotal this page

Site: FirstEnergy Ashtabula 345 kV

Rater(s): B. Robertson, B. Otto

Date: 12/27/2018

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15

subtotal first page

0

15

max 10 pts

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3

12

max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
☒ Emergent
☐ Shrub
☐ Forest
☐ Mudflats
☐ Open water
☐ Other

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
☐ Moderately high (4)
☐ Moderate (3)
☐ Moderately low (2)
☐ Low (1)
☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated 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 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

12

GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 12/27/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

1	1
max 14 pts	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

6.5	7.5
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed	
☐ ditch	☐ point source (nonstormwater)
☐ tile	☒ filling/grading
☐ dike	☐ road bed/RR track
☐ weir	☐ dredging
☐ stormwater input	☐ other _____

6	13.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed	
☐ mowing	☒ shrub/sapling removal
☐ grazing	☐ herbaceous/aquatic bed removal
☒ clearcutting	☐ sedimentation
☒ selective cutting	☐ dredging
☐ woody debris removal	☐ farming
☐ toxic pollutants	☐ nutrient enrichment

13.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 12/27/2018
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w-bcr-12/27/2018-02

13.5

subtotal first page

0	13.5
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-4	9.5
----	-----

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other _____

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated 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 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

9.5 GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV	Rater(s): B. Robertson, B. Otto	Date: 12/27/2018
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w-bao-12/27/18-02

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

1	2
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

7.5	9.5
max 30 pts.	subtotal

Metric 3. Hydrology.

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

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

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed	
☐ ditch ☐ tile ☐ dike ☐ weir ☐ stormwater input	☐ point source (nonstormwater) ☒ filling/grading ☒ road bed/RR track ☐ dredging ☐ other

5	14.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

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

Check all disturbances observed	
☐ mowing ☐ grazing ☒ clearcutting ☒ selective cutting ☐ woody debris removal ☐ toxic pollutants	☒ shrub/sapling removal ☒ herbaceous/aquatic bed removal ☐ sedimentation ☐ dredging ☐ farming ☐ nutrient enrichment

14.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV

Rater(s): B. Robertson, B. Otto

Date: 12/27/2018

w-bao-12/27/18-02

14.5

subtotal first page

0

14.5

max 10 pts

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3

11.5

max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
☒ 1 Emergent
☐ Shrub
☐ Forest
☐ Mudflats
☐ Open water
☐ Other

6b. horizontal (plan view) Interspersions.

Select only one.

- ☐ High (5)
☐ Moderately high (4)
☐ Moderate (3)
☐ Moderately low (2)
☐ Low (1)
☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 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
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Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

11.5

GRAND TOTAL (max 100 pts)

Site: FirstEnergy Ashtabula 345 kV

Rater(s): B. Robertson, B. Otto

Date: 12/27/2018

w-bcr-12/27/2018-01

1

1

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

1

2

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

6.5

8.5

max 30 pts.

subtotal

Metric 3. Hydrology.

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

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

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

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

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

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

3b. Connectivity. Score all that apply.

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

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

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

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☒ stormwater input

- ☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other

6

14.5

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

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

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

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

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

Check all disturbances observed

- ☒ mowing
☐ grazing
☒ clearcutting
☒ selective cutting
☐ woody debris removal
☐ toxic pollutants

- ☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☒ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

14.5

subtotal this page

Site: FirstEnergy Ashtabula 345 kV

Rater(s): B. Robertson, B. Otto

Date: 12/27/2018

14.5

subtotal first page

w-bcr-12/27/2018-01

0

14.5

max 10 pts

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

-3

11.5

max 20 pts

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
☒ 1 Emergent
☐ Shrub
☐ Forest
☐ Mudflats
☐ Open water
☐ Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
☐ Moderately high (4)
☐ Moderate (3)
☐ Moderately low (2)
☐ Low (1)
☒ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussucks
☐ Coarse woody debris >15cm (6in)
☐ Standing dead >25cm (10in) dbh
☐ Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
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Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

11.5 GRAND TOTAL (max 100 pts)

Appendix C
Primary Headwater Habitat Evaluation Index (HHEI) and
Qualitative Habitat Evaluation Index (QHEI) Stream Datasheets



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 37

Stream & Location: Unnamed Tributary to Fields Brook/Ashtabula 345kV Transmission Line **RM:** _____ **Date:** 08 / 28 / 18

s-mdt-08/28/2018-01

Scorers Full Name & Affiliation: M. Thomayer, T. Qualio-Jacobs

River Code: _____ **STORET #:** _____ **Lat./ Long.:** _____ **Office verified location** ☐
1] SUBSTRATE Check **ONLY** Two substrate **TYPE BOXES**, estimate % or note every type present

Check ONE (Or 2 & average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate 0 Maximum 20
☐ BLDR /SLABS [10]	_____	☐ HARDPAN [4]	_____	☐ LIMESTONE [1]	☒ HEAVY [-2]			☐ SILT	☐ MODERATE [-1]			
☐ BOULDER [9]	_____	☐ DETRITUS [3]	_____	☐ TILLS [1]	☐ NORMAL [0]			☐ WETLANDS [0]	☐ FREE [1]			
☐ COBBLE [8]	_____	☐ MUCK [2]	_____	☐ SANDSTONE [0]	☐ EXTENSIVE [-2]			☒ HARDPAN [0]	☐ MODERATE [-1]			
☐ GRAVEL [7]	_____	☒ SILT [2]	100	☐ RIP/RAP [0]	☐ NORMAL [0]			☐ SANDSTONE [0]	☐ NONE [1]			
☐ SAND [6]	_____	☐ ARTIFICIAL [0]	_____	☐ LACUSTURINE [0]				☐ RIP/RAP [0]				
☐ BEDROCK [5]	_____	(Score natural substrates; ignore sludge from point-sources)		☐ SHALE [-1]				☐ LACUSTURINE [0]				
NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]				☐ COAL FINES [-2]								

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

AMOUNT

Check ONE (Or 2 & average)

☐ UNDERCUT BANKS [1]	☐ POOLS > 70cm [2]	☐ OXBOWS, BACKWATERS [1]	☐ EXTENSIVE >75% [11]
☐ OVERHANGING VEGETATION [1]	☐ ROOTWADS [1]	☐ AQUATIC MACROPHYTES [1]	☐ MODERATE 25-75% [7]
☐ SHALLOWS (IN SLOW WATER) [1]	☐ BOULDERS [1]	☐ LOGS OR WOODY DEBRIS [1]	☐ SPARSE 5-<25% [3]
☐ ROOTMATS [1]			☐ NEARLY ABSENT <5% [1]

Comments
Channel
Maximum
20

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☒ RECOVERED [4]	☐ MODERATE [2]
☒ LOW [2]	☐ FAIR [3]	☒ RECOVERING [3]	☒ LOW [1]
☒ NONE [1]	☒ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments
Channel
Maximum
20

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

River right looking downstream

EROSION	RIPIARIAN WIDTH	FLOOD PLAIN QUALITY	CONSERVATION TILLAGE
☐ NONE / LITTLE [3]	☒ WIDE > 50m [4]	☒ FOREST, SWAMP [3]	☐ URBAN OR INDUSTRIAL [0]
☒ MODERATE [2]	☐ MODERATE 10-50m [3]	☐ SHRUB OR OLD FIELD [2]	☐ MINING / CONSTRUCTION [0]
☐ HEAVY / SEVERE [1]	☐ NARROW 5-10m [2]	☐ RESIDENTIAL, PARK, NEW FIELD [1]	
	☐ VERY NARROW < 5m [1]	☐ FENCED PASTURE [1]	
	☐ NONE [0]	☐ OPEN PASTURE, ROWCROP [0]	

Comments

 Indicate predominant land use(s) past 100m riparian. **Riparian**
Maximum
10

5] POOL / GLIDE AND RIFFLE / RUN QUALITY
MAXIMUM DEPTH
CHANNEL WIDTH
CURRENT VELOCITY

Check ONE (ONLY)

Check ONE (Or 2 & average)

Check ALL that apply

- ☐ > 1m [6]
☐ 0.7-<1m [4]
☐ 0.4-<0.7m [2]
☒ 0.2-<0.4m [1]
☐ < 0.2m [0]

- ☐ POOL WIDTH > RIFFLE WIDTH [2]
☒ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

- ☐ TORRENTIAL [-1] ☐ SLOW [1]
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ FAST [1] ☐ INTERMITTENT [-2]
☒ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

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

Comments

10" Max pool depth

Pool / Current
Maximum
12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☒ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☒ EXTENSIVE [-1]

Comments
Riffle / Run
Maximum
8

6] GRADIENT (27 ft/mi) ☐ VERY LOW - LOW [2-4]
DRAINAGE AREA (1.14 mi²) ☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 20 **%GLIDE:** 20
%RUN: 50 **%RIFFLE:** 10

Gradient
Maximum
10

AJ SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
☐ WADE
☐ L. LINE
☒ OTHER
- STAGE**
 1st sample pass-- 2nd
☐ HIGH
☐ UP
☒ NORMAL
☐ LOW
☐ DRY
- DISTANCE**
☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☒ OTHER

CLARITY

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

meters

CANOPY

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

CJ RECREATION

POOL: ☐ >100ft² ☐ >3ft

BJAESTHETICS

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

DJ MAINTENANCE

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

EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
 HARDENED / URBAN / DIRT&GRIME
 CONTAMINATED / LANDFILL
 BMPs-CONSTRUCTION-SEDIMENT
 LOGGING / IRRIGATION / COOLING
 BANK / EROSION / SURFACE
 FALSE BANK / MANURE / LAGOON
 WASH H₂O / TILE / H₂O TABLE
 ACID / MINE / QUARRY / FLOW
 NATURAL / WETLAND / STAGNANT
 PARK / GOLF / LAWN / HOME
 ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

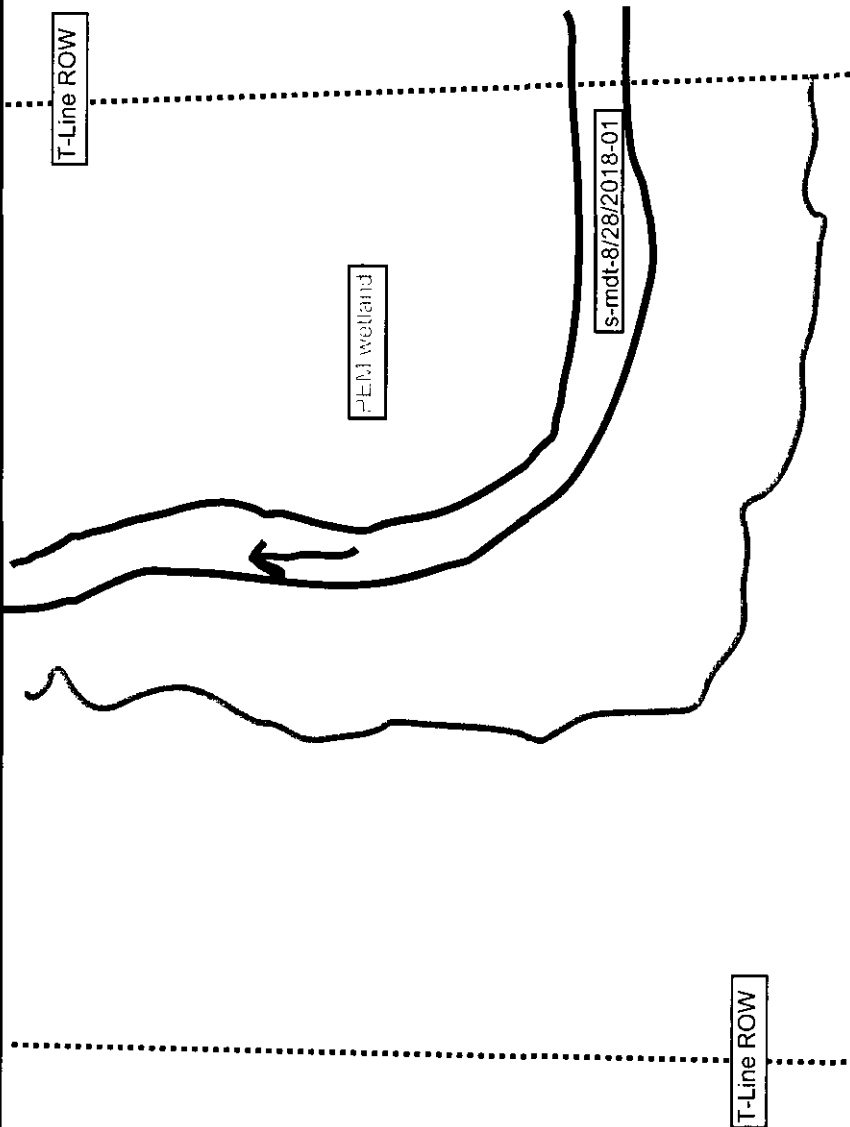
- $\bar{x}$ width
 $\bar{x}$ depth
 max. depth
 $\bar{x}$ bankfull width
 bankfull $\bar{x}$ depth
 W/D ratio
 bankfull max. depth
 floodprone $\bar{x}$ width
 entrench. ratio
 Legacy Tree:

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

Recreation inferred.

OHWM = 5', TOB = 12'

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

42

Stream & Location: Fields Brook/Ashtabula 345kV Transmission Line

RM: Date: 08 / 28 / 18

s-mdt-08/28/2018-02

Scorers Full Name & Affiliation: M. Thomayer, T. Qualio-Jacobs

River Code: STORET #: Lat./ Long.: /8 Office verified location ☐

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

Check ONE (Or 2 & average)

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY		Substrate 0 Maximum 20
	POOL RIFFLE		POOL RIFFLE					
☐ BLDR /SLABS [10]		☐ HARDPAN [4]		☐ LIMESTONE [1]		☒ HEAVY [-2]		
☐ BOULDER [9]		☐ DETRITUS [3]		☐ TILLS [1]		☐ MODERATE [-1]		
☐ COBBLE [8]		☐ MUCK [2]		☐ WETLANDS [0]		☐ NORMAL [0]		
☐ GRAVEL [7]		☒ SILT [2]	100 100	☒ HARDPAN [0]		☐ FREE [1]		
☐ SAND [6]		☐ ARTIFICIAL [0]		☐ SANDSTONE [0]		☒ EXTENSIVE [-2]		
☐ BEDROCK [5]		(Score natural substrates; ignore sludge from point-sources)		☐ RIP/RAP [0]		☐ MODERATE [-1]		
NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]				☐ LACUSTURINE [0]		☐ NORMAL [0]		
Comments				☐ SHALE [-1]		☐ NONE [1]		
				☐ COAL FINES [-2]				

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

AMOUNT

Check ONE (Or 2 & average)

☐ UNDERCUT BANKS [1]	☐ POOLS > 70cm [2]	☐ OXBOWS, BACKWATERS [1]	☒ EXTENSIVE >75% [11]
☐ OVERHANGING VEGETATION [1]	☐ ROOTWADS [1]	☐ AQUATIC MACROPHYTES [1]	☒ MODERATE 25-75% [7]
☐ SHALLOWS (IN SLOW WATER) [1]	☐ BOULDERS [1]	☐ LOGS OR WOODY DEBRIS [1]	☐ SPARSE 5-<25% [3]
☐ ROOTMATS [1]			☐ NEARLY ABSENT <5% [1]

Comments

Cover
Maximum 20
10

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☒ RECOVERED [4]	☐ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	☒ RECOVERING [3]	☒ LOW [1]
☒ NONE [1]	☒ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum 20
6.54) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)
River right looking downstream

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY	CONSERVATION TILLAGE
☐ NONE / LITTLE [3]	☒ WIDE > 50m [4]	☒ FOREST, SWAMP [3]	☐ URBAN OR INDUSTRIAL [0]
☒ MODERATE [2]	☐ MODERATE 10-50m [3]	☒ SHRUB OR OLD FIELD [2]	☐ MINING / CONSTRUCTION [0]
☐ HEAVY / SEVERE [1]	☐ NARROW 5-10m [2]	☐ RESIDENTIAL, PARK, NEW FIELD [1]	
	☐ VERY NARROW < 5m [1]	☐ FENCED PASTURE [1]	
	☐ NONE [0]	☐ OPEN PASTURE, ROWCROP [0]	

Comments

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

Riparian
Maximum 10
7.5

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

CHANNEL WIDTH

CURRENT VELOCITY

Check ONE (ONLY)

Check ONE (Or 2 & average)

Check ALL that apply

☐ > 1m [6]

☐ POOL WIDTH > RIFFLE WIDTH [2]

☐ TORRENTIAL [-1]

☒ SLOW [1]

☒ 0.7-<1m [4]

☒ POOL WIDTH = RIFFLE WIDTH [1]

☐ VERY FAST [1]

☐ INTERSTITIAL [-1]

☐ 0.4-<0.7m [2]

☐ POOL WIDTH < RIFFLE WIDTH [0]

☐ FAST [1]

☐ INTERMITTENT [-2]

☐ 0.2-<0.4m [1]

☐ MODERATE [1]

☐ EDDIES [1]

Indicate for reach - pools and riffles.

☐ < 0.2m [0]

Comments

30" Max pool depth

Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

Pool /
Current
Maximum 12
6

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS	Riffle / Run Maximum 8
☒ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]	
☐ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]	
☐ BEST AREAS < 5cm [metric=0]		☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]	
			☒ EXTENSIVE [-1]	

Comments

6) GRADIENT (27 ft/mi) ☐ VERY LOW - LOW [2-4]
DRAINAGE AREA (1.24 mi²) ☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 10

%GLIDE: 60

Gradient
Maximum 10
10

%RUN: 20

%RIFFLE: 10

EPA 4520

06/16/06

AJ SAMPLED REACH

Check ALL that apply

METHOD STAGE

- ☐ BOAT ☐ HIGH ☐ WADE ☐ UP ☐ L. LINE ☒ NORMAL ☐ LOW ☐ DRY

DISTANCE

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

CLARITY

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

meters

CANOPY

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

CJ RECREATION

POOL: ☐ >100r2 ☐ >3ft

BJ AESTHETICS

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

DJ MAINTENANCE

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

EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
 HARDENED / URBAN / DIRT&GRIME
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 ACID / MINE / QUARRY / FLOW
 NATURAL / WETLAND / STAGNANT
 PARK / GOLF / LAWN / HOME
 ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

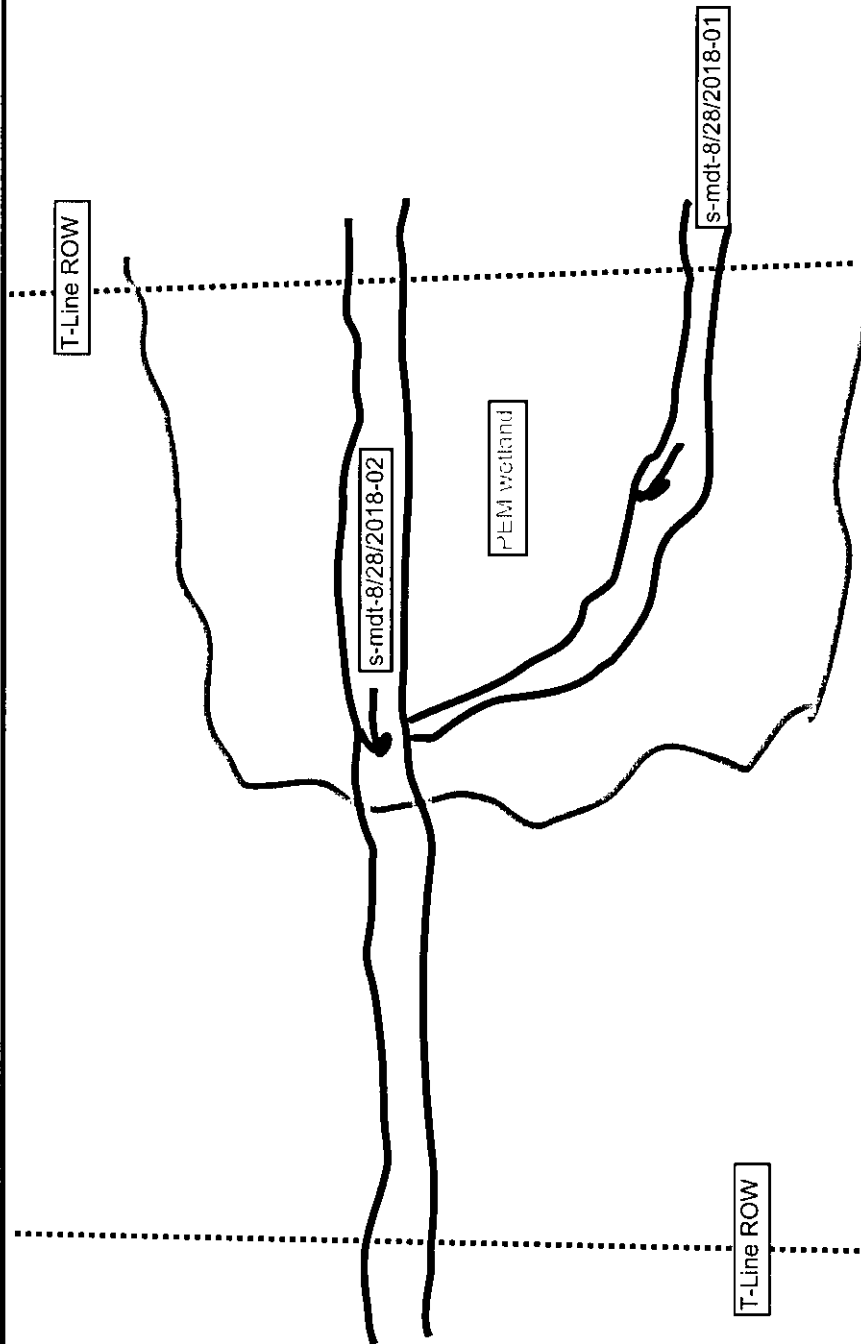
- $\bar{x}$ width
 $\bar{x}$ depth
 max. depth
 $\bar{x}$ bankfull width
 bankfull $\bar{x}$ depth
 W/D ratio
 bankfull max. depth
 floodprone $\bar{x}^2$ width
 entrench. ratio
 Legacy Tree:

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

Recreation inferred.

OHWM = 10', TOB = 15'

Stream Drawing:





Primary Headwater Habitat Evaluation Form

36

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

SITE NAME/LOCATION **FirstEnergy Ashtabula 345kV Transmission Line** Field ID: **s-mdt-08/29/2018-01**SITE NUMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) _____LENGTH OF STREAM REACH (ft) **200** LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____DATE **08/29/18** SCORER **MDT, TMQ** COMMENTS **Ephemeral flow regime**

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

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

Channelized and appears to have been dredged at some point.

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

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **3**HHEI
Metric
PointsSubstrate
Max = 40**6**

A + B

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

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

Pool Depth
Max = 30**25**

COMMENTS _____

MAXIMUM POOL DEPTH **Inches** **8**

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

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

Bankfull
Width
Max=30**5**

COMMENTS _____

AVERAGE BANKFULL WIDTH **Feet** **3.00**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
☒	☒	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☐	☐	None

COMMENTS _____

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
☐	☐	Mature Forest, Wetland
☒	☒	Immature Forest, Shrub or Old Field
☐	☐	Residential, Park, New Field
☐	☐	Fenced Pasture

L	R	
☐	☐	Conservation Tillage
☐	☐	Urban or Industrial
☐	☐	Open Pasture, Row Crop
☐	☐	Mining or Construction

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

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

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

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

STREAM GRADIENT ESTIMATE

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

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

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

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Distance from Evaluated Stream
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

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

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **Ashtabula**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity: **0.00**
Photograph Information: **2 photos**
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**
Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N): ☒ Y If not, please explain:

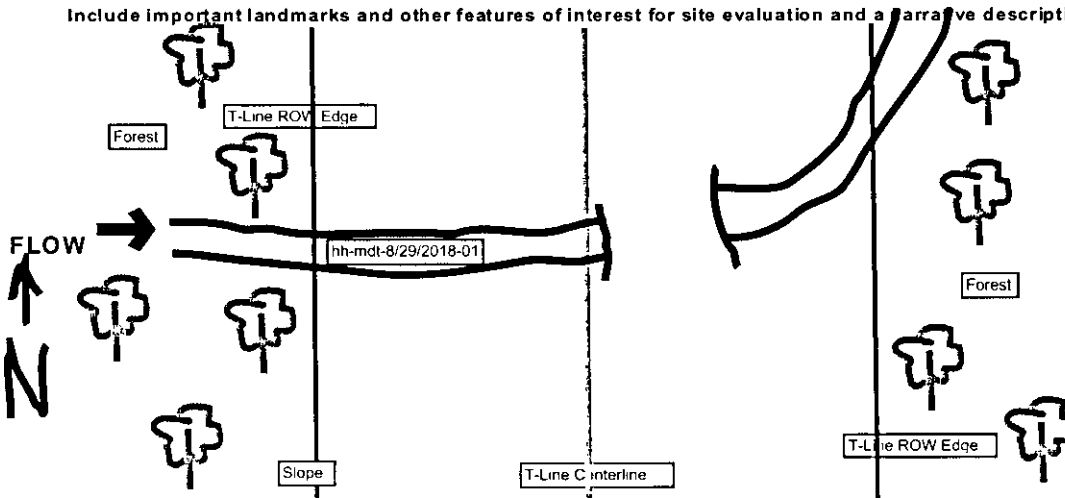
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

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



Appendix D

Representative Photographs



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland AEWP-01	PEM	North	8/28/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Upland AEWP-01	Upland	South	8/28/2018

ASHTABULA-ERIE WEST-PERRY 345KV TRANSMISSION LINE REBUILD AND SUBSTATION EXPANSION PROJECT
APPENDIX D – REPRESENTATIVE PHOTOGRAPHS
WETLAND AND WATERBODY DELINEATION REPORT



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland AEWP-02	PEM	South	8/28/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Upland AEWP-02	Upland	Northeast	8/28/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland AEWP-03	PEM	West	8/28/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Upland AEWP-03	Upland	East	8/28/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland AEWP-05	PEM	North	8/28/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Upland AEWP-05	Upland	South	8/28/2018

ASHTABULA-ERIE WEST-PERRY 345KV TRANSMISSION LINE REBUILD AND SUBSTATION EXPANSION PROJECT
 APPENDIX D – REPRESENTATIVE PHOTOGRAPHS
 WETLAND AND WATERBODY DELINEATION REPORT



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland AEWP-11	PEM	East	12/27/2018



Site Name	Cowardin Class	Photo Direction	Date of Survey
Wetland AEWP-12	PEM	East	12/27/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream AEWP-01	Perennial	Upstream (West)	8/28/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream AEWP-02	Perennial	Downstream (East)	8/28/2018



Site Name	Flow Regime	Photo Direction	Date of Survey
Stream AEWP-03	Ephemeral	Downstream (South)	8/29/2018