

Letter of Notification for the Lee Extension 138 kV Transmission Line Project



PUCO Case No. 22-0752-EL-BLN

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

Submitted by:
AEP Ohio Transmission Company, Inc.

August 5, 2022

LETTER OF NOTIFICATION FOR LEE EXTENSION 138 kV TRANSMISSION LINE PROJECT

LETTER OF NOTIFICATION

AEP Ohio Transmission Company, Inc.

Lee Extension 138 kV Transmission Line Project

4906-6-05 Accelerated Application Requirements

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

4906-6-05(B) General Information

B(1) Project Description

The name of the project and applicant's reference number, names and reference number(s) of resulting circuits, a brief description of the project, and why the project meets the requirements for a Letter of Notification.

The Company has identified the need to construct the Lee Extension 138 kV Transmission Line Project (the “Project”), in the Village of Albany, Lee and Alexander Townships, Athens County, Ohio. The Project consists of constructing approximately 1-mile of the single-circuit Lee Extension 138 kV transmission line between the existing Lee Substation (non-jurisdictional distribution station), and the existing 6-wire single-circuit Philo – Rutland 138 kV Transmission Line. Figures 1 and 2 show the location of the Project.

The Project meets the requirements for a Letter of Notification (“LON”) as defined by Items 2(b) of Appendix A to Ohio Administrative Code Section 4906-1-01, *Application Requirement Matrix for Electric Power Transmission Lines*:

(1) New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:

(b) Line(s) greater than 0.2 miles in length but not greater than two miles in length.

The Project has been assigned Case No. 22-0752-EL-BLN.

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B(2) Statement of Need

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

The need and solution for the Athens Area Improvements Project was presented to PJM on February 21, 2020 and March 19, 2020 respectively, then subsequently assigned a PJM # of s2224. This Project was included in the Company's most recent Long-Term Forecast Report on page 50.

This application is for the Lee 138 kV Extension Line Project, which is the first step in constructing a solution to address all of the needs of a larger project in the Athens, Ohio area, which will address numerous asset renewal and operational flexibility needs. The Project in this application will construct approximately 1-mile of greenfield transmission line tapping the existing Philo-Rutland 138 kV line to the existing Lee Station (non-jurisdictional distribution station).

This first step is critical in allowing for the retirement of the 11.3 miles of 69 kV and 138 kV line between the tap point for Lee Extension and Rosewood Switch. The Project in this application will facilitate the other work referenced in the PJM slide needed in the area to re-establish the 138 kV path between Dexter and Lemaster Stations through Lee and Elliot Stations and eliminate the three-terminal line at Rosewood Switch. This will also establish a third source to the Athens area, which today has only the two 138 kV sources at Strouds Run and Elliot Stations. The 69 kV network served from Elliot and Strouds Run Stations serve approximately 53 MW of load at four AEP Ohio stations, including Ohio University.

Failure to move forward with this Project will continue to expose customers in the greater Athens area to outages on the 138 kV and 69 kV lines as those assets continue to deteriorate. Completing the Project and constructing approximately 1-mile of greenfield line, along with the other proposed work to be filed under separate cover, will allow for the retirement of 11.3 miles of deteriorated 69 kV and 138 kV line in the area, eliminate a three-terminal line, and provide a third 138 kV source to the 69 kV network serving Athens.

B(3) Project Location

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

The location of the Project in relation to existing transmission lines and substations is shown on Figure 1, in Appendix A. Figure 2, in Appendix A, identifies the Project components on a 2019 aerial photograph.

B(4) Alternatives Considered

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

The Company conducted an alternatives analysis that included reviewing four alternative routes within the Project Study Area (see Figure 3, in Appendix A). Based on desktop and field examination as well as landowner and stakeholder input, the Company concluded that the Project Route is the most feasible and appropriate route for the Project. The goal of selecting a suitable route for the Project was to minimize impacts on land use and natural and cultural resources while avoiding circuitous routes, significantly higher costs, and non-standard design requirements. The selection of the Proposed Route was based on siting decisions made throughout the process, the knowledge of subject matter experts from the Company and the Company's consultant, and a comparative analysis of potential impacts.

Initially, the Company selected Alternative Route C (see Figure 3, in Appendix A) as the Proposed Route. Of the four route alternatives evaluated for the Project, Route C paralleled SR 681 to the best extent practicable, notably minimizing impacts to the surrounding natural environment and agricultural land. However, following the Company's public announcement of the initial Proposed Route (Alternative Route C), landowners adjacent north of SR 681 expressed strong opposition to the Proposed Route's potential viewshed impacts. Coordinating with landowners located both adjacent north and south of SR 681, the Company revised the Proposed Route to cross agricultural land further to the south.

The Proposed Route was selected because it effectively addresses landowner input by reducing viewshed impacts to residences north of SR 681, requires minimal tree clearing, impacts no streams or wetlands, and would not limit future development in the area. One existing mobile home is located within the Project; however, the Company coordinated with the property owner to relocate the residence in a location outside the Project, which is also better suited for the owners' future development plans on the property. Finally, the Proposed Route represents the most suitable location and most appropriate solution for meeting the Company's needs in the area.

B(5) Public Information Program

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

The Company will inform affected property owners and tenants about this Project through several different mediums. Within seven days of filing this LON, the Company will issue a public notice in a newspaper of general circulation in the Project area. The notice will comply with all requirements of OAC Section 4906-6-08(A)(1-6). Further, the Company has mailed (or will mail) a letter, via first class mail, to affected landowners, tenants, contiguous owners and any other landowner the Company may approach for an easement necessary for the construction, operation, or maintenance of the Project.

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The letter will comply with all requirements of OAC Section 4906-6-08(B). The Company maintains a website (<http://aeptransmission.com/ohio/>) which hosts an electronic copy of this LON and the public notice of this LON. An electronic and paper copy of the LON will be served to the public library in each political subdivision affected by this Project. In addition, the Company retains ROW land agents that discuss Project timelines, construction and restoration activities and convey this information to affected owners and tenants.

B(6) Construction Schedule

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

Construction of the Project is planned to begin in November 2022 with an anticipated in-service date of January 2023.

B(7) Area Map

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

Figure 1, in Appendix A, identifies the location of the Project area on a United States Geological Survey 1:24,000 quadrangle map (Albany). Appendix A, Figure 2 is an aerial map of the Project area.

To visit the Project from downtown Columbus, Ohio, take I-70 E towards Wheeling 17.3 miles. Take exit 105A for US-33 E/Southeast Expressway toward Lancaster for 68.8 miles. Take the exit towards OH-32 W/US-33 E/US-50 W toward Pomeroy/Chillicothe for 2.1 miles. Take edit 199 A on the left for US-50 W/OH-31 W toward Chillicothe/Cincinnati for 0.8 mile. Continue onto OH-32/US-50 for 7.6 miles and make a right. Turn right onto State Street for 0.2 mile. Turn left onto McCoy Avenue for 0.2 mile. Turn right onto Virginia Street for 0.1 mile to arrive at Lee Substation. The address for Lee Substation is 5692 Virginia Street, Albany, Ohio 45710 at latitude 39.225936, longitude -82.19575.

B(8) Property Agreements

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

A list of properties required for the Project are provided in the table below.

Property Parcel Number	Agreement Type	Easement/Option Obtained (Yes/No)
H020080007400	New Easement Agreement	No
H020080007401	New Easement Agreement	Yes
H020080007300	New Easement Agreement	No
H02- Road ROW (Depot Street)		

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Property Parcel Number	Agreement Type	Easement/Option Obtained (Yes/No)
	H020010002801 – Road ROW (SR 681)	
	H02008 - Rail ROW. Permit Required.	
	H020080010501 – Road ROW (SR 681)	
	H02008 – Road ROW (Louisa Avenue)	
	H020010002602 – Road ROW (SR 681)	
H020010002600	New Easement Agreement	No
B010010092500	New Easement Agreement	No

B(9) Technical Features

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

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

The Lee Extension 138 kV Transmission Line is estimated to include the following:

- Voltage: 138 kV
- Conductors: (3) single bundle 795 kcm ACSR 26/7 (Drake)
- Static Wire: (1) 7#8 Alumoweld
- Insulators: Polymer
- ROW Width: 100 feet
- Structure Types: (6) single circuit monopole deadend structures
(5) braced post single circuit tangent steel structures
(1) single circuit monopole running angle structure

B(9)(b) Electric and Magnetic Fields

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

B(9)(b)(i) Calculated Electric and Magnetic Field Strength Levels

i) Calculated Electric and Magnetic Field Levels

Three loading conditions were examined: (1) Normal Maximum Loading, (2) Emergency Loading, and (3) Winter Normal Conductor Rating, consistent with the OPSB requirements. Normal Maximum Loading represents the peak flow expected with all system facilities in service; daily/hourly flows fluctuate below this level. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods of time. Winter normal (WN) conductor rating represents the maximum current flow that a line, including its terminal equipment, can carry during winter conditions. It is not anticipated that this circuit of this line would operate at its WN rating in the foreseeable future.

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EMF levels were computed one meter above ground under the line and at the ROW edges (50/50 feet, left/right, of centerline).

Our results, calculated using EPRI's EMF Workstation 2015 software, are summarized below.

OPSB Project: Transmission and Distribution line					
Condition	Load (A)	Phasing Arrangements	Ground Clearance (feet)	Electric Field (kV/m)*	Magnetic Field (mG)*
(1) Normal Max. Loading[^]	737.2/324.48	A-B-C	24.54/28.33	0.29/1.74/0.21	20.15/96.67/26.32
(2) Emergency Line Loading^{^^}	825.17/463.54	A-B-C	20.6/25.86	0.27/2.41/0.17	24.92/150.76/31.75
(3) Winter Conductor Rating^{^^^}	1361.31/324.48	A-B-C	20.6/25.86	0.28/1.74/0.21	35.5/171.41/47.95

*EMF levels (left ROW edge/maximum/right ROW edge) computed one meter above ground at the point of minimum ground clearance, assuming balanced phase currents and 1.0 P.U. Voltages. ROW width is 50 feet (left) and 50 feet (right) of centerline, respectively.

[^]Peak line flow expected with all system facilities in service.

^{^^}Maximum flow during a critical system contingency

^{^^^}Maximum continuous flow that the line, including its terminal equipment, can withstand during winter conditions.

For power-frequency EMF, IEEE Standard C95.6TM-2002 recommends the following limits:

	General	Controlled
	Public	Environment
	-----	-----
Electric Field Limit (kV/m)	5.0	20.0
Magnetic Field Limit (mG)	9040	27,100

The above EMF levels are well within the limits specified in IEEE Standard C95.6TM-2002. Those limits have been established to "prevent harmful effects in human beings exposed to electromagnetic fields in the frequency range of 0-3 kHz."

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B(9)(b)(ii) Design Alternatives

A discussion of the applicant's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width.

No design alternatives were considered to mitigate EMF strength levels. Transmission lines, when energized, generate EMF. Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. However, some people are concerned that EMF have impacts on human health. Due to these concerns, EMF associated with the new circuits was calculated and set forth in the table above. The EMF was computed in a manner to maximize the estimate, assuming the highest reasonable input values based on conditions along the proposed transmission line rebuild. Normal daily EMF levels would be less than these, which were calculated at maximum load conditions. Based on studies from the National Institutes of Health, the magnetic field (measured in milliGauss, or mG) associated with emergency loading at the highest EMF value for this transmission line is lower than those associated with normal household appliances like microwave ovens, electric shavers and hair dryers. For additional information regarding EMF, the National Institutes of Health has posted information on their website: <http://www.niehs.nih.gov/health/topics/agents/emf/>.

Additionally, information on electric and magnetic fields is available on the Company's website: <https://www.aepohio.com/info/projects/emf/OurPosition.aspx>. The information found on the Company's website describes the basics of electromagnetic field theory, scientific research activities, and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities for this Project.

B(9)(b)(ii)(c) Project Cost

The estimated capital cost of the project.

The capital costs estimate for the proposed Project, which is comprised of applicable tangible and capital costs, is approximately \$2.1 million using a Class 4 estimate. Pursuant to the PJM OATT, the costs for this Project will be recovered in the AEP Ohio Transmission Company's FERC formula rate (Attachment H-20 to the PJM OATT) and allocated to the AEP Zone.

B(10) Social and Economic Impacts

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

B(10)(a) Operating Characteristics

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

The Project is in the Village of Albany in Lee Township and unincorporated Alexander Township, Athens County, Ohio. Existing land use in the Project area is predominantly residential development, with scattered wooded areas, and agricultural lands, as classified by the Athens County Auditor.

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Subdivided residential development is generally concentrated north of State Street (SR 681). Additional residences are located south of SR 681, as well as agricultural land. A small pocket of commercial development is located east of US-50 and northwest of the Project.

Approximately 97 residences are located within 1,000 feet of the Project. One existing mobile home is located within the Project; however, the Company coordinated with the property owner to relocate the residence in a location outside the Project, which is also better suited for the owners' future development plans on the property. No additional impacts to residential buildings are required for the Project. There are no churches, cemeteries, wildlife management areas, or nature preserve lands located within 1,000 feet of the Project centerline.

B(10)(b) Agricultural Land Information

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

One property registered as agricultural district land (Parcel No. B010010092500) is crossed by the Project based on email coordination with the Athens County Auditor's Office on June 28, 2022. The Project crosses approximately 1.7 acres of agricultural district land. Overall, the Project occupies 11.5 acres; of that, approximately 5.7 acres exists as agricultural land used for either row crop land or pasture/hay field. It is anticipated that only the small footprint of the proposed pole locations along the 138 kV transmission line will be converted from agricultural use as a result of the Project.

B(10)(c) Archaeological and Cultural Resources

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

The Company's consultant completed Phase I Archaeological and Phase I History/Architectural surveys, which involved subsurface testing and visual inspection in November 2021 and was coordinated with the State Historic Preservation Office ("SHPO"). The Company's consultant recommended that the Project would have no adverse effect on historic properties and no further cultural resource work would be necessary. In the June 10, 2022 response, SHPO supported the consultant's recommendations. A copy of the concurrence letter from SHPO is provided in Appendix C.

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

Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and

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a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

A Notice of Intent (“NOI”) will be filed with the Ohio Environmental Protection Agency for authorization of construction storm water discharges under General Permit OHC000005. The Company will also submit a Storm Water Pollution Prevention Plan (SWPPP) to the Athens County that adheres to the County’s permit requirements. The Company will implement and maintain best management practices as outlined in the Project-specific SWPPP to minimize erosion sediment to Project surface waters during storm events.

No structures or proposed access roads are located within the Federal Emergency Management Agency’s (“FEMA”) 100-year floodplain area. Therefore, no floodplain permitting is expected to be required for the Project.

There are no other known local, state, or federal requirements to be met before construction of the Project.

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

Provide a description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, listing, and species of special interest) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

On May 24, 2021, the Company’s consultant submitted coordination letters to the United States Fish and Wildlife Service (“USFWS”) and the Ohio Department of Natural Resources (“ODNR”) Ohio Natural Heritage Program (“ONHP”) and Division of Wildlife (“DOW”), seeking an environmental review of the potential impacts of the Project to threatened or endangered species. The USFWS provided a response on June 10, 2021 (TAILS# 03E15000-2021-TA-1487) and ODNR provided a response on July 27, 2021, see Appendix D. Additionally, the Company’s consultant conducted an on-site habitat survey on November 11, 2021 and March 8, 2022, documenting existing field conditions for the Project.

The June 10, 2021 USFWS response indicated that the Project is within the range of the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) in Ohio. Minimal tree clearing (approximately 0.3 acre) is required directly south of the existing Lee Substation and south of SR 681 (State Street). The Company will adhere to seasonal tree clearing restrictions between October 1 and March 31 and therefore impacts to these species are not anticipated.

The ODNR ONHP response indicated no records of state endangered or threatened plants or animals within the Project area. In addition, the ODNR ONHP indicated no records of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the Project area.

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The ODNR DOW indicated that Project lies within the range of the following state threatened and federally endangered species: Indiana bat, northern long-eared bat, and little brown bat (*Myotis lucifugus*). The DOW recommends seasonal tree cutting for trees ≥ 3 inches diameter at breast height (dbh) between October 1 and March 31 to avoid adverse impacts to these species. As stated above, only minimal tree clearing is required within the proposed ROW. The Company will adhere to seasonal tree clearing restrictions between October 1 and March 31; therefore, impacts to these species are not anticipated.

The ODNR DOW also indicated the Project lies within range of the following federally endangered and state threatened mussel species: club shell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), pink mucket (*Lampsilis orbiculata*), sheepnose (*Plethobasus cyphus*), snuffbox (*Epioblasma triquetra*). No in-water work is proposed for the Project; therefore, ODNR indicates that no impacts to the above-listed mussel species are likely.

The ODNR DOW also indicated the Project lies within range of the following state endangered and threatened fish species: spotted darter (*Etheostama maculatum*), channel darter (*Percina copelandi*), paddlefish (*Polyodon spathula*), and river darter (*Percina shumardi*). No in-water work is proposed for the Project; therefore, ODNR indicates that no impacts to the above-listed fish species are likely.

The ODNR DOW also indicated the Project lies within the range of the timber rattlesnake (*Crotalus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species. In addition to using wooded areas, the timber rattlesnake also utilizes sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering. ODNR indicated that due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. The on-site habitat survey confirmed ODNR's determination that no habitat is present.

The Project is within the range of the eastern spadefoot toad (*Scaphiopus holbrookii*), a state endangered species. This species is found in areas of sandy soils that are associated with river valleys. Breeding habitats may include flooded agricultural fields or other water holding depressions. ODNR indicated that due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact this species. The on-site habitat survey confirmed ODNR's determination that no habitat is present.

The Project is within the range of the midland mud salamander (*Pseudotriton montanus diastictus*), a state threatened species. No in-water work is proposed for the Project; therefore, ODNR indicates that no impacts to the above-listed species are likely.

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B(10)(f) Areas of Ecological Concern

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

On November 11, 2021 and March 8, 2022, wetland and stream delineation surveys were completed by the Company's consultant for an approximately 59-acre Environmental Survey Corridor (ESC), which encompasses a 300-foot-wide corridor of the Project centerline (Appendix D). During the November 11, 2021 and March 8, 2022 field surveys, one intermittent stream (Stream LE-1) was identified within the ROW of the Project. Two additional intermittent streams (Stream LE-2 and Stream LE-3), two ponds (Pond LE-1 and Pond LE-2), and three wetlands (Wetland LE-1, Wetland LE-2, and Wetland LE-3) were identified outside of the Project, but within the ESC.

A total of 0.3 acre of upland tree clearing is required within the proposed ROW for Project construction. Of the 0.3 acre of upland tree clearing, approximately 0.2 acres are required south of the Lee Substation and the remaining 0.1 acre is required along the eastside of railroad ROW. Impacts to Stream LE-1 are not anticipated. The tree clearing will occur within the recommended tree clearing window (October 1 – March 31), to limit potential impacts to state and federally-listed bat species. No other impacts to delineated features within the ESC are anticipated, and no other areas of ecological concern were identified within the Project area.

Based on a review of the Protected Areas Database of the United States as well as the Conservation Easement Database, there are no state or national parks, forests, wildlife areas or mapped conservation easements in the vicinity of the Project.

The FEMA Flood Insurance Rate Map (map number map number 39009C0355C) was reviewed to check for the presence of floodplains/flood hazard areas within the Project area. No mapped FEMA floodplains are located in the Project area.

B(10)(g) Unusual Conditions

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

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

Appendix A Project Maps

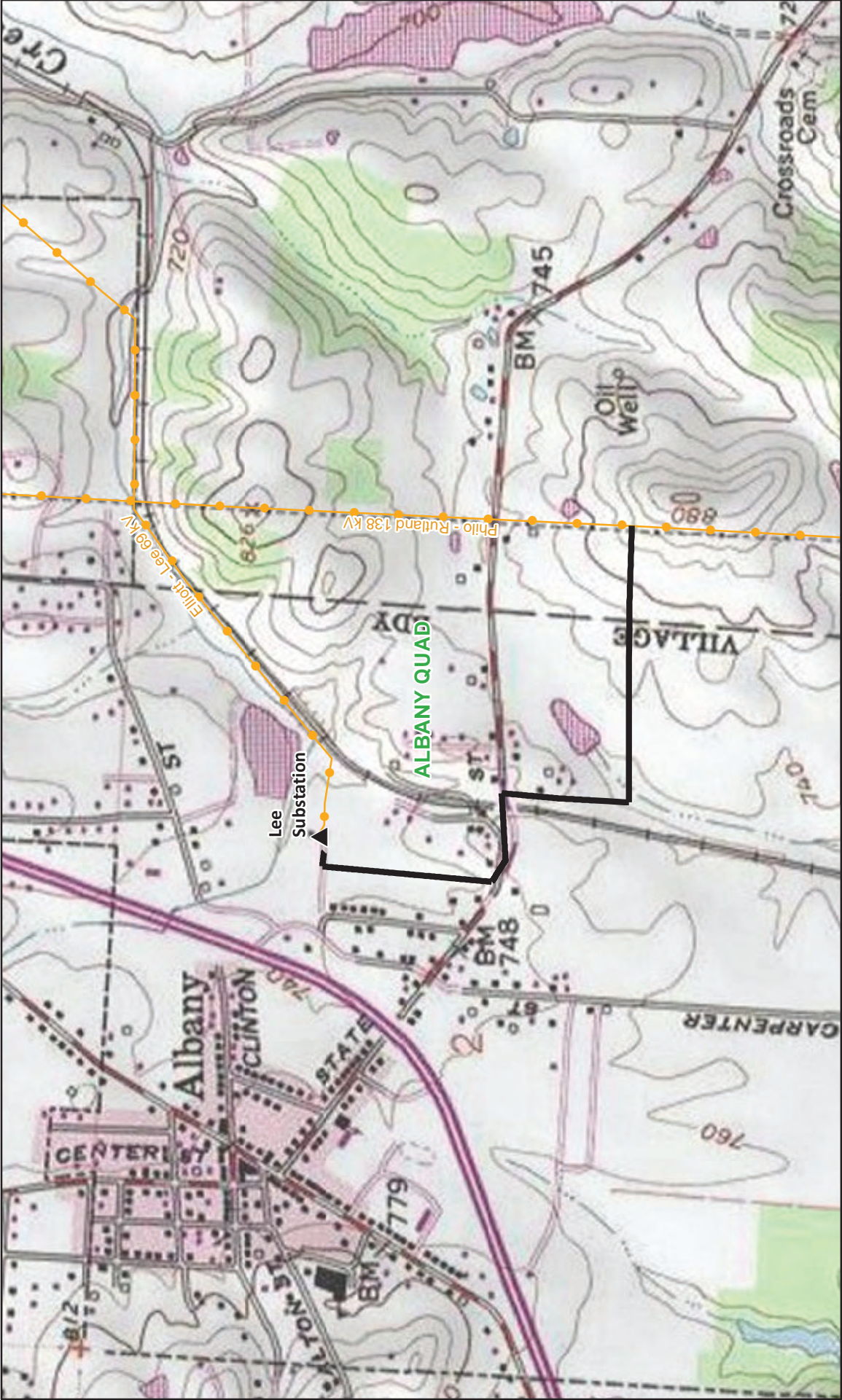


Figure 1
Project Overview

Lee Extension 138 kV
 Transmission Line Project

0 790 1,580
 Feet

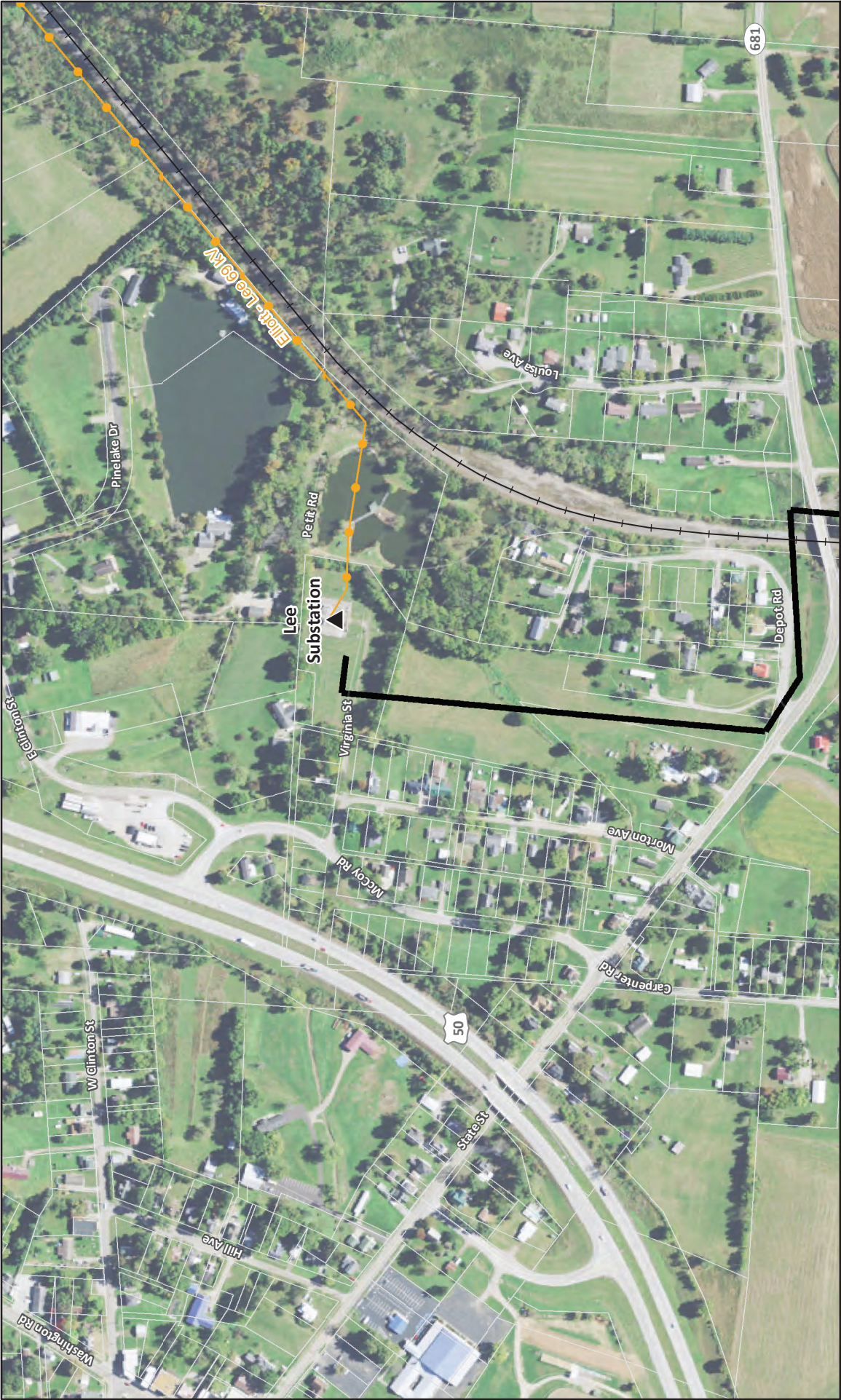


Data Sources:
 Basemap (USGS 1995)

State Plane Ohio South
 NAD 83

July 22, 2022

- Existing Substation
- Proposed Lee Extension 138 kV
- Existing Transmission Line
- USGS 24k Topo Quad Boundary



- ▲ Existing Substation
- Proposed Lee Extension 138 kV
- Existing Transmission Line
- Active Railroad
- Parcel Boundary

Data Sources:
Imagery (NAIP 2021)

State Plane Ohio South
NAD 83

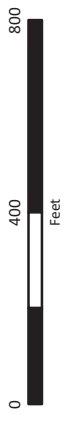


July 22, 2022

Figure 2 Project Aerial

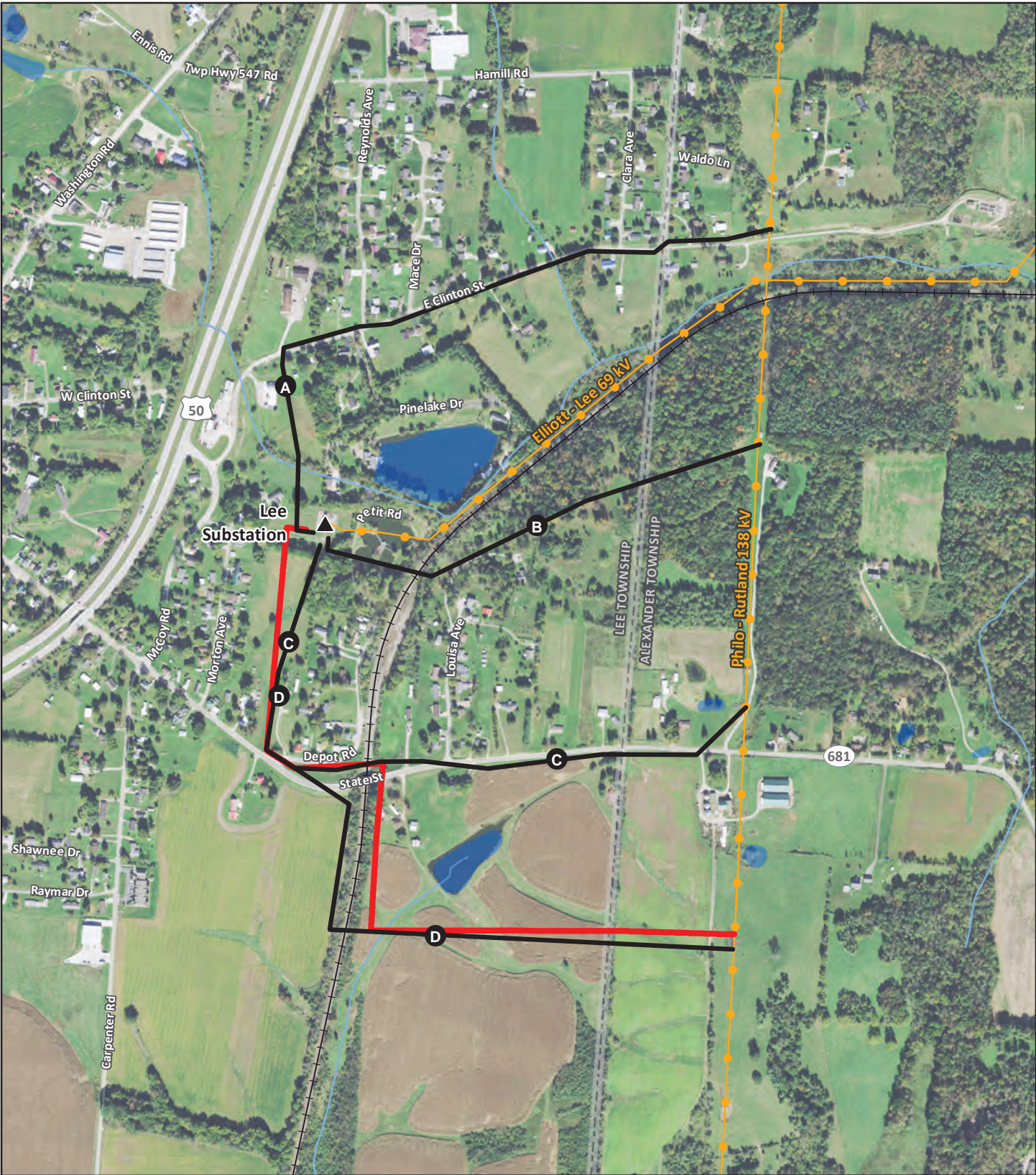


Lee Extension 138 kV
Transmission Line Project





<p>Figure 2 Project Aerial</p>	<p>Lee Extension 138 kV Transmission Line Project</p> <p>APP OHIO TRANSMISSION COMPANY A subsidiary of APP ENERGY</p> <p>0 400 800 Feet</p>
<p>Data Sources: Imagery (NAIP 2021)</p>	 <p>State Plane Ohio South NAD 83</p> <p>July 22, 2022</p>
<p> <ul style="list-style-type: none"> ▲ Existing Substation — Proposed Lee Extension 138 kV — Existing Transmission Line - - Active Railroad □ Parcel Boundary </p>	
<p align="right">Page 2 of 2</p>	



- ▲ Substation
- Proposed Route
- Alternative Route
- Existing Transmission Line
- ++ Active Railroad
- Stream or River
- Lake or Pond
- ▭ Township Boundary

Sources:
 Imagery (OGRIIP 2020)
 Streets (ESRI 2019)
 Hydrology (USGS 2020)

State Plane OH South
 NAD 83

July 22, 2022



Figure 3
Alternative Routes

Lee Extension
138 kV Transmission Line

0 500 1,000
 Feet

Appendix B Long Term Forecast Report and PJM Solutions

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

5.	APPLICATION FOR CERTIFICATE:	N/A	
6.	CONSTRUCTION:	2023-2025	
7.	CAPITAL INVESTMENT:	\$30M	
8.	PLANNED SUBSTATION:	N/A	
9.	SUPPORTING STRUCTURES:	Steel	
10.	PARTICIPATION WITH OTHER UTILITIES	N/A	
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	Rebuild of existing 69 kV lines/ Providing looped service to existing radials	
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure and reliability concerns.	
13.	MISCELLANEOUS:	(note \$'s for DC section counted on Kalida - Continental line as well)	
1.	LINE NAME AND NUMBER:	Elliott - Dexter (s2224) TP2019225	
2.	POINTS OF ORIGIN AND TERMINATION	Elliott, Dexter INTERMEDIATE STATION - Lee 138 kV	
3.	RIGHTS-OF-WAY: LENGTH / WIDTH / CIRCUITS	18.0 mi / 100 ft / 1 circuit (Proposed line only encompasses 8 miles)	
4.	VOLTAGE: DESIGN / OPERATE	138 kV/ 138 kV	
5.	APPLICATION FOR CERTIFICATE:	2022	
6.	CONSTRUCTION:	2022-2024	
7.	CAPITAL INVESTMENT:	\$18M	
8.	PLANNED SUBSTATION:	Lee 138 kV	
9.	SUPPORTING STRUCTURES:	Steel	
10.	PARTICIPATION WITH OTHER UTILITIES	N/A	
11.	PURPOSE OF THE PLANNED TRANSMISSION LINE	Rebuild of existing 138 kV line	
12.	CONSEQUENCES OF LINE CONSTRUCTION DEFERMENT OR TERMINATION	Increased risk of equipment failure and reliability concerns.	
13.	MISCELLANEOUS:		
1.	LINE NAME AND NUMBER:	Lamping - Switzer (s2216) TP2019216	

AEP Transmission Zone M-3 Process Athens Area Improvements

Need Number: AEP-2018-OH027

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 05/11/2020

Previously Presented:

Needs Meeting 11/29/2018

Solutions Meeting 3/19/2020

Project Driver:

Equipment Material/Condition/Performance/Risk, Operational Flexibility and Efficiency

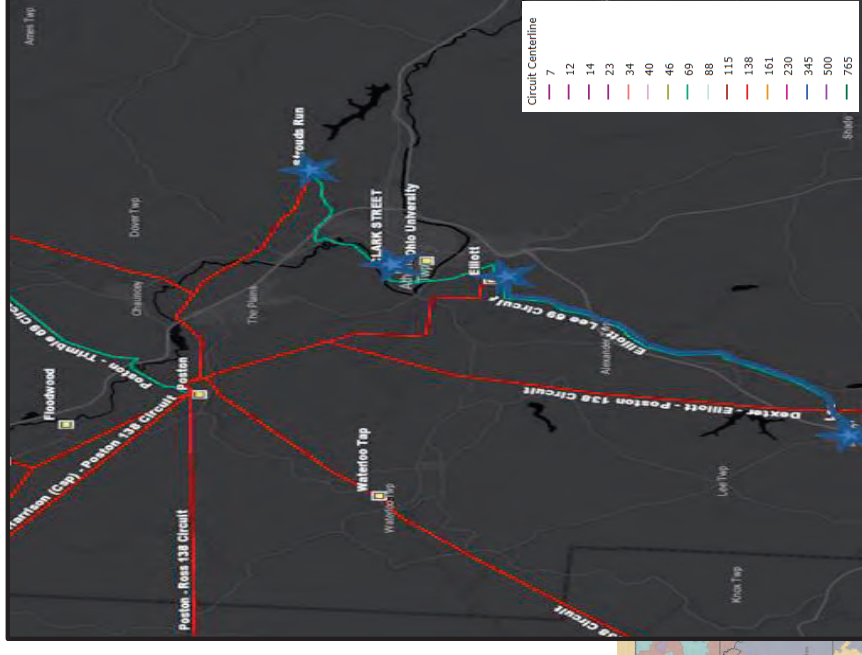
Specific Assumption Reference:

AEP Guidelines for Transmission Owner Identified Needs (slide 8)

Problem Statement:

Equipment Material / Condition / Performance / Risk:

- Elliott 138 kV circuit breaker 102 (vintage 1956) is an oil type breaker recommended for replacement due to bushing damage, reliability, and lack of spare part availability.
- Elliott 69kV circuit breakers 61, 66, and 67 (vintage 1972) have experienced the following numbers of fault operations: CB-102 (38), CB-67 (10), CB-66 (40), and CB-61 (1). These breakers are oil type breakers recommended for replacement due to reliability and lack of spare part availability.
- Strouds Run 69kV circuit breakers 63 and 66 (vintage 1969-1973) are oil breakers recommended to replace due to reliability and lack of spare part availability. Maintenance has become more difficult due to the oil handling required to maintain them. They have experienced the following fault operations: CB 63 (24), CB 66 (0).
- Strouds Run 138kV Circuit switchers "CS-TR1" and "CS-TR2" are Mark type switchers. Mark switchers are being recommended for replacement system wide due to their inability to coordinate with modern relaying packages. Circuit switchers have experienced the following fault operations: CS-TR1 (17), CS-TR2 (18).
- Strouds Run 138/69 kV 33.6MVA transformer #1 (vintage 1972) is also showing significant signs of deterioration. Drivers for replacement include dielectric strength breakdown, short circuit strength breakdown, and bushing damage.
- Clark Street 69 kV circuit breakers 61 and 64 (vintage 1968) are oil filled breakers that have been recommended for replacement due to oil handling requirements, no longer has vendor support, lacks sufficient spare part availability, and has a history of malfunctions. The breakers have had the following fault operations: CB 61 (8) and CB 64 (15).



AEP Transmission Zone M-3 Process Athens Area Improvements

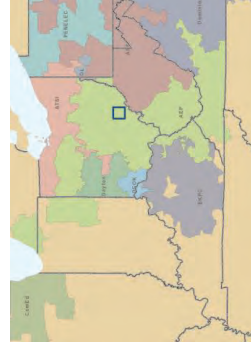
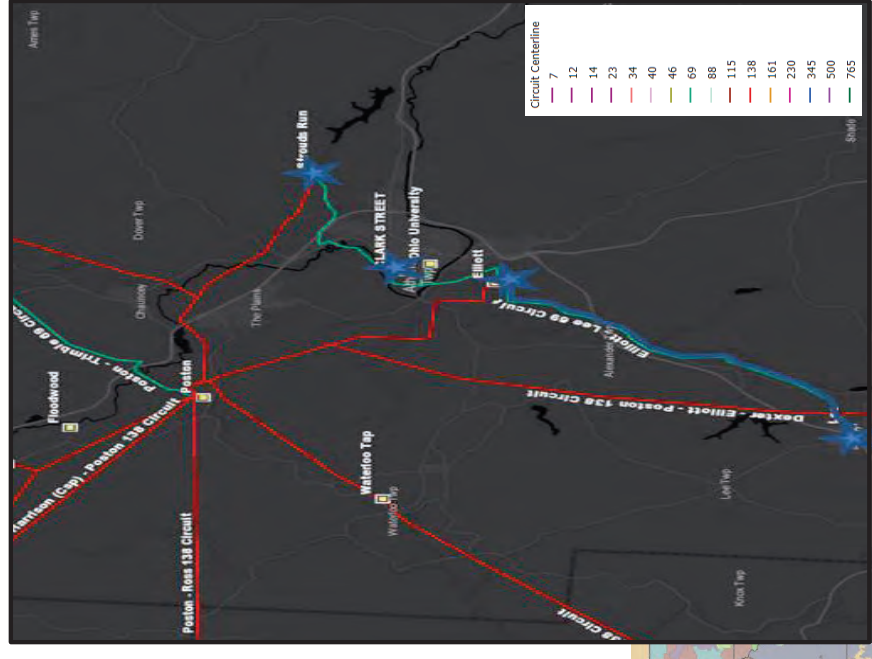
Problem Statement Continued:

Equipment Material / Condition / Performance / Risk:

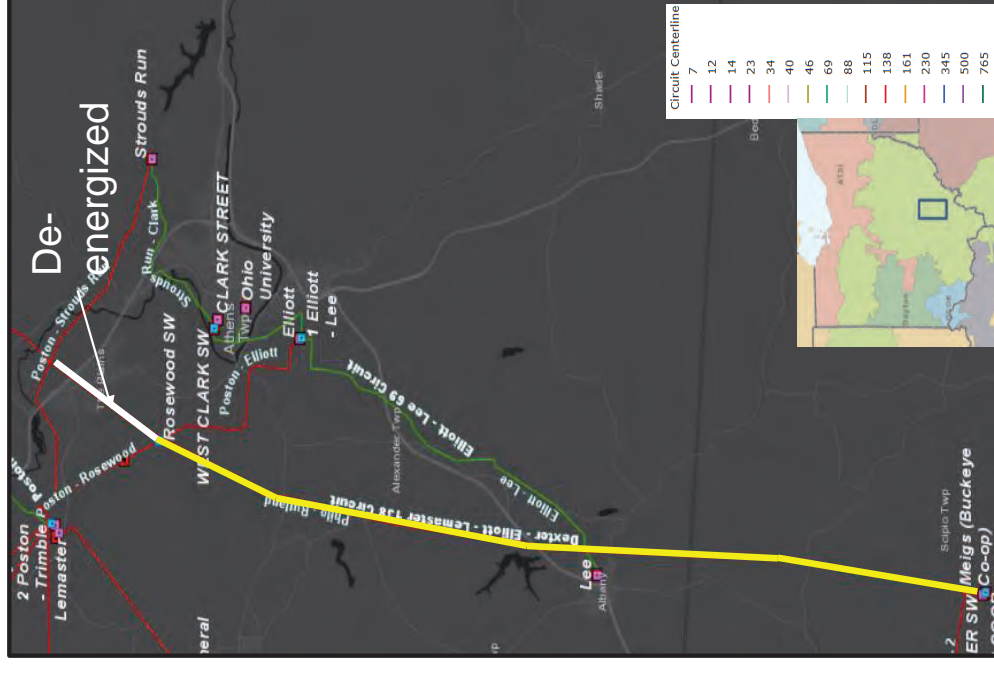
- The Elliot – Lee 69kV 8 mile, 69 kV line (vintage 1974) was constructed using wood pole structures with 336.4 KCM ACSR 18/1 conductor (73 MVA rating).
- There are 106 open A conditions on this line, including rotten structures, burnt/broken insulators, and loose/broken/sagging conductor sections, improperly installed shield wires and woodpecker damaged structures.
- These stations still have the following amount of electromechanical relays employed: Elliot (29), Strouds Run (78), Clark Street (25). EM relays have limited vendor support, lack SCADA functionality, and don't offer fault data collection.

Operational Flexibility and Efficiency:

- The Crooksville – Poston – Strouds Run 138kV circuit is a three-terminal line, which limits sectionalizing and can cause mis-operations and over tripping.
- The Dexter – Elliot – Poston 138kV circuit is a three-terminal line, which limits sectionalizing and can cause mis-operations and over tripping



AEP Transmission Zone M-3 Process Athens Area Improvements



Need Number: AEP-2020-OH011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 05/11/2020

Previously Presented:

Needs Meeting 2/21/2020

Solutions Meeting 3/19/2020

Project Driver:

Equipment Material/Condition/Performance/Risk

Specific Assumption Reference:

AEP Guidelines for Transmission Owner Identified Needs (AEP Assumptions Slide 8), AEP Presentation on Pre-1930s Lines

Problem Statement:

Dexter –Rosewood 138kV (1927 Steel Lattice Line)

- Length: 8.8 Miles
- Original Construction Type: Aluminum/Steel Lattice
- Original Conductor Type: 397.5 CM ACSR 30/7 (1926 vintage)
- Momentary/Permanent Outages: 3 total outages over last 5 years
- Total structure count: 38
- Please reference needs materials on pre-1930s era lattice lines
- There is an additional 2.5 miles of the 1920's Philo -Rutland lattice line which is de-energized and runs through the middle of The Plains community north of Athens

AEP Transmission Zone M-3 Process Athens Area Improvements

Need Number: AEP-2020-OH014

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 05/11/2020

Previously Presented:

Needs Meeting 02/21/2020

Solutions Meeting 3/19/2020

Project Driver:

Equipment Material/Condition/Performance/Risk

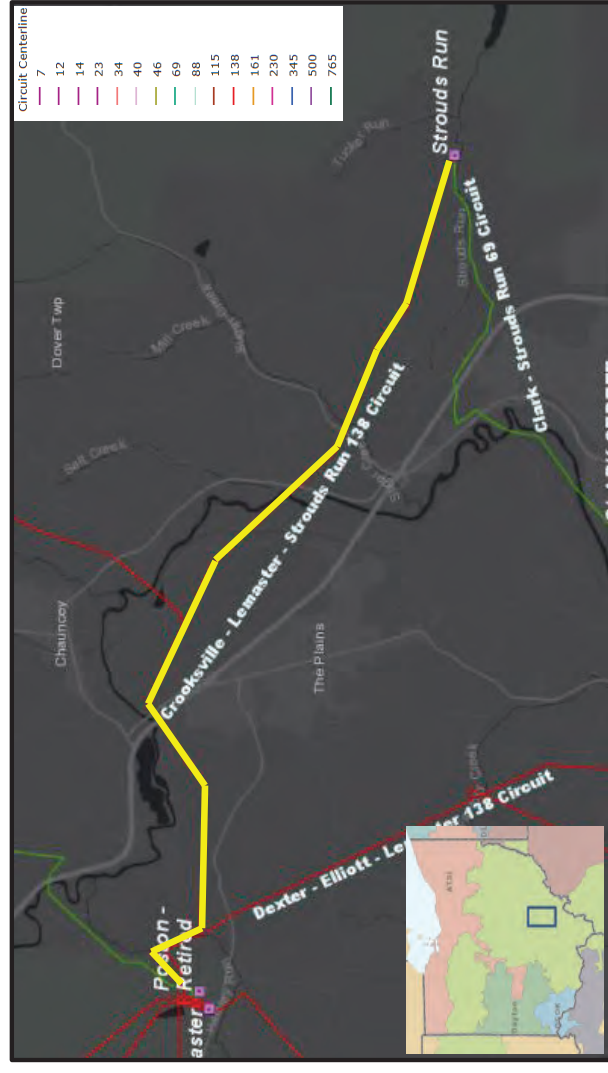
Specific Assumption Reference:

AEP Guidelines for Transmission Owner Identified Needs (AEP Assumptions slide 8)

Problem Statement:

Poston – Shrouds Run 138kV (1965)

- Length 7.52 Miles
- Original Construction Type: Wood H-Frame
- Original Conductor Type: 636 ACSR Conductor (vintage 1966)
- Momentary/Permanent Outages: 3 total outages last 5 years
 - Number of open conditions: 62
 - Total structure count: 46
 - Open conditions include: rot top, woodpecker holes, bowed structures, and burnt poles
 - Unique structure count with open conditions: 31



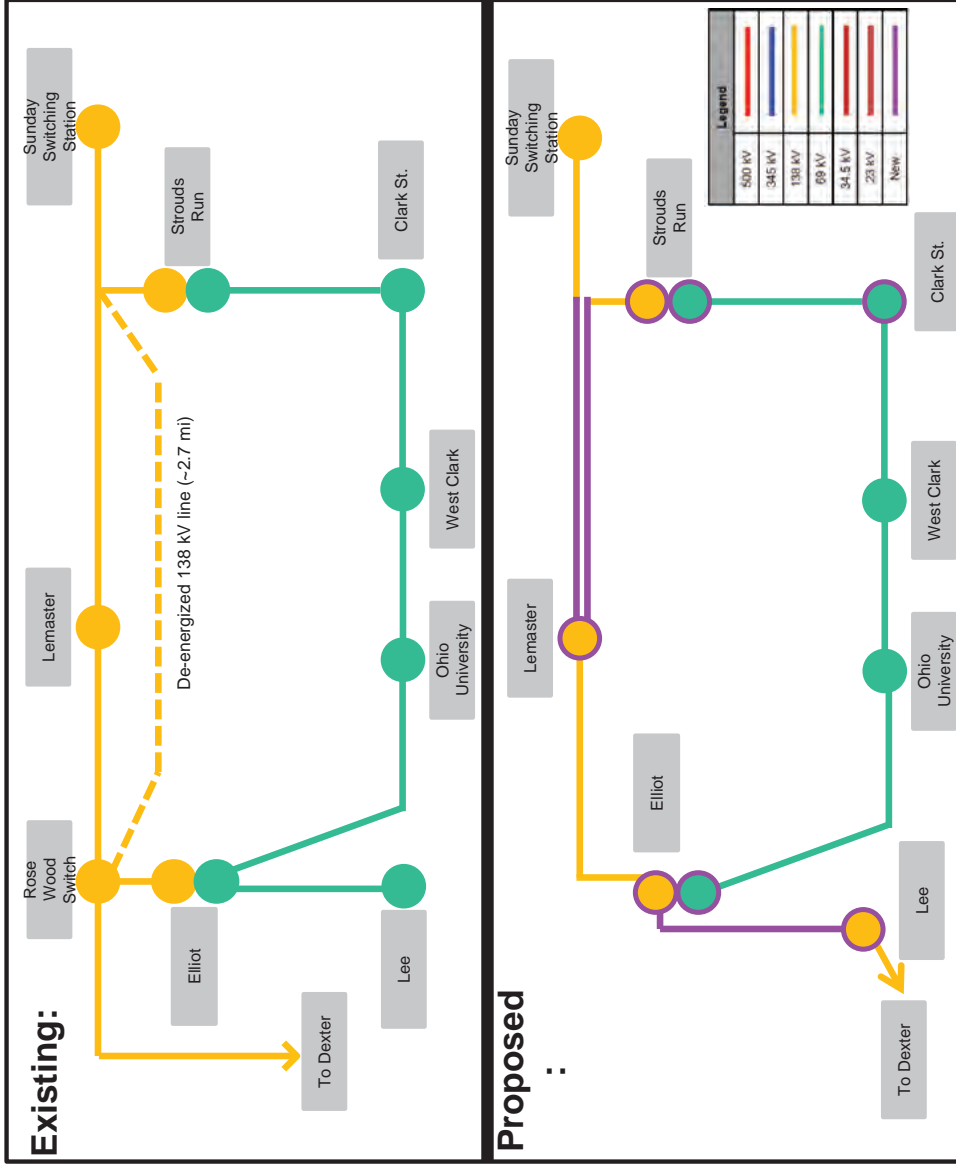
AEP Transmission Zone M-3 Process Athens Area Improvements

Need Number: AEP-2018-OH027, AEP-2020-OH011 & AEP-2020-OH014

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 05/11/2020

Selected Solution:

- Rebuild the existing ~8 mile Elliott – Lee 69kV line to 138 kV and retire the existing 69 kV line. **(S2224.1) Estimated Cost: \$20.7M**
- Retire approximately 11.5 miles of the Philo – Rutland 138kV line asset from Lee station north, including the de-energized portion of the line that runs through the Plains community. **(S2224.2) Estimated Cost: \$3.5M**
- Convert Lee to 138 kV service and install two line MOABs connected to the 138 kV line between Dexter and Elliot. **(S2224.3) Estimated Cost: \$3.0M**
- At Clark Street, replace 69 kV circuit breakers “61” & “64” (3000A 40kA). **(S2224.4) Estimated Cost: \$2.9M**
- At Elliot, install a new 138/69 kV transformer (130 MVA) in addition to high and low side protection (3000 A 40 kA) which will replace transformer #1 at Strouds Run that will be retired. Replace existing 138 kV circuit breaker “102” and 69 kV circuit breakers “61” and “66” (3000A, 40 kA). Install 138 kV circuit breaker (3000A, 40 kA) on the new 138 kV line towards Dexter (via Lee) along with a 138 kV bus-tie breaker (3000, 40 kA). Retire 69 kV circuit breaker “67” due to the conversion of Lee station to 138 kV. **(S2224.5) Estimated Cost: \$6.7M**
- Rebuild ~3.68 miles of single circuit line from the Poston - Strouds Run line as double circuit 138kV transmission line to eliminate the hard tap on the line. **(S2224.6) Estimated Cost: \$16.0M**



AEP Transmission Zone M-3 Process Athens Area Improvements

Selected Solution Continued:

- At Strouds Run, install a 138kV line breaker (3000A 40kA) towards Lemaster. Replace transf #2 high side circuit switcher with a circuit breaker (3000A, 40 kA). Replace the 69kV circuit breaker"66" (3000A, 40kA). Retire 138/69/13 kV 33.6 MVA transf #1, 69 kV circuit breaker "63", and circuit switcher # 1. (S2224.7) **Estimated Cost: \$1.6M**
- At Lemaster station, install a 138kV breaker (3000A 40kA) to accommodate the new circuit. (S2224.8) **Estimated Cost: \$1.0M**
- Remove Rosewood switch. (S2224.9) **Estimated Cost: \$0.1M**

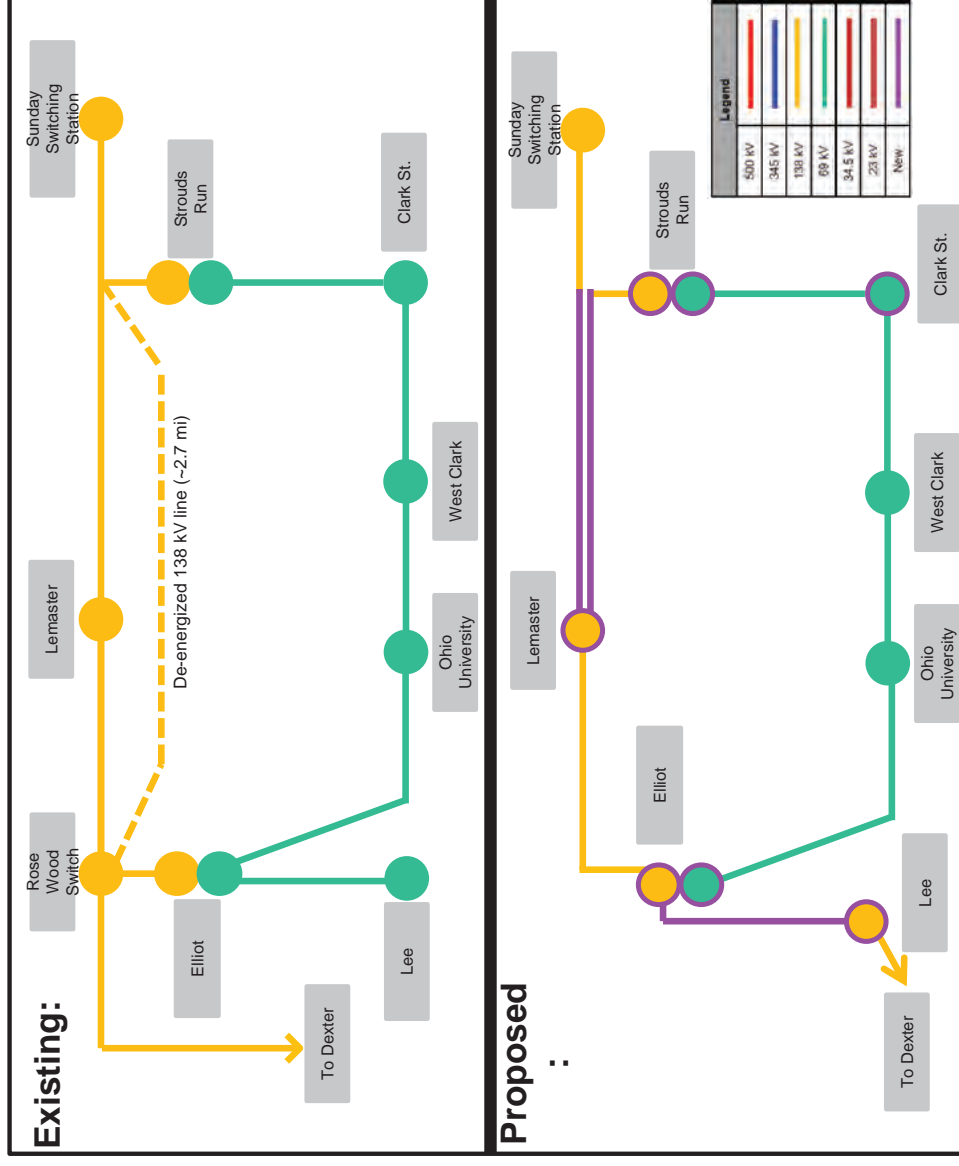
Estimated Cost: \$55.5M

Projected In-Service: 10/01/2024

Supplemental Project ID: S2224.1-.9

Project Status: Scoping

Model: N/A



Appendix C Archaeological and Cultural Resources



In reply, refer to
2021-ATH-53199

June 10, 2022

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

RE: Lee Extension 138kV Rebuild Project, Lee and Alexander Townships, Athens County, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received June 8, 2022 regarding the proposed Lee Extension 138kV Rebuild Project, Lee and Alexander Townships, Athens County, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-5). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]).

The following comments pertain to the *Addendum Archaeological Investigations for the Lee Extension 138kV Rebuild Project in Lee and Alexander Townships, Athens County, Ohio* by Ryan J. Weller (Weller & Associates, Inc. 2022).

A literature review, visual inspection, surface collection, and shovel test unit excavation was completed as part of the investigations. No previously identified archaeological sites are located within the addendum project area and no new archaeological sites were identified during survey. Our office agrees no additional archeological investigation is needed. No additional architectural resources 50 years of age or older are located in the revised study area.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Krista Horrocks".

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

RPR Serial No: 1093699

Appendix D Wetland Delineation Report

LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT ECOLOGICAL SURVEY REPORT



PROJECT NO.: LP2043151.085
DATE: JUNE 2022

AEP Transmission
8500 Smith's Mill Road
New Albany, OH 43054



An AEP Company

BOUNDLESS ENERGY™

WSP USA
312 ELM STREET, SUITE 2500
CINCINNATI, OH 45202



WSP.COM



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1 INTRODUCTION

On behalf of American Electric Power (AEP) Ohio Transmission Company, Inc. (AEP Ohio Transco), WSP USA (WSP) conducted environmental surveys for the proposed approximately 0.75-mile-long Lee Extension 138 kV Transmission Line Project (“Project”), located in Alexander and Lee Townships, Athens County, Ohio. The environmental survey included a wetland and water resource delineation and characterization of potential habitat for state and federally listed species. The wetland delineation was performed to determine whether wetlands and streams are present within the vicinity of the Project that would meet the definition of Waters of the United States (WoUS) or be subject to regulations implemented by the Ohio Environmental Protection Agency (OEPA), and to document their extents and current conditions if present. The wetland delineation was performed by individuals trained in the three-parameter methodology (hydrophytic vegetation, wetland hydrology, and hydric soils) adopted by the U.S. Army Corps of Engineers (USACE) as outlined in the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont, (Version 2.0)* (USACE, 2010) and in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987).

The report presents the results of the ecological considerations and review of the site’s existing and reasonably foreseeable site conditions at the time of the environmental surveys. The results cannot apply to site changes occurring after the survey which WSP has not had the opportunity to review. During the course of any survey, site conditions may change over time due to human and/or natural causes; as such, the results presented in this report may be invalidated, either wholly or in part, by changes beyond the control of WSP.



2 BACKGROUND INFORMATION

2.1 PROJECT AREA

The approximately 0.75-mile Project is located within Alexander and Lee Townships, Athens County, Ohio. The 300 foot wide Environmental Survey Corridor (ESC) originates at the existing Lee Station (39.225984°, -82.195602°), and extends generally south and east to the proposed junction with the existing Philo – Rutland 138 kV Transmission Line (approximate coordinates: 39.223161°, -82.287617°) (Figure 1, Appendix A). The approximately 59.0-acre ESC is within the Albany, Ohio U.S. Geological Survey (USGS) 7.5-minute topographic map quadrangle boundary. Table 2-1 provides an overview of the project location.

TABLE 2-1: GENERAL PROJECT INFORMATION

COUNTY:	Athens
TOWNSHIP:	Alexander and Lee
END POINT COORDINATES:	Lee Station: 39.225984°, -82.195602° Philo – Rutland 138 kV Transmission Line: 39.226161°, -82.187617°
USGS QUADRANGLE:	Albany, Ohio
ENVIRONMENTAL SURVEY CORRIDOR LENGTH (mi.):	0.75
ENVIRONMENTAL SURVEY CORRIDOR WIDTH (ft.):	300
ENVIRONMENTAL SURVEY CORRIDOR SIZE (ac.):	59.0
ELEVATION RANGE (ft. above sea level):	732 - 771
8-DIGIT HYDROLOGIC UNIT CODE:	05030204 05030202
12-DIGIT HYDROLOGIC UNIT CODE(S) :	05030202-07-01 05030204-08-02
DATE(S) OF SURVEY :	November 11, 2021 and March 8, 2022

2.1.1 DRAINAGE BASINS

All streams in the vicinity of the ESC drain to the Hocking River or the Ohio River, which are traditionally navigable waterways (TNW). The ESC is located within the Hocking (HUC 05030204) and Upper Ohio-Shade (HUC 05030202) drainage basins, hydrologic unit code). The ESC lies within two 12-digit HUCs, as outlined in Table 2-2 (USDA, 2019).

The OEPA 401 *Water Quality Certification for the Nationwide Permits Web Mapping Application* indicates that field-assessed streams within both 12-digit sub-watersheds are denoted as “eligible”; indicating that stream impacts within



the ESC will not require an individual 401 water quality certification provided that the OEPA’s general and special limitations and conditions for the nationwide permits are met (OEPA, 2020).

TABLE 2-2: 12-DIGIT HUC’S CROSSED BY THE PROJECT

8-DIGIT HUC CODE ¹	8-DIGIT HUC CODE NAME ¹	12-DIGIT HUC CODE ¹	12-DIGIT HUC NAME ¹	OHIO EPA SECTION 401 ELIGIBILITY ²
05030202	Upper Ohio-Shade	05030202-07-01	Headwaters Leading Creek	Eligible
05030204	Hocking	05030204-08-02	Headwaters Margaret Creek	Eligible

¹Source: USDA, 2019

²Source: OEPA, 2020



3 METHODOLOGY

On November 11, 2021 and March 8, 2022, a WSP ecologist traversed the approximately 0.75-miles long and 300 foot wide ESC (approximately 59.0-acres) to conduct a wetland and waters delineation. The physical boundaries of aquatic resources were recorded using a Trimble Global Positioning System (GPS) unit rated for sub-decimeter accuracy. The GPS data was then geo-corrected using Trimble GPS Pathfinder Office software (version 5.60) and reviewed for quality control.

Prior to conducting field surveys, WSP ecologists completed a desktop review by analyzing several federal and state documents for the presence of wetland and streams. This review included Natural Resources Conservation Service (NRCS) soil survey data, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps of Ohio, USGS 7.5-minute topographic maps, and USGS National Hydrography Dataset (NHD) stream and river data as an exercise to identify the occurrence and location of potential wetlands and streams.

3.1 WETLAND AND STREAM DELINEATION

3.1.1 WETLAND DELINEATION

The USACE and the U.S. Environmental Protection Agency (USEPA) define wetlands as areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR, Part 328.3).

Wetlands were delineated according to Section 404 of the Clean Water Act, Technical Report Y-87-1 *Corps of Engineers Wetlands Delineation Manual ('87 Manual)* (Environmental Laboratory, 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont, (Version 2.0) (Regional Supplement)* (USACE, 2010). Representative data points were collected for wetlands and corresponding, adjacent upland areas. Wetland data was recorded on the USACE *Regional Supplement Wetland Determination Data Forms*.

Wetland vegetation communities were classified according to the *Classification of Wetlands and Deepwater Habitats of the United States*, commonly referred to as the Cowardin Classification System (Cowardin et al., 1979). Wetlands within the ESC were assessed using the OEPA *Ohio Rapid Assessment Method for Wetlands v. 5.0 (ORAM)* to determine the ecological quality and level of disturbance (Mack, 2001).

3.1.2 STREAM DELINEATION AND ASSESSMENT

Streams were identified by the presence of a defined bed and bank, and evidence of an ordinary high water mark (OHWM). The OHWM is defined in the USACE *Regulatory Guidance Letter No. 05-05* (USACE, 2005). Generally, the OHWM is identified by a clearly defined, natural line along the stream bank created by fluctuations and flow of water; this may include changes in contours, substrate, vegetation, and debris (USACE, 2005).



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* (Rankin, 2006) and *Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams, Version 3* (Davic, 2012).



4 RESULTS

A WSP ecologist surveyed the ESC on November 11, 2021 and March 8, 2022 by walking the approximately 59.0-acre ESC and evaluating for wetlands and other WoUS. The WSP ecologist identified three wetlands, three streams, and two ponds within the ESC. Several non-jurisdictional drainages were also identified within the ESC. The identified water resources are depicted on the Delineated Features Map (Figure 3, Appendix A).

4.1 DESKTOP REVIEW

4.1.1 SOILS EVALUATION

According to the NRCS Soil Data for Athens County, Ohio, there are 12 soil map units shown within the ESC, as presented in Table 4-1. The soils observed by the WSP ecologist during the reconnaissance of the ESC were consistent with the NRCS soil survey mapping.

TABLE 4-1: SOIL UNITS MAPPED WITHIN THE ESC

SOIL UNIT SYMBOL	SOIL UNIT NAME	PERCENT HYDRIC	HYDRIC RATING ¹	AREA WITHIN ESC (ac.)
Dol1A1	Doles silt loam, 0 to 2 percent slopes	2	Predominately Non-Hydric	2.5
GsC	Guernsey silt loam, 8 to 15 percent slopes	0	Non-Hydric	1.7
GuD	Guernsey-Upshur complex, 15 to 25 percent slopes	0	Non-Hydric	3.1
Lic1B1	Licking silt loam, 2 to 6 percent slopes	0	Non-Hydric	2.4
New1AF	Newark silt loam, 0 to 3 percent slopes, frequently flooded	5	Predominately Non-Hydric	4.9
Omu1B1	Omulga silt loam, 2 to 6 percent slopes	0	Non-Hydric	24.5
Omu1C1	Omulga silt loam, 6 to 12 percent slopes	0	Non-Hydric	13.5
Ud	Udorthents, loamy	0	Non-Hydric	0.5
UpC	Upshur silty clay loam, 8 to 15 percent slopes	0	Non-Hydric	2.3
UpD	Upshur silty clay loam, 15 to 25 percent slopes	0	Non-Hydric	2.3
WhC	Westmoreland-Guernsey silt loams, 8 to 15 percent slopes	0	Non-Hydric	1.2
WmD	Westmoreland-Upshur complex, 15 to 25 percent slopes	0	Non-Hydric	0.2

Total Area of Non-Hydric Soils 51.6

Total Area of Predominantly Non-Hydric Soils 7.4

¹Non-Hydric = 0% hydric soil component; Predominantly Non-Hydric = 1-32%; Partially Hydric =33-65%; Predominantly Hydric = 66-99%; and All Hydric = 100%. Source: Soil Survey Staff, NRCS. Web Soil Survey.

4.1.2 NATIONAL WETLAND INVENTORY REVIEW

According to the NWI maps of the Albany, Ohio quadrangle boundary, there are three mapped NWI features within the ESC, as presented in Table 4-2. The location of the NWI features is shown on Figure 2 (Appendix A).





TABLE 4-2: NWI FEATURES MAPPED WITHIN THE ESC

NWI CODE	NWI DESCRIPTION	MAP PAGE	ASSOCIATED DELINEATED RESOURCE
PSS/EM1A	Palustrine Scrub-Shrub, Broad-Leaved Deciduous / Palustrine Emergent, Persistent Temporarily Flooded	Page 2 of 3	No Identified Resource
R4SBC	Riverine, intermittent, streambed, seasonally flooded	Page 3 of 3	Non-Jurisdictional Ditch Wetland LE-2
PUBGx	Palustrine, unconsolidated bottom, intermittently exposed, excavated	Page 3 of 3	Pond LE-2

Source: USFWS National Wetlands Inventory Map.

4.1.3 FEMA FLOODPLAIN REVIEW

According to Federal Emergency Management Agency (FEMA) National Flood Hazard Layer, there are no 100-year floodplains or regulated floodways within the ESC.

4.2 DELINEATED WETLANDS

During environmental surveys of the ESC, the WSP ecologist identified three emergent wetlands, each containing a mix of wet-mesic species, dominated by herbaceous plants including *juncus sp.*, *scirpus sp.*, and *carex sp.* among others, which were less prevalent. The identified wetlands totaled 0.26 acres within the ESC. Each wetland was assessed as a Category One wetland. Wetland LE-1 and Wetland LE-2 extend beyond the ESC to the west and south, respectively, as shown on Figure 3, Appendix A. Wetland LE-1 and Wetland LE-3 are adjacent to Stream LE-3, an unnamed tributary to Margaret Creek. Wetland LE-2 drains southward to Leading Creek. Therefore, all three wetlands are likely to be considered jurisdictional by the USACE. It should be noted that final determination of wetland jurisdiction will be made by the USACE.

Table 4-3 provides specific wetland habitat types, acreages within the ESC, ORAM category, as well as information regarding jurisdictional status. USACE wetland determination forms are provided in Appendix B. ORAM forms are included in Appendix C. Representative photographs of the wetland as well as the upland verification data point were taken and are provided in Appendix E.



TABLE 4-3: WETLANDS DELINEATED WITHIN THE ESC

WETLAND ID	LOCATION		COWARDIN CLASS. ¹	DELINEATED AREA ² (acres)	ORAM		HYDROLOGIC CONNECTION	PROXIMAL WATERBODY
	LAT.	LON.			SCORE ₃	CATEGORY		
Wetland LE-1	39.2233	-82.1877	PEM	0.12	17	1	Jurisdictional	UNT to Margaret Creek
Wetland LE-2	39.2193	-82.1950	PEM	0.01	19	1	Jurisdictional	UNT to Leading Creek
Wetland LE-3	39.2212	-82.1877	PEM	0.13	19	1	Jurisdictional	UNT to Margaret Creek

Sum of PEM Wetland Areas	0.26
Sum of PSS Wetland Areas	0.00
Sum of PFO Wetland Areas	0.00
Total Wetland Area	0.26

¹PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested;

²Acres reflect the area delineated within the ESC and are approximate based on GPS data and are rounded to the nearest 0.01-acre.

4.3 STREAMS AND RIVERS

During the environmental survey, the WSP ecologist identified three streams totaling 1,007 linear feet within the ESC. All three streams were identified as intermittent and were assessed using the HHEI methodology. All three streams were also identified as unnamed tributaries to Margaret Creek, which flows to the Hocking River, which is a TNW. It should be noted that the USACE will make the final determination of jurisdictional status. All three identified streams had defined bed and bank, with substrates containing gravel, silt, and leaf pack/debris, and had drainage basins of less than 0.25 mi².

Locations of the identified streams within the ESC are shown in Figure 3 (Appendix A). Table 4-4 provides waterbody name, flow regime, stream length within the ESC, field evaluation data and Ohio EPA Section 401 eligibility. Completed OEPA HHEI forms are provided in Appendix D. Representative photographs were taken of each stream during the field survey and are provided in Appendix E.

In addition to the jurisdictional streams identified, all swales, ditches, and other surface drainages within the ESC were also evaluated for consideration as jurisdictional Waters of the U.S. with respect to the Clean Water Act. Jurisdictional ditches must meet the definition of tributary, have an OHWM, and flow directly or indirectly through another water to a TNW. Multiple roadside ditches, erosional features, and swales were observed throughout the ESC, however, none of the identified ditches or drainages would be considered jurisdictional within the ESC. These features were excavated in upland soils to convey upland drainage and had no defined bed and bank or flow regime to constitute a Waters of the U.S. designation. Locations of identified non-jurisdictional drainages identified within the ESC are shown in Figure 3, Appendix A.



TABLE 4-4: STREAMS MAPPED WITHIN THE ESC

STREAM ID	LOCATION		STREAM NAME	STREAM TYPE	DELINEATED LENGTH (FEET)	BANKFULL WIDTH (FEET)	OHWM WIDTH (FEET)	FIELD EVALUATION			OHIO EPA 401 ELIGIBILITY
	LAT	LONG						METHOD	SCORE	CLASS	
Stream LE-1	39.224682	-82.196193	UNT to Margaret Creek	Intermittent	591	5.0	2.0	HHEI	35	Modified, Small Drainage, Warmwater System	Eligible
Stream LE-2	39.222828	-82.187541	UNT to Margaret Creek	Intermittent	339	3.0	1.5	HHEI	18	Modified, Small Drainage, Warmwater System	Eligible
Stream LE-3	39.223366	-82.187326	UNT to Margaret Creek	Intermittent	77	6.0	2.0	HHEI	26	Modified, Small Drainage, Warmwater System	Eligible

Sum of Ephemeral Stream Lengths	0
Sum of Intermittent Stream Lengths	1,007
Sum of Perennial Stream Lengths	0
Total Stream Length	1,007

Notes: UNT = unnamed tributary

Lengths are approximate based on GPS data and are rounded to the nearest foot.

4.4 PONDS AND OPEN WATER

Two ponds were identified within the ESC. Approximately 0.03 acres of Pond LE-1 is within the ESC and is likely to be considered jurisdictional by the USACE, as it appears to be an impoundment of a jurisdictional stream (Stream LE-1, UNT to Margaret Creek). Pond LE-2 (0.26 acres) lies entirely within the ESC, appears to be man-made and not an impoundment of a WoUS. Therefore, Pond LE-2 is not likely to be considered jurisdictional by the USACE. It should be noted that the USACE will make the final determination of jurisdictional status.

4.5 VEGETATIVE COMMUNITIES

The WSP ecologists conducted a general habitat survey in conjunction with the stream and wetland field surveys. A variety of woody and herbaceous habitats, as described below in Table 4-5, are present within the ESC. A breakdown of vegetated land cover is provided, overlain on aerial photography in Figure 4 (Appendix A).



TABLE 4-5: VEGETATIVE COMMUNITIES WITHIN THE ESC

VEGETATIVE COMMUNITY	DESCRIPTION	ACREAGE WITHIN THE ESC	PERCENTAGE OF ESC
Agricultural Land	Agricultural land primarily consisting of soybean and corn fields were present within the ESC.	17.3	29.3%
Developed, High Intensity	These areas consist of developed residential, industrial, and commercial land uses, including roads, buildings, and parking lots. These areas are generally devoid of significant vegetation.	7.3	12.3%
Developed, Open Space	Developed areas, including residential and commercial properties, were observed within the ESC. These landscaped areas are frequently mowed or maintained grasses and forbs.	18.2	30.8%
Scrub/Shrub	Scrub/shrub habitats represent the successional stage between old field and second growth forest, and often emerge in recently harvested forests responding to the lack of overhead canopy.	0.9	1.6%
Pasture/Hayfield	Non-native grasses planted for livestock forage or subject to regular mowing/harvest for livestock feed.	3.9	6.7%
Old Field	Old Field habitats represent the successional stage between Developed, Open Space and Scrub/Shrub habitat. Often times these areas are previously developed areas that have been left fallow, which area maintained (mowed) once or twice a year.	7.3	12.4%
Successional Hardwood Woodland ¹	Successional hardwood woodlands were present within the ESC. Dominant woody species within these areas include red maple (<i>Acer rubrum</i>) and shagbark hickory (<i>Carya ovata</i>).	3.5	6.0%
Wetlands and Ponds	Wetlands and ponds delineated within the ESC boundaries.	0.5	0.9%
Total		55.5	100%

4.6 THREATENED AND ENDANGERED SPECIES COORDINATION

The first phase of the evaluation involved a review of online lists of federal and state species of concern. In addition to the review of available literature and a request for Environmental Review was submitted to the Ohio Department of Natural Resources (ODNR). A coordination letter was also submitted to the USFWS soliciting comments on the Project. Detailed descriptions of the agency coordination are provided in proceeding sections. Correspondence from the USFWS and ODNR is included as Appendix G.



4.6.1 USFWS COORDINATION

A request for review was submitted to the USFWS on May 24, 2021. In an email dated June 10, 2021 the USFWS provided comments on the Project with regard to federally-listed threatened and endangered species within the Project vicinity. The USFWS indicated that there are no federal wildlife refuges, wilderness areas, or critical habitat within the vicinity of the Project. Comments from USFWS regarding protected species are provided in Table 4-6. The USFWS review comments has been included in Appendix G.

4.6.2 ODNR COORDINATION

A request for Environmental Review was submitted to the ODNR on May 24, 2021. The ODNR Environmental Review response dated July 26, 2021 included comments from the Ohio Natural Heritage Database Program, Division of Wildlife (DOW), and Division of Water Resources. A review of Natural Heritage Database identified no records of state- and/or federally-listed species, high-quality native communities, or protected natural areas within the vicinity of the Project. However, the ranges of multiple species were within a one-mile radius of the ESC. Using this as guidance, WSP has provided observations of threatened and endangered species habitat within the vicinity of the ESC in Table 4-6. The ODNR Environmental Review has been included in Appendix G.



TABLE 4-6: LISTED SPECIES COMMENTED ON BY ODNR AND USFWS

COMMON NAME (SCIENTIFIC NAME)	STATE STATUS	FEDERAL STATUS	HABITAT DESCRIPTION	POTENTIAL HABITAT OBSERVED IN ESC	AGENCY COMMENT	WSP IMPACT ASSESSMENT
Mammals						
Indiana bat (<i>Myotis sodalis</i>)	Endangered	Endangered	<p>Winter hibernacula are provided by caves and mines. Summer roost habitat typically includes live or dead trees with exfoliating bark, crevices, or cavities that can be used for roosting. Open sub-canopy areas and flight corridors are important to allow maneuvering during foraging. Proximity to water sources provides a greater density of insect prey.</p>	Yes	<p>USFWS and ODNR comments recommended seasonal tree clearing dates (October 1 through March 31) to avoid impacts protected bat species.</p> <p>ODNR recommended a desktop habitat assessment for potential hibernacula within a 0.25-mile radius of the ESC.</p>	<p>Potentially suitable habitat may be provided by forested areas within the ESC. No potential hibernacula were identified within 0.25-miles of the ESC.</p>
northern long-eared bat (<i>Myotis septentrionalis</i>)	Threatened	Threatened				
little brown bat (<i>Myotis lucifugus</i>)	Endangered	Not Listed				
tri-colored bat (<i>Perimyotis subflavus</i>)	Endangered	Not Listed				
Reptiles						
timber rattlesnake (<i>Crotalus horridus</i>)	Endangered	Species of Concern	<p>This species is a woodland species utilizing sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering.</p>	No	<p>ODNR said due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.</p>	<p>Based on the location and type of work proposed, the Project is not anticipated to impact this species or its habitat. On site habitat survey confirmed ODNR's determination that no habitat is present.</p>



TABLE 4-6: LISTED SPECIES COMMENTED ON BY ODNR AND USFWS

COMMON NAME (SCIENTIFIC NAME)	STATE STATUS	FEDERAL STATUS	HABITAT DESCRIPTION	POTENTIAL HABITAT OBSERVED IN ESC	AGENCY COMMENT	WSP IMPACT ASSESSMENT
Amphibians						
eastern spadefoot toad (<i>Scaphiopus holbrookii</i>)	Endangered	Not Listed	This species is found in areas of sandy soils that are associated with river valleys. Breeding habitats may include flooded agricultural fields or other water holding depressions.	No	ODNR indicated that due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact these species.	Based on the location and type of work proposed, the Project is not anticipated to impact this species or its habitat. On site habitat survey confirmed ODNR's determination that no habitat is present.
midland mud salamander (<i>Pseudotriton montanus diastictus</i>)	Threatened	Not Listed	Found in springs, seeps, and creeks. Much of the life of this animal is probably spent underground in burrows.	No		
Mussels						
clubshell (<i>Pleurobema clava</i>)	Endangered	Endangered	Habitat is typically provided by streams and small rivers with well-oxygenated riffles and sand and gravel substrates.	No	ODNR indicated that due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact these species.	No suitable habitat observed. In-water work is not anticipated; therefore, project is not likely to impact this or other aquatic species.
fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Endangered	This mussel is typically found in medium to large rivers. It buries itself in sand or gravel in deep water of moderate current.	No		
pink mucket (<i>Lampsilis orbiculata</i>)	Endangered	Endangered	This mussel is found in mud and sand and in shallow riffles and shoals swept free of silt in major rivers and tributaries.	No		
sheepnose (<i>Plethobasus cyphus</i>)	Endangered	Endangered	Lives in shallow areas with moderate to swift currents in larger rivers and streams.	No		
snuffbox (<i>Epioblasma triquetra</i>)	Endangered	Endangered	Typically found in small to medium-sized creeks and some larger rivers, in areas with a swift current.	No		
black sandshell (<i>Ligumia recta</i>)	Threatened	Not Listed	most commonly occupies rivers with strong currents and lakes with a firm substrate of gravel or sand.	No		



TABLE 4-6: LISTED SPECIES COMMENTED ON BY ODNR AND USFWS

COMMON NAME (SCIENTIFIC NAME)	STATE STATUS	FEDERAL STATUS	HABITAT DESCRIPTION	POTENTIAL HABITAT OBSERVED IN ESC	AGENCY COMMENT	WSP IMPACT ASSESSMENT
fawnsfoot (<i>Truncilla donaciformis</i>)	Threatened	Not Listed	Typically occurs in flowing areas of large rivers in soft or coarse substrate.	No	ODNR indicated that due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact these species.	No suitable habitat observed. In-water work is not anticipated; therefore, project is not likely to impact this or other aquatic species.
threehorn wartyback (<i>Obliquaria reflexa</i>)	Threatened	Not Listed	Typically found in large rivers with moderate current and stable gravel, sand and mud bottoms.	No		
Fish						
spotted darter (<i>Etheostoma maculatum</i>)	Endangered	Not Listed	Occur in freshwater rivers marked with the presence of boulders and other rocks.	No	If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat.	No suitable habitat was observed. No in-stream work is anticipated, therefore no impacts to these species or their habitat is anticipated.
channel darter (<i>Percina copelandi</i>)	Threatened	Not Listed	This species prefers pools and riffles of small- to medium-sized rivers, but can also be found in shallow, slow current areas of large rivers.	No		
river darter (<i>Percina shumardi</i>)	Threatened	Not Listed	Typically found in major rivers and at the mouths of adjoining tributaries, preferring to inhabit chutes of oxbow rivers and riffles containing sandy, gravely, and rocky substrates.	No		
paddlefish (<i>Polyodon spathula</i>)	Threatened	Not Listed	Typically found in deep water of large river basins and their tributaries.	No		



5 SUMMARY

WSP conducted environmental surveys of the proposed approximately 0.75-mile long Lee Extension 138 kV Transmission Line Project on November 11, 2021 and March 8, 2022. Three wetlands, three streams, and two ponds were delineated by a WSP ecologist within the 59.0-acre ESC. No potential bat hibernacula were identified within 0.25-miles of the ESC and no potential bat hibernacula were identified within the ESC during the field survey.

All three wetlands, totaling 0.26 acres within the ESC, were determined to be jurisdictional, Category 1, PEM wetlands. Pond LE-1 was identified as an impoundment of Stream LE-1, totaling 0.03 acres within the ESC; Pond LE-2 was identified as a man-made feature measure 0.26 acres within the ESC. Pond LE-1 will likely be considered jurisdictional by the USACE whereas Pond LE-2 will likely not be considered jurisdictional. Three intermittent streams, totaling 1,007 linear feet within the ESC, were identified and evaluated using the HHEI methodology. The results discussed in this report are confined to the ESC limits described in earlier sections and depicted on Figure 3 (Appendix A).

Based on observations within the ESC during environmental surveys, USFWS comments, and ODNR comments, potential impacts to the Indiana bat and northern long-eared bat are not anticipated if the recommended seasonal clearing dates are utilized. Forested areas that would typically provide potential summer roost habitat for bat species, were located within the ESC, however forested areas had been cleared and/or impacted at the time of the environmental survey and no longer provide potential habitat to bat species during summer months.

WSP performed a desktop review for potential hibernacula within the vicinity of the Project as a result of comments from ODNR relating to state- and federally-listed bat species. Topographic maps did not depict caves, cliffs/ledges, or karst topography within a three-mile radius of the ESC. A review of aerial imagery also did not provide evidence of these habitat types. One documented mine (The Woods Mine) was identified within a three-mile buffer of the Project Area. The Woods Mine was identified approximately 1.95 miles east of the ESC and three mine openings were documented. However, no potential hibernacula were identified within 0.25-miles of the ESC and no potential hibernacula were identified within the ESC during the field survey. All tree clearing will occur within the recommended clearing window (October 1st – March 31st), to avoid any impacts to these species or their habitat. If any tree clearing will occur outside the recommended clearing window appropriate coordination with USFWS and ODNR will occur to seek permission for out of season tree clearing. Additional information pertaining to the state- and federally-listed bat species is provided in Table 4-6.

It is anticipated that in-stream work is not necessary, therefore no mussel surveys are necessary related to protected mussel species. Additionally, no construction timing windows are required to protect any state- and/or federally-listed fish species.

Potentially suitable habitat for state and/or federally listed threatened and endangered reptile (timber rattlesnake) and amphibian species (eastern spadefoot toad and midland mud salamander) was not identified within the ESC. Based on the response from ODNR-DOW, due to the location, the type of habitat within the Project area, and the type of work proposed, this Project is not likely to impact these species, or their habitat.

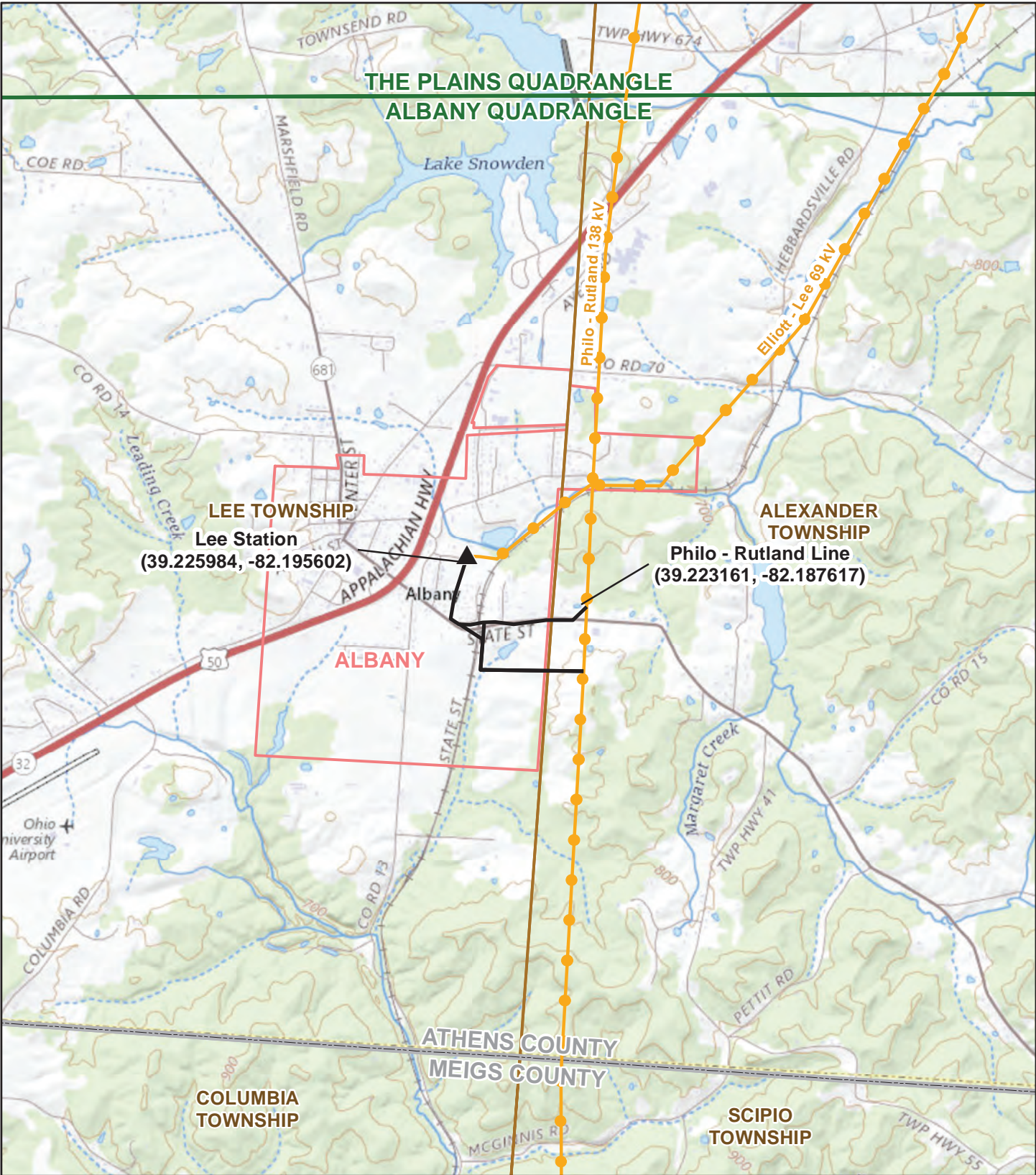


6 REFERENCES

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APPENDIX

A FIGURES



**THE PLAINS QUADRANGLE
ALBANY QUADRANGLE**

LEE TOWNSHIP
Lee Station
(39.225984, -82.195602)

ALEXANDER TOWNSHIP
Philo - Rutland Line
(39.223161, -82.187617)

ALBANY

**ATHENS COUNTY
MEIGS COUNTY**

COLUMBIA TOWNSHIP

SCIPIO TOWNSHIP

- ▲ Existing AEP Station
- Lee Extension Proposed Routes
- Existing AEP Transmission Line
- ▭ USGS 24k Topo Quad Boundary
- ▭ County Boundary
- ▭ Township Boundary
- ▭ Municipal Boundary

Sources:
Topo (USGS)
Quad Boundaries (USGS)

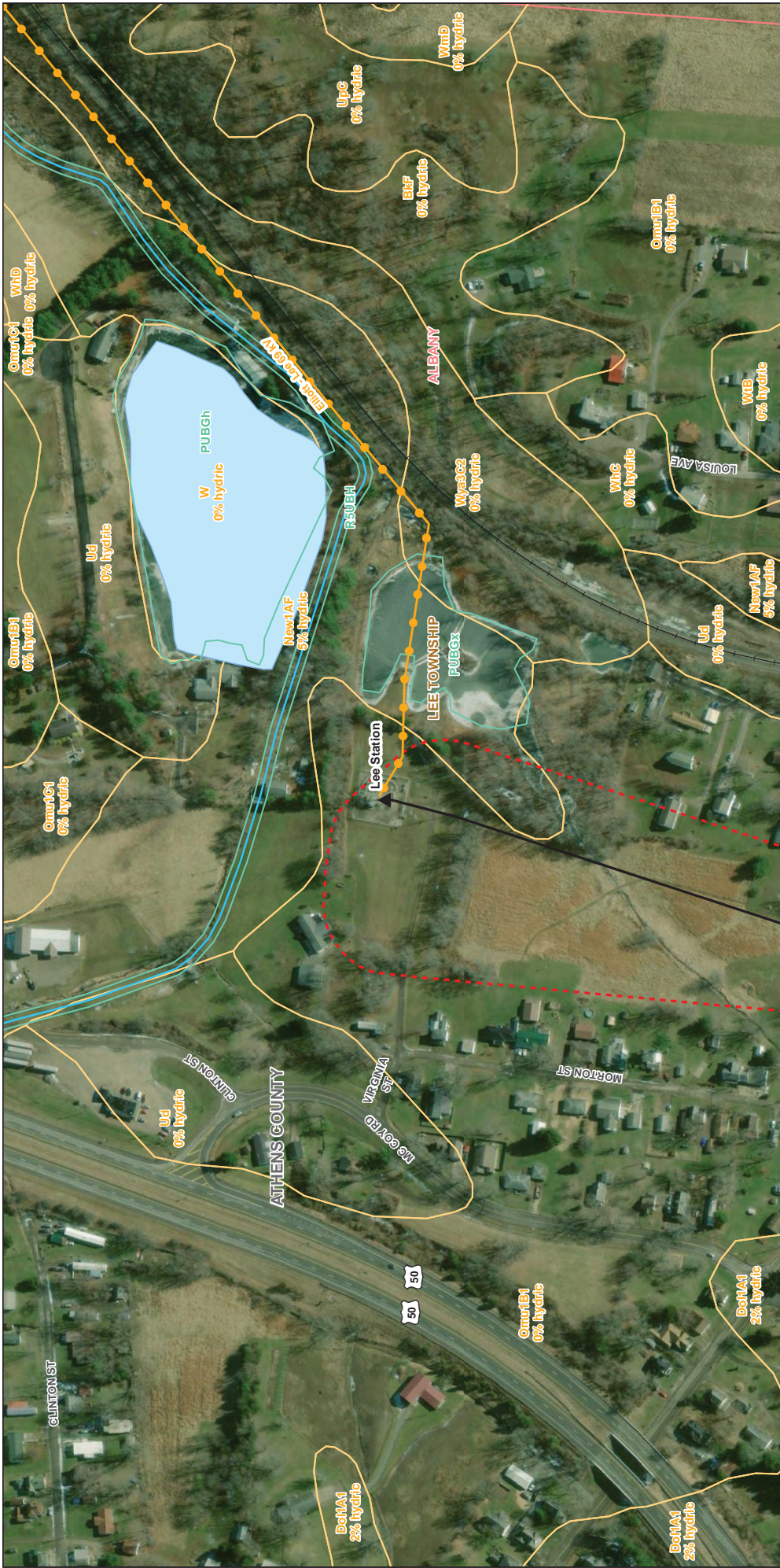
Coordinate System:
State Plane Ohio South
NAD 1983

March 16, 2022



**LEE EXTENSION 138 KV
TRANSMISSION LINE PROJECT
Figure 1. Project Location Map**





Page 1 of 3

LEE EXTENSION 138 KV
TRANSMISSION LINE PROJECT
Figure 2. Environmental Basemap

Legend:

- Existing AEP Station
- Lee Extension Proposed Routes
- Railroad
- NHD Stream
- Existing AEP Transmission
- Environmental Survey Corridor
- NWI Wetlands
- NHD Waterbody
- Soil Map Unit
- County Boundary
- Township Boundary
- Municipal Boundary

Sources:

- 2020 Imagery (ESRI)
- Wetland (USFWS)
- Hydrography (USGS)
- Soil Units (USDA)
- Floodplains (FEMA)

Coordinate System:
State Plane Ohio South
NAD 1983

May 23, 2022

Scale: 0 200 400 Feet

Map of Athens County: A small inset map showing the location of the project area within Athens County, Ohio, with a red box highlighting the project area.

WSP Logo: The logo for WSP (Western Surveying & Planning) is located in the bottom right corner.



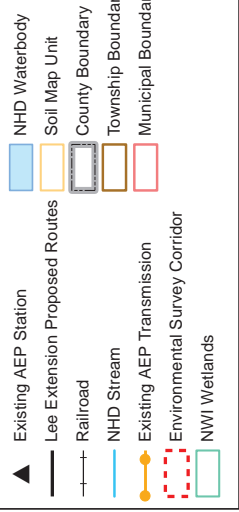
<p>Page 2 of 3</p>		<p>Sources: 2020 Imagery (ESRI) Wetland (USFWS) Hydrography (USGS) Soil Units (USDA) Floodplains (FEMA)</p>		<p>Coordinate System: State Plane Ohio South NAD 1983</p>	
<p>Existing AEP Station</p>		<p>NHD Waterbody</p>		<p>May 23, 2022</p>	
<p>Lee Extension Proposed Routes</p>		<p>Soil Map Unit</p>		<p>2020 Imagery (ESRI)</p>	
<p>Railroad</p>		<p>County Boundary</p>		<p>Wetland (USFWS)</p>	
<p>NHD Stream</p>		<p>Township Boundary</p>		<p>Hydrography (USGS)</p>	
<p>Existing AEP Transmission</p>		<p>Municipal Boundary</p>		<p>Soil Units (USDA)</p>	
<p>Environmental Survey Corridor</p>		<p>NWI Wetlands</p>		<p>Floodplains (FEMA)</p>	

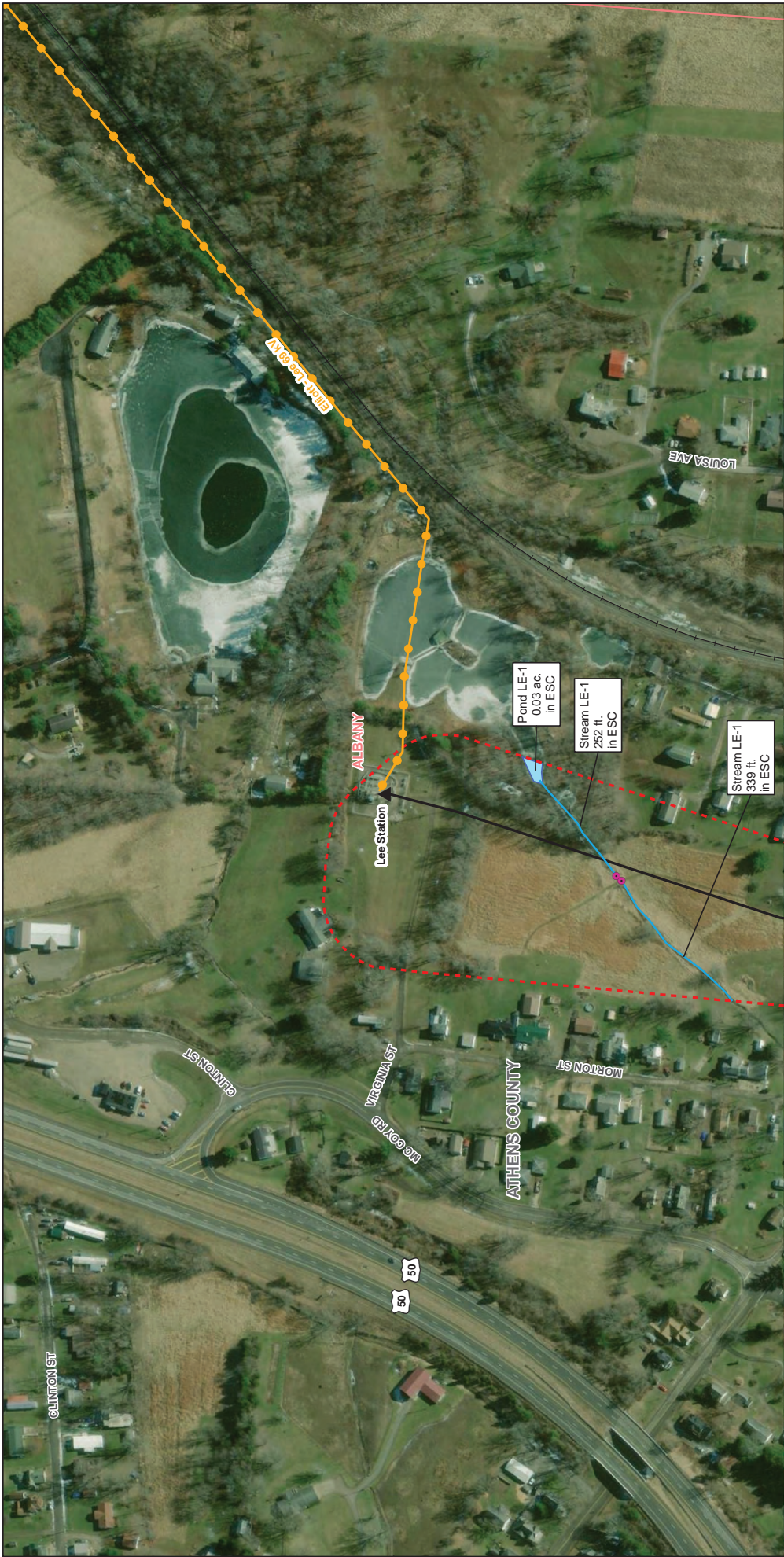
LEE EXTENSION 138 KV
 TRANSMISSION LINE PROJECT

Figure 2. Environmental Basemap



APRIL 2022



0 200 400 Feet

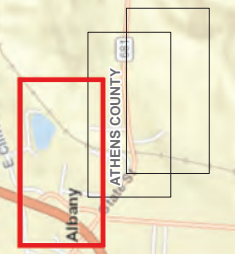




LEE EXTENSION 138 KV
TRANSMISSION LINE PROJECT
Figure 3. Delineated Features



















Sources:
2020 Imagery (ESRI)

Coordinate System:
State Plane Ohio South
NAD 1983




May 23, 2022

Page 1 of 3

	Existing AEP Station		County Boundary
	Upland Data Point		Township Boundary
	Wetland Data Point		Municipal Boundary
	Culvert Point		Environmental Survey Corridor
	Lee Extension Proposed Routes		Delineated Stream
	Existing AEP Transmission Line		Non-Jurisdictional Drainage
			Delineated Pond
			Delineated Wetland
			Environmental Survey Corridor
			Railroad



Page 2 of 3

<p>Sources: 2020 Imagery (ESRI)</p> <p>Coordinate System: State Plane Ohio South NAD 1983</p> <p style="text-align: right;">May 23, 2022</p>	<p style="text-align: center;">ATHENS COUNTY</p> <p style="text-align: center;">Albany</p>	<p style="text-align: center;">LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT</p> <p style="text-align: center;">Figure 3. Delineated Features</p> <div style="text-align: right;">   </div> <div style="text-align: right;">  <p style="margin-left: 10px;">0 200 400 Feet</p> </div>																												
<p>Legend</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td>Existing AEP Station</td> <td style="width: 15%;"></td> <td>County Boundary</td> </tr> <tr> <td></td> <td>Upland Data Point</td> <td></td> <td>Township Boundary</td> </tr> <tr> <td></td> <td>Wetland Data Point</td> <td></td> <td>Municipal Boundary</td> </tr> <tr> <td></td> <td>Culvert Point</td> <td></td> <td>Non-Jurisdictional Drainage</td> </tr> <tr> <td></td> <td>Lee Extension Proposed Routes</td> <td></td> <td>Environmental Survey Corridor</td> </tr> <tr> <td></td> <td>Existing AEP Transmission Line</td> <td></td> <td>Delineated Pond</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Delineated Wetland</td> </tr> </table>				Existing AEP Station		County Boundary		Upland Data Point		Township Boundary		Wetland Data Point		Municipal Boundary		Culvert Point		Non-Jurisdictional Drainage		Lee Extension Proposed Routes		Environmental Survey Corridor		Existing AEP Transmission Line		Delineated Pond				Delineated Wetland
	Existing AEP Station		County Boundary																											
	Upland Data Point		Township Boundary																											
	Wetland Data Point		Municipal Boundary																											
	Culvert Point		Non-Jurisdictional Drainage																											
	Lee Extension Proposed Routes		Environmental Survey Corridor																											
	Existing AEP Transmission Line		Delineated Pond																											
			Delineated Wetland																											



Page 3 of 3

<p>▲ Existing AEP Station</p> <p>● Upland Data Point</p> <p>● Wetland Data Point</p> <p>● Culvert Point</p> <p>— Lee Extension Proposed Routes</p> <p>— Existing AEP Transmission Line</p>	<p>— Railroad</p> <p>— Delineated Stream</p> <p>— Non-Jurisdictional Drainage</p> <p>— Environmental Survey Corridor</p> <p>— Delineated Pond</p> <p>— Delineated Wetland</p>	<p>▭ County Boundary</p> <p>▭ Township Boundary</p> <p>▭ Municipal Boundary</p>
<p>LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT</p> <p>Figure 3. Delineated Features</p>		
<p>N</p> <p>0 200 400 Feet</p>		
<p>Sources: 2020 Imagery (ESRI)</p> <p>Coordinate System: State Plane Ohio South NAD 1983</p> <p>May 23, 2022</p>		



Page 1 of 3

LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT
Figure 4. Vegetation Coverage

Sources:
 2020 Imagery (ESRI)

Coordinate System:
 State Plane Ohio South
 NAD 1983

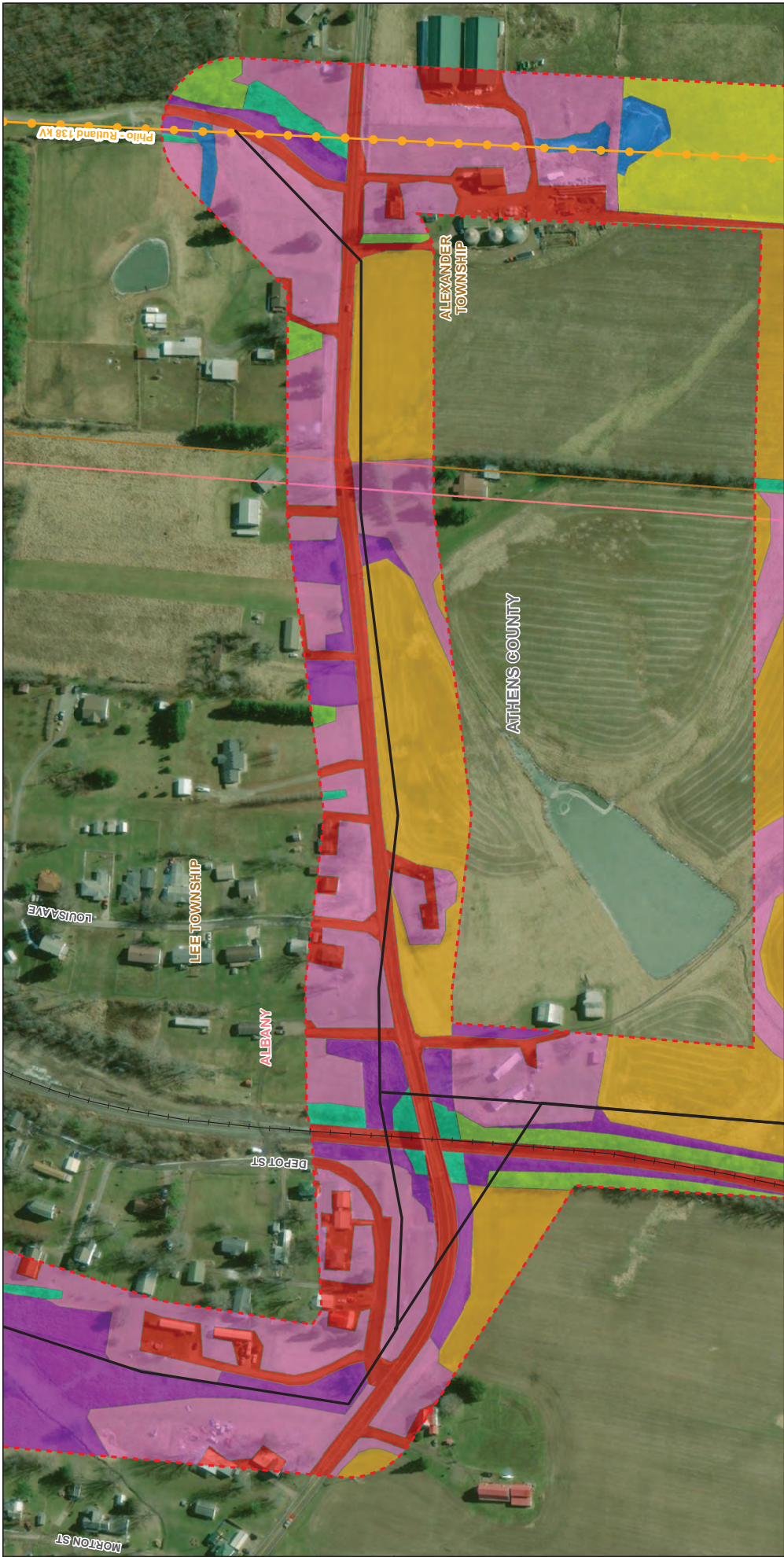
May 23, 2022

Legend:

- Existing AEP Station
- Lee Extension Proposed Routes
- Existing AEP Transmission Line
- Railroad
- 300-foot Environmental Survey Corridor
- Agricultural Land
- Wetlands and Waterbodies
- Township Boundary
- Municipal Boundary
- County Boundary
- Developed - High Intensity
- Developed - Open Space
- Old Field
- Pasture/Hay/field
- Scrub Shrub
- Successional Hardwood Forest

Scale: 0 200 400 Feet

Logos: AEP OHIO, wsp



Page 2 of 3

<p>Existing AEP Station</p> <p>Lee Extension Proposed Routes</p> <p>Existing AEP Transmission Line</p> <p>Railroad</p> <p>300-foot Environmental Survey Corridor</p> <p>Agricultural Land</p>	<p>Wetlands and Waterbodies</p> <p>Developed - High Intensity</p> <p>Developed - Open Space</p> <p>Old Field</p> <p>Pasture/Hay/field</p> <p>Scrub Shrub</p> <p>Successional Hardwood Forest</p> <p>Township Boundary</p> <p>Municipal Boundary</p> <p>County Boundary</p>	<p>Sources: 2020 Imagery (ESRI)</p> <p>Coordinate System: State Plane Ohio South NAD 1983</p> <p>May 23, 2022</p>
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LEE EXTENSION 138 KV
TRANSMISSION LINE PROJECT

Figure 4. Vegetation Coverage

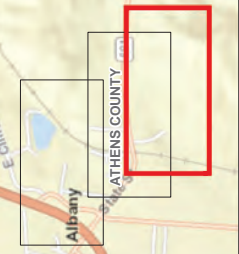
N

0 200 400 Feet



LEE EXTENSION 138 KV
TRANSMISSION LINE PROJECT
Figure 4. Vegetation Coverage

N
0 200 400 Feet



Sources: 2020 Imagery (ESRI)
Coordinate System: State Plane Ohio South NAD 1983
May 23, 2022

Page 3 of 3

<ul style="list-style-type: none"> Existing AEP Station Lee Extension Proposed Routes Existing AEP Transmission Line Railroad 300-foot Environmental Survey Corridor Agricultural Land 	<ul style="list-style-type: none"> Developed - High Intensity Developed - Open Space Old Field Pasture/Hay/field Scrub Shrub Successional Hardwood Forest 	<ul style="list-style-type: none"> Wetlands and Waterbodies Township Boundary Municipal Boundary County Boundary
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APPENDIX

B USACE WETLAND DETERMINATION FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lee Extension 138 kV Transmission Line City/County: Athens County Sampling Date: 11/12/2021
 Applicant/Owner: AEP State: OH Sampling Point: Wetland LE-1
 Investigator(s): P. Renner Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5
 Subregion (LRR or MLRA): LRR N Lat: 39.223296 Long: -82.187650 Datum: NAD83
 Soil Map Unit Name: Omulga silt loam, 2 to 6 percent slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Mowed PEM wetland located in low spot in hay field.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> 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) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Wetland LE-1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>r=30'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>r=15'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: <u>r=15'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>0</u> 20% of total cover: <u>0</u>				
Herb Stratum (Plot size: <u>r=5'</u>)				
1. <u>Phleum pratense</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
2. <u>Juncus effusus</u>	<u>45</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Carex lurida</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	
4. <u>Scirpus cyperinus</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
5. <u>Phalaris arundinacea</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>47.5</u> 20% of total cover: <u>19</u>				
Woody Vine Stratum (Plot size: <u>r=30'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

SOIL

Sampling Point: Wetland LE-1

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 ¹	Loc ²		
0-8	10YR 4/2	90	10YR 4/6	10	C	M	silt loam	
8-18	10YR 5/2	90	10YR 4/6	10	C	M	silt loam	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lee Extension 138 kV Transmission Line City/County: Athens County Sampling Date: 11/12/2021
 Applicant/Owner: AEP State: OH Sampling Point: Upland LE-1
 Investigator(s): P. Renner Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Omulga silt loam, 2 to 6 percent slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Non-wetland data point corresponding to Wetland LE-1	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ 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)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Upland LE-1

<p><u>Tree Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;"></th> <th style="width:40%; text-align: center;">Absolute % Cover</th> <th style="width:15%; text-align: center;">Dominant Species?</th> <th style="width:40%; text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Sapling Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Shrub Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: <u>r=5'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. <u>Phleum pratense</u></td><td style="text-align: center;">25</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FACU</td></tr> <tr><td>2. <u>Poa pratensis</u></td><td style="text-align: center;">25</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FACU</td></tr> <tr><td>3. <u>Phragmites australis</u></td><td style="text-align: center;">5</td><td style="text-align: center;">No</td><td style="text-align: center;">FACW</td></tr> <tr><td>4. <u>Conium maculatum</u></td><td style="text-align: center;">10</td><td style="text-align: center;">No</td><td style="text-align: center;">FACW</td></tr> <tr><td>5. <u>Symphotrichum ericoides</u></td><td style="text-align: center;">10</td><td style="text-align: center;">No</td><td style="text-align: center;">FACU</td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td>7.</td><td></td><td></td><td></td></tr> <tr><td>8.</td><td></td><td></td><td></td></tr> <tr><td>9.</td><td></td><td></td><td></td></tr> <tr><td>10.</td><td></td><td></td><td></td></tr> <tr><td>11.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: <u>37.5</u> 20% of total cover: <u>15</u></td></tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table>		Absolute % Cover	Dominant Species?	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<p>Remarks: (Include photo numbers here or on a separate sheet.)</p>																																																																																																																																																																																																			

SOIL

Sampling Point: Upland LE-1

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 ¹	Loc ²		
0-16	10YR 4/3	100					silt loam	
16-20	10YR 5/6	100					silt loam	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lee Extension 138 kV Transmission Line City/County: Athens County Sampling Date: 3/8/2022
 Applicant/Owner: AEP State: OH Sampling Point: Wetland LE-2
 Investigator(s): B. Rolfes Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): CONVEX Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat: 39.2193 Long: -82.1950 Datum: NAD83
 Soil Map Unit Name: Newark silt loam, 0 to 3 percent slopes, frequently flooded NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Wetland data point corresponding to Wetland LE-2, in depressional area downstream from man-made pond, adjacent to agricultural row crops. Recent rainfall on 3/7/2022 - approximately approximately 1.08".	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required: check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> 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) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>8</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Wetland LE-2

<p><u>Tree Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;"></th> <th style="width:10%; text-align: center;">Absolute % Cover</th> <th style="width:10%; text-align: center;">Dominant Species?</th> <th style="width:10%; text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Sapling Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; 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(7.6 cm) or larger in diameter at breast height (DBH).</p> <p>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p>Woody vine – All woody vines, regardless of height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____</p>
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SOIL

Sampling Point: Wetland LE-2

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 ¹	Loc ²		
0-12	10YR 5/2	60	7.5 YR 5/6	10	C	M	silty clay loar	
	10YR 5/4	30						

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lee Extension 138 kV Transmission Line City/County: Athens County Sampling Date: 3/8/2022
 Applicant/Owner: AEP State: OH Sampling Point: Upland LE-2
 Investigator(s): B. Rolfes Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat: 39.2194 Long: -82.1951 Datum: NAD83
 Soil Map Unit Name: Newark silt loam, 0 to 3 percent slopes, frequently flooded NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Non-wetland data point corresponding to Wetland LE-2, in upland field adjacent to agricultural row crops. Recent rainfall on 3/7/2022 - approximately approximately 1.08".	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required: check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ 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 <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No indicators of wetland hydrology present.	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Upland LE-2

<p><u>Tree Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;"></th> <th style="width:40%; text-align: center;">Absolute % Cover</th> <th style="width:15%; text-align: center;">Dominant Species?</th> <th style="width:40%; text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Sapling Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Shrub Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: <u>0</u> 20% of total cover: <u>0</u></td></tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: <u>r=5'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;"></th> <th style="width:40%; text-align: center;">Absolute % Cover</th> <th style="width:15%; text-align: center;">Dominant Species?</th> <th style="width:40%; text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Dactylis glomerata</u></td><td style="text-align: center;"><u>45</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>2. <u>Poa pratensis</u></td><td style="text-align: center;"><u>25</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>3. <u>Setaria faberi</u></td><td style="text-align: center;"><u>10</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>UPL</u></td></tr> <tr><td>4. <u>Zea mays</u></td><td style="text-align: center;"><u>10</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>N/A</u></td></tr> <tr><td>5. <u>Galium aparine</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>6. <u>Juncus effusus</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACW</u></td></tr> <tr><td>7.</td><td></td><td></td><td></td></tr> <tr><td>8.</td><td></td><td></td><td></td></tr> <tr><td>9.</td><td></td><td></td><td></td></tr> <tr><td>10.</td><td></td><td></td><td></td></tr> <tr><td>11.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: <u>50</u> 20% of total cover: <u>20</u></td></tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: center;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table>		Absolute % Cover	Dominant Species?	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Indicator Status	1. <u>Dactylis glomerata</u>	<u>45</u>	<u>Yes</u>	<u>FACU</u>	2. <u>Poa pratensis</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	3. <u>Setaria faberi</u>	<u>10</u>	<u>No</u>	<u>UPL</u>	4. <u>Zea mays</u>	<u>10</u>	<u>No</u>	<u>N/A</u>	5. <u>Galium aparine</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	6. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	7.				8.				9.				10.				11.				_____ = Total Cover				50% of total cover: <u>50</u> 20% of total cover: <u>20</u>				1.				2.				3.				4.				5.				_____ = Total Cover				50% of total cover: _____ 20% of total cover: _____				<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)</p> <hr/> <p>Prevalence Index worksheet:</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%; text-align: center;">Total % Cover of:</th> <th style="width:50%; text-align: center;">Multiply by:</th> </tr> </thead> <tbody> <tr><td>OBL species <u>0</u></td><td>x 1 = <u>0</u></td></tr> <tr><td>FACW species <u>5</u></td><td>x 2 = <u>10</u></td></tr> <tr><td>FAC species <u>0</u></td><td>x 3 = <u>0</u></td></tr> <tr><td>FACU species <u>75</u></td><td>x 4 = <u>300</u></td></tr> <tr><td>UPL species <u>20</u></td><td>x 5 = <u>100</u></td></tr> <tr><td>Column Totals: <u>100</u> (A)</td><td><u>410</u> (B)</td></tr> </tbody> </table> <p style="text-align: center;">Prevalence Index = B/A = <u>4.1</u></p> <hr/> <p>Hydrophytic Vegetation Indicators:</p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> 2 - Dominance Test is >50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0¹</p> <p><input type="checkbox"/> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p><small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small></p> <hr/> <p>Definitions of Five Vegetation Strata:</p> <p>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).</p> <p>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p>Woody vine – All woody vines, regardless of height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>75</u>	x 4 = <u>300</u>	UPL species <u>20</u>	x 5 = <u>100</u>	Column Totals: <u>100</u> (A)	<u>410</u> (B)
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SOIL

Sampling Point: Upland LE-2

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<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
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<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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

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

Remarks:

No indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lee Extension 138 kV Transmission Line City/County: Athens County Sampling Date: 3/8/2022
 Applicant/Owner: AEP State: OH Sampling Point: Wetland LE-3
 Investigator(s): B. Rolfes Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR N Lat: 39.2212 Long: -82.1877 Datum: NAD83
 Soil Map Unit Name: Upshur silty clay loam, 15 to 25 percent slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Wetland data point corresponding to Wetland LE-3, in depressional area downstream from man-made agricultural pond. Recent rainfall on 3/7/2022 - approximately 1.08".	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> 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) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>8</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Wetland LE-3

<p><u>Tree Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;"></th> <th style="width:10%; text-align: center;">Absolute % Cover</th> <th style="width:10%; text-align: center;">Dominant Species?</th> <th style="width:10%; text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td>6. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Sapling Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td>6. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p><u>Shrub Stratum</u> (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td>6. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: <u>0</u> 20% of total cover: <u>0</u></td></tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: <u>r=5'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;"></th> <th style="width:10%; text-align: center;">Absolute % Cover</th> <th style="width:10%; text-align: center;">Dominant Species?</th> <th style="width:10%; text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Phalaris arundinacea</u></td><td style="text-align: center;"><u>35</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>FACW</u></td></tr> <tr><td>2. <u>Juncus effusus</u></td><td style="text-align: center;"><u>30</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>FACW</u></td></tr> <tr><td>3. <u>Lysimachia terrestris</u></td><td style="text-align: center;"><u>15</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>OBL</u></td></tr> <tr><td>4. <u>Carex vulpinoidea</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>OBL</u></td></tr> <tr><td>5. <u>Rosa multiflora</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>6. <u>Poa pratensis</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>7. _____</td><td></td><td></td><td></td></tr> <tr><td>8. _____</td><td></td><td></td><td></td></tr> <tr><td>9. _____</td><td></td><td></td><td></td></tr> <tr><td>10. _____</td><td></td><td></td><td></td></tr> <tr><td>11. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: <u>47</u> 20% of total cover: <u>19</u></td></tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table>		Absolute % Cover	Dominant Species?	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Indicator Status	1. <u>Phalaris arundinacea</u>	<u>35</u>	<u>Yes</u>	<u>FACW</u>	2. <u>Juncus effusus</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	3. <u>Lysimachia terrestris</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	4. <u>Carex vulpinoidea</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	5. <u>Rosa multiflora</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	6. <u>Poa pratensis</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	7. _____				8. _____				9. _____				10. _____				11. _____				_____ = Total Cover				50% of total cover: <u>47</u> 20% of total cover: <u>19</u>				1. _____				2. _____				3. _____				4. _____				5. _____				_____ = Total Cover				50% of total cover: _____ 20% of total cover: _____				<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)</p> <hr/> <p>Prevalence Index worksheet:</p> <p>Total % Cover of: _____ Multiply by:</p> <p>OBL species _____ x 1 = _____</p> <p>FACW species _____ x 2 = _____</p> <p>FAC species _____ x 3 = _____</p> <p>FACU species _____ x 4 = _____</p> <p>UPL species _____ x 5 = _____</p> <p>Column Totals: _____ (A) _____ (B)</p> <p>Prevalence Index = B/A = _____</p> <hr/> <p>Hydrophytic Vegetation Indicators:</p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input checked="" type="checkbox"/> 2 - Dominance Test is >50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0¹</p> <p><input type="checkbox"/> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <hr/> <p>Definitions of Five Vegetation Strata:</p> <p>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).</p> <p>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p>Woody vine – All woody vines, regardless of height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____</p>
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WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lee Extension 138 kV Transmission Line City/County: Athens County Sampling Date: 3/8/2022
 Applicant/Owner: AEP State: OH Sampling Point: Upland LE-3
 Investigator(s): B. Rolfes Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 3
 Subregion (LRR or MLRA): LRR N Lat: 39.2212 Long: -82.1878 Datum: NAD83
 Soil Map Unit Name: Upshur silty clay loam, 15 to 25 percent slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Non-wetland data point corresponding to Wetland LE-3, on adjacent slope within fenced in pasutreland. Recent rainfall on 3/7/2022 - approximately 1.08".	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required: check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ 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)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology present.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: Upland LE-3

<p>Tree Stratum (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;"></th> <th style="width:40%;">Absolute % Cover</th> <th style="width:15%;">Dominant Species?</th> <th style="width:10%;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p>Sapling Stratum (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table> <p>Shrub Stratum (Plot size: <u>r=15'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: <u>0</u> 20% of total cover: <u>0</u></td></tr> </tbody> </table> <p>Herb Stratum (Plot size: <u>r=5'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;"></th> <th style="width:40%;">Absolute % Cover</th> <th style="width:15%;">Dominant Species?</th> <th style="width:10%;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Dactylis glomerata</u></td><td style="text-align: center;"><u>35</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>2. <u>Setaria faberi</u></td><td style="text-align: center;"><u>25</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>UPL</u></td></tr> <tr><td>3. <u>Rosa multiflora</u></td><td style="text-align: center;"><u>10</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>4. <u>Cirsium vulgare</u></td><td style="text-align: center;"><u>10</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>5. <u>Trifolium repens</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>6. <u>Poa pratensis</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>7.</td><td></td><td></td><td></td></tr> <tr><td>8.</td><td></td><td></td><td></td></tr> <tr><td>9.</td><td></td><td></td><td></td></tr> <tr><td>10.</td><td></td><td></td><td></td></tr> <tr><td>11.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: <u>45</u> 20% of total cover: <u>18</u></td></tr> </tbody> </table> <p>Woody Vine Stratum (Plot size: <u>r=30'</u>)</p> <table style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1.</td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: _____ 20% of total cover: _____</td></tr> </tbody> </table>		Absolute % Cover	Dominant Species?	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(7.6 cm) or larger in diameter at breast height (DBH).</p> <p>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p>Woody vine – All woody vines, regardless of height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>25</u>	x 5 = <u>125</u>	Column Totals: <u>90</u> (A)	<u>385</u> (B)
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SOIL

Sampling Point: Upland LE-3

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 ¹	Loc ²		
0-6	10YR 5/4	100					clay loam	

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

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) (LRR N) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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Restrictive Layer (if observed): Type: <u>Rock</u> Depth (inches): <u>6</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

No indicators of wetland hydrology.

APPENDIX

C OEPA ORAM DATA FORMS

Background Information

Name:	Philip Renner
Date:	11/11/2021
Affiliation:	WSP USA
Address:	312 Elm Street; Cincinnati, OH
Phone Number:	937.570.7691
e-mail address:	philip.renner@wsp.com
Name of Wetland:	Wetland LE-1
Vegetation Community(ies):	PEM
HGM Class(es):	Depression
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
<p>Please refer to attached mapping.</p>	
Lat/Long or UTM Coordinate	39.223296, -82.187650
USGS Quad Name	Albany
County	Athens
Township	Alexander
Section and Subsection	
Hydrologic Unit Code	05030204-08-02
Site Visit	X
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	

Scoring Boundary Worksheet

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

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

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

Narrative Rating

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

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

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

Table 1. Characteristic plant species.

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

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

Site: Lee Extension	Rater(s): P. Renner	Date: 11/11/2021
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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), shrub land, young second growth forest. (5)
 - MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
 - HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

7	9
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)
- 3b. Connectivity. Score all that apply.
- 100 year floodplain (1)
 - Between stream/lake and other human use (1)
 - Part of wetland/upland (e.g. forest), complex (1)
 - Part of riparian or upland corridor (1)
- 3c. Maximum water depth. Select only one and assign score.
- >0.7 (27.6in) (3)
 - 0.4 to 0.7m (15.7 to 27.6in) (2)
 - <0.4m (<15.7in) (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- Semi- to permanently inundated/saturated (4)
 - Regularly inundated/saturated (3)
 - Seasonally inundated (2)
 - Seasonally saturated in upper 30cm (12in) (1)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- None or none apparent (12)
 - Recovered (7)
 - Recovering (3)
 - Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

7	16
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	
<input checked="" type="checkbox"/> mowing	<input checked="" type="checkbox"/> shrub/sapling removal
<input checked="" type="checkbox"/> grazing	<input checked="" type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input checked="" type="checkbox"/> sedimentation
<input checked="" type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

16
subtotal this page

Site: Lee Extension	Rater(s): P. Renner	Date: 11/11/2021
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16

subtotal first page

0	16
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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)

1	17
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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) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

17

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES NO ✓	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO ✓	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO ✓	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO ✓	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO ✓	If yes, Category 1.
	Question 6. Bogs	YES NO ✓	If yes, Category 3.
	Question 7. Fens	YES NO ✓	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO ✓	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO ✓	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO ✓	If yes, Category 3
Question 11. Relict Wet Prairies	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	7	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE	17	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

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

Final Category

Choose one	Category 1 ✓	Category 2	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brad Rolfes	
Date:	3/8/2021	
Affiliation:	WSP USA	
Address:	312 Elm Street; Cincinnati, OH	
Phone Number:	859-321-1058	
e-mail address:	brad.rolfes@wsp.com	
Name of Wetland:	Wetland LE-2	
Vegetation Community(ies):	PEM	
HGM Class(es):	Depression	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.		
<p>Please refer to attached mapping.</p>		
Lat/Long or UTM Coordinate	39.2192, -82.1950	
USGS Quad Name	Albany	
County	Athens	
Township	Alexander	
Section and Subsection		
Hydrologic Unit Code	05030204-08-02	
Site Visit	X	
National Wetland Inventory Map	X	
Ohio Wetland Inventory Map		
Soil Survey	X	
Delineation report/map		

Name of Wetland: Wetland LE-2	
Wetland Size (acres, hectares):	0.28
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score :19	Category: 1

Scoring Boundary Worksheet

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

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

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

Narrative Rating

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

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

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

Table 1. Characteristic plant species.

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

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

Site: Lee Extension	Rater(s): B. Rolfes	Date: 3/8/2022
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Wetland LE-2

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)

3	4
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), shrub land, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

8	12
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)

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input 	<ul style="list-style-type: none"> <input type="checkbox"/> point source (nonstormwater) <input checked="" type="checkbox"/> filling/grading <input checked="" type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other
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6	18
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"> <input checked="" type="checkbox"/> mowing <input checked="" type="checkbox"/> grazing <input checked="" type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input checked="" type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> shrub/sapling removal <input checked="" type="checkbox"/> herbaceous/aquatic bed removal <input checked="" type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment
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18
subtotal this page

Site: Lee Extension	Rater(s): B. Rolfes	Date: 3/8/2022
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18

subtotal first page

0	18
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)

1	19
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.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

19

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES NO ✓	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO ✓	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO ✓	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO ✓	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO ✓	If yes, Category 1.
	Question 6. Bogs	YES NO ✓	If yes, Category 3.
	Question 7. Fens	YES NO ✓	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO ✓	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO ✓	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO ✓	If yes, Category 3
Question 11. Relict Wet Prairies	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	8	
	Metric 4. Habitat	6	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	1	
	TOTAL SCORE	19	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

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

Final Category

Choose one	Category 1 ✓	Category 2	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Brad Rolfes
Date:	3/8/2021
Affiliation:	WSP USA
Address:	312 Elm Street; Cincinnati, OH
Phone Number:	859-321-1058
e-mail address:	brad.rolfes@wsp.com
Name of Wetland:	Wetland LE-3
Vegetation Community(ies):	PEM
HGM Class(es):	Depression
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
<p>Please refer to attached mapping.</p>	
Lat/Long or UTM Coordinate	39.2212, -82.1877
USGS Quad Name	Albany
County	Athens
Township	Alexander
Section and Subsection	
Hydrologic Unit Code	05030204-08-02
Site Visit	X
National Wetland Inventory Map	X
Ohio Wetland Inventory Map	
Soil Survey	X
Delineation report/map	

Scoring Boundary Worksheet

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

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

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

Narrative Rating

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

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

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

Table 1. Characteristic plant species.

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

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

Site: Lee Extension	Rater(s): B. Rolfes	Date: 3/8/2022
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Wetland LE-3

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)

3	4
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), shrub land, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

10	14
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)

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input 	<ul style="list-style-type: none"> <input type="checkbox"/> point source (nonstormwater) <input checked="" type="checkbox"/> filling/grading <input checked="" type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

4	18
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"> <input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants 	<ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input checked="" type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input checked="" type="checkbox"/> nutrient enrichment

18
subtotal this page

Site: Lee Extension	Rater(s): B. Rolfes	Date: 3/8/2022
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18

subtotal first page

0	18
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)

1	19
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.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

19

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES NO ✓	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO ✓	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO ✓	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO ✓	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO ✓	If yes, Category 1.
	Question 6. Bogs	YES NO ✓	If yes, Category 3.
	Question 7. Fens	YES NO ✓	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO ✓	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO ✓	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES NO ✓	If yes, Category 3	
Question 11. Relict Wet Prairies	YES NO ✓	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	4	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE	19	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

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

Final Category

Choose one	Category 1 ✓	Category 2	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX

D OEPA HHEI STREAM DATA FORMS



Primary Headwater Habitat Evaluation Form

35

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

SITE NAME/LOCATION

SITE NUMBER RIVER BASIN DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft) LAT. LONG. RIVER CODE RIVER MILE

DATE SCORER COMMENTS

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

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

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<input type="text" value="92%"/>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="3%"/>
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> <input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

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

Substrate Percentage Check (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

15

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):

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

COMMENTS MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30

15

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

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

COMMENTS AVERAGE BANKFULL WIDTH (meters):

Bankfull Width Max=30

5

This information must also be completed

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

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

COMMENTS

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

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

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

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

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
 County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
 Photograph Information:
 Elevated Turbidity? (Y/N): Canopy (% open):
 Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
 Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
 Is the sampling reach representative of the stream (Y/N) If not, please explain:

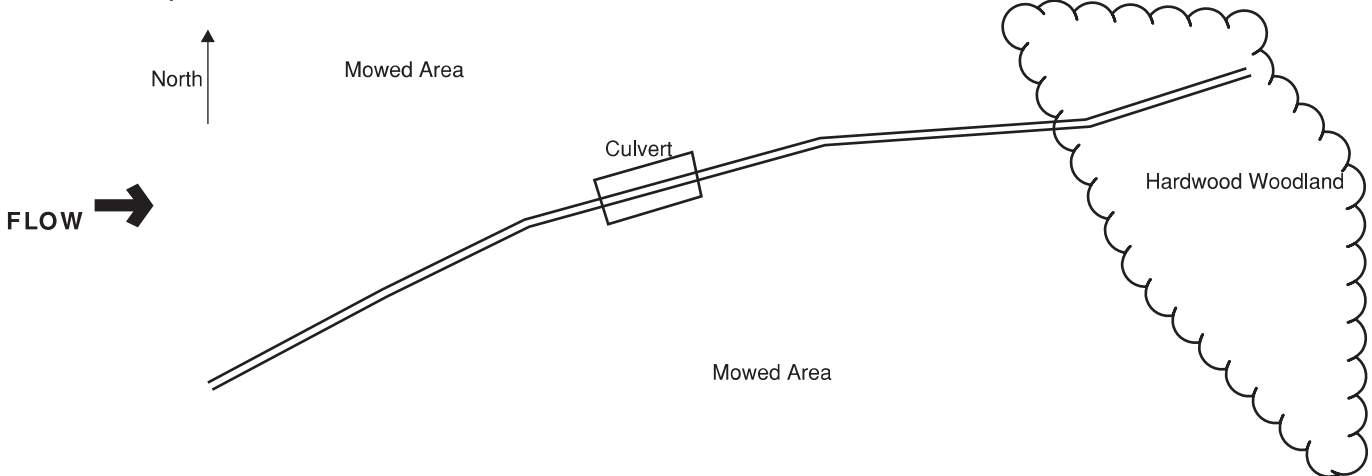
Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
 Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
 Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
 Comments Regarding Biology:

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

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





Primary Headwater Habitat Evaluation Form

18

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

SITE NAME/LOCATION

SITE NUMBER RIVER BASIN DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft) LAT. LONG. RIVER CODE RIVER MILE

DATE SCORER COMMENTS

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

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

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<input type="text" value="95%"/>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

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

Substrate Percentage Check (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

8

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):

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

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30

5

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

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

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

Bankfull Width Max=30

5

This information must also be completed

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

RIPARIAN WIDTH

FLOODPLAIN QUALITY

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

COMMENTS

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

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

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

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

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Hocking Township / City:

MISCELLANEOUS

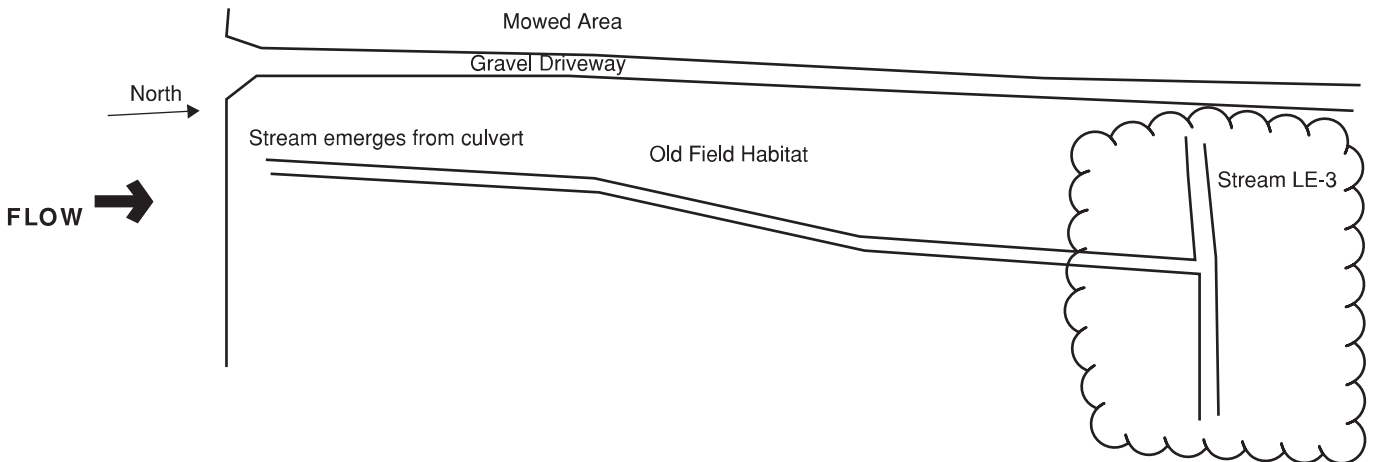
Base Flow Conditions? (Y/N): Y Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): N Canopy (% open): 100%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) 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





Primary Headwater Habitat Evaluation Form

26

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

SITE NAME/LOCATION

SITE NUMBER RIVER BASIN DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft) LAT. LONG. RIVER CODE RIVER MILE

DATE SCORER COMMENTS

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

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

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<input type="text" value="55%"/>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> <input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="35%"/>	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

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

Substrate Percentage Check (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A)

TOTAL NUMBER OF SUBSTRATE TYPES: (B)

HHEI Metric Points

Substrate Max = 40

16

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):

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

COMMENTS MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30

5

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

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

COMMENTS AVERAGE BANKFULL WIDTH (meters):

Bankfull Width Max=30

5

This information must also be completed

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

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

COMMENTS

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

Stream Flowing Moist Channel, isolated pools, no flow (Intermittent)

Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral)

COMMENTS

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

None 1.0 2.0 3.0

0.5 1.5 2.5 >3

STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

WWH Name: Distance from Evaluated Stream

CWH Name: Distance from Evaluated Stream

EWH Name: Distance from Evaluated Stream

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

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

County: Township / City:

MISCELLANEOUS

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

Photograph Information:

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

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

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

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

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

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

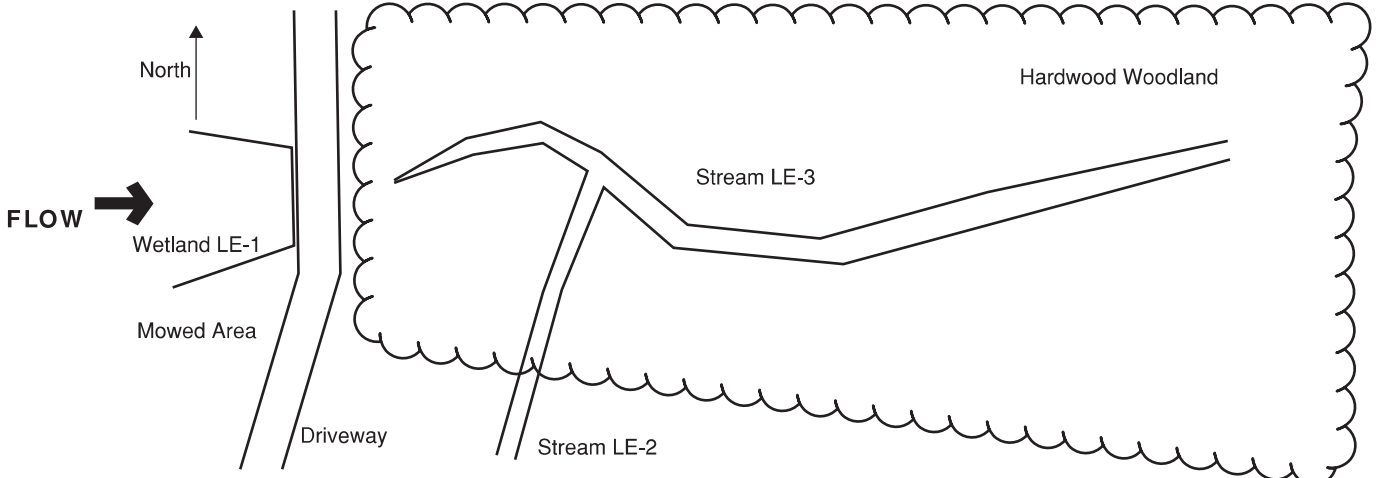
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

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

Comments Regarding Biology:

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

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



APPENDIX

E REPRESENTATIVE PHOTOGRAPHS

LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT

PHOTOGRAPH 1



Wetland LE-1 (PEM), facing north on November 11, 2021.

PHOTOGRAPH 2



Wetland LE-1 (PEM), facing south on November 11, 2021.

PHOTOGRAPH 3



Wetland LE-1 (PEM), facing east on November 11, 2021.

PHOTOGRAPH 4



Wetland LE-1 (PEM), facing west on November 11, 2021.

LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT

PHOTOGRAPH 5



Upland LE-1, facing north on November 11, 2021. Representative view of old field habitat and agricultural land.

PHOTOGRAPH 6



Upland LE-1, facing south on November 11, 2021.

LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT

PHOTOGRAPH 7



Wetland LE-2 (PEM), facing north on March 8, 2022.

PHOTOGRAPH 8



Wetland LE-2 (PEM), facing south on March 8, 2022.

PHOTOGRAPH 9



Wetland LE-2 (PEM), facing east on March 8, 2022.

PHOTOGRAPH 10



Wetland LE-2 (PEM), facing west on March 8, 2022.

PHOTOGRAPH 11



Upland LE-2, facing north on March 8, 2022.

PHOTOGRAPH 12



Upland LE-2, facing west on March 8, 2022.

PHOTOGRAPH 13



Wetland LE-3 (PEM), facing north on March 8, 2022.

PHOTOGRAPH 14



Wetland LE-3 (PEM), facing south on March 8, 2022.

PHOTOGRAPH 15



Wetland LE-3 (PEM), facing east on March 8, 2022.

PHOTOGRAPH 16



Wetland LE-3 (PEM), facing west on March 8, 2022.

LEE EXTENSION 138 KV TRANSMISSION LINE PROJECT

PHOTOGRAPH 17



Upland LE-3, facing south on March 8, 2022.

PHOTOGRAPH 18



Upland LE-3, facing north on March 8, 2022.

PHOTOGRAPH 19



Stream LE-1 (intermittent), facing upstream on November 11, 2021.

PHOTOGRAPH 20



Stream LE-1 (intermittent), facing downstream on November 11, 2021.

PHOTOGRAPH 21



Stream LE-1 (intermittent), substrate on November 11, 2021.

PHOTOGRAPH 22



Stream LE-2 (intermittent), facing upstream on March 8, 2022.

PHOTOGRAPH 23



Stream LE-2 (intermittent), facing downstream on March 8, 2022.

PHOTOGRAPH 24



Stream LE-2 (intermittent), substrate on March 8, 2022.

PHOTOGRAPH 25



Stream LE-3 (intermittent), facing upstream on March 8, 2022.

PHOTOGRAPH 26



Stream LE-3 (intermittent), facing downstream on March 8, 2022.

PHOTOGRAPH 27



Stream LE-3 (intermittent), facing upstream on March 8, 2022.

PHOTOGRAPH 28



Pond LE-1, facing northeast on March 8, 2022.

PHOTOGRAPH 29



Pond LE-2, facing north on March 8, 2022.

PHOTOGRAPH 30



Representative view of developed, open space in ESC on November 11, 2021.

PHOTOGRAPH 31



Representative view of forested habitat in ESC on November 11, 2021.

PHOTOGRAPH 32



Representative view of pasture/hayfield in ESC on March 8, 2022.

PHOTOGRAPH 33



Representative view of agricultural land in ESC on March 8, 2022.

APPENDIX

F AGENCY COORDINATION



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

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

July 27, 2021

Bradley Rolfes
WSP USA
312 Elm Street, Suite 2500
Cincinnati, Ohio 45202

Re: 21-0522; Lee Extension 138 kV Transmission Line

Project: The proposed project involves the new construction of the approximately 0.75-mile Lee Extension 138 kV Transmission Line.

Location: The proposed project is located in Alexander and Lee Townships, Athens County, Ohio.

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

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

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

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

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

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

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

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

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

Federally Endangered

club shell (*Pleurobema clava*)
fanshell (*Cyprogenia stegaria*)
pink mucket (*Lampsilis orbiculata*)
sheepnose (*Plethobasus cyphus*)
snuffbox (*Epioblasma triquetra*)

State Threatened

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

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

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

State Endangered

spotted darter (*Etheostoma maculatum*)

State Threatened

channel darter (*Percina copelandi*)

paddlefish (*Polyodon spathula*)

river darter (*Percina shumardi*)

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

The project is within the range of the timber rattlesnake (*Crotalus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species. In addition to using wooded areas, the timber rattlesnake also utilizes sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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

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

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 Sarah Tebbe, Environmental Specialist, at Sarah.Tebbe@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

Rolfes, Brad

From: Ohio, FW3 <ohio@fws.gov>
Sent: Thursday, June 10, 2021 2:47 PM
To: Rolfes, Brad
Cc: nathan.reardon@dnr.state.oh.us; Parsons, Kate
Subject: AEP Lee Extension 138 kV Transmission Line Project, Athens County, Ohio

Follow Up Flag: Flag for follow up
Flag Status: Flagged



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# 03E15000-2021-TA-1487

Dear Mr. Rolfes,

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

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

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥ 3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still

prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

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

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

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

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

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

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

Sincerely,



Patrice Ashfield
Field Office Supervisor

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

**This foregoing document was electronically filed with the Public Utilities
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Case No(s). 22-0752-EL-BLN

Summary: Correspondence Letter of Notification, Lee Extension Project.
electronically filed by Hector Garcia-Santana on behalf of AEP Ohio Transmission
Company, Inc.