Application for Certificate of Environmental Compatibility and Public Need

New Liberty-East Leipsic 138-kV Upgrade Project

OPSB Case No. 22-0856-EL-BTX

AEP OHIO TRANSMISSION COMPANY

An AEP Company

BOUNDLESS ENERGY

Submitted to

Ohio Power Siting Board

January 2023

BEFORE THE OHIO POWER SITING BOARD

Certificate Application for Electric Transmission Facilities

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Acronyms and Abbreviations

ACSR	aluminum conductor, steel-reinforced cable
AEP	American Electric Power
AEP Ohio Transco	AEP Ohio Transmission Company, Inc.
BMP	best management practice
Company	AEP Ohio Transmission Company, Inc.
dbh	diameter at breast height
DGS	Division of Geological Survey
DOE	Determination of Eligibility
DOW	Division of Wildlife
ELF	extremely low frequency
EMF	electric and magnetic field
Field Survey Area	200 feet on either side of the centerline for the Preferred Route and 50 to 200 feet on either side of the centerline for the Alternate
GIS	geographic information system
HHEI	Headwater Habitat Evaluation Index
IARC	International Agency for Research on Cancer
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ID	identification
IEEE	Institute of Electrical and Electronics Engineers
Jacobs	Jacobs Engineering Group Inc.
kcmil	thousand circular mil
kV	kilovolt
kV/m	kilovolt per meter
mG	milligauss
MHz	megahertz
MSDS	Material Safety Data Sheet
NA	not applicable
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
OHI	Ohio Historic Inventory
OHPO	Ohio Historic Preservation Office
OPSB	Ohio Power Siting Board
ORAM	Ohio Rapid Assessment Method
OSHA	Occupational Health and Safety Administration
OUPS	Ohio Utilities Protection Services
Project	East Leipsic-New Liberty 138-kV Transmission Line Project

QHEI	Qualitative Habitat Evaluation Index
ROW	right-of-way
SDS	Safety Data Sheet
SWPPP	stormwater pollution prevention plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WHO	World Health Organization

4906-5-02 PROJECT SUMMARY AND APPLICANT INFORMATION

(A) PROJECT SUMMARY

American Electric Power Ohio Transmission Company, Inc. (the "Company") plans to rebuild and upgrade the New Liberty - East Leipsic Transmission line in Putnam and Hancock Counties, Ohio. The New Liberty-East Leipsic 138-kV Upgrade Project (the "Project") involves the upgrade of approximately 18 miles of 34.5-kV or 69-kV transmission line to 138-kV standards by replacing the aging wooden poles with single-structure steel poles and new conductors. The two main components of the Project include:

- Upgrading 11 miles of existing 69-kV transmission line, between the East Leipsic Substation and the proposed Rader Road Substation, to 138-kV standards.
- Upgrading seven miles of existing 34.5-kV transmission line, between the proposed Rader Road Substation and the New Liberty Substation, to 138-kV standards.

(1) General Purpose of the Facility

The Project's purpose is to strengthen the reliability of the local electric system in Putnam and Hancock Counties by replacing infrastructure that has shown significant deterioration resulting in service interruptions. Upgrading the power line voltage ensures the transmission network supports additional electric load growth in the area. A stronger transmission grid also benefits local distribution companies and electric cooperatives who receive power from the transmission lines.

(2) General Location, Size, and Operating Characteristics

The proposed Project extends from the eastern portion of Putnam County near Leipsic, Ohio to the western boundary of Findlay in Hancock County, Ohio, and passes the northern edge of the Village of McComb. The setting is largely flat agricultural land with sparse residences or other development.

The existing transmission line begins at the Company's existing East Leipsic Substation on Road 5 in Leipsic and travels east to the existing McComb Substation (to be retired and replaced as Rader Road Substation) on County Road 126 in McComb, then continues southeast to the existing New Liberty Substation off Township Road 94 in the City of Findlay. The length of the existing transmission line between these substations is approximately 17.6 miles and will be upgraded and installed as an overhead transmission line to 138-kV standards. Figure 2-1 shows the Project area, Project endpoints, and the Preferred and Alternate Routes identified by the Company.

The existing outdated wooden poles will be replaced with steel monopole structures ranging between 75 to 95 feet in height with an approximate right-of-way (ROW) width of 100 feet supporting a single 138-kV circuit. The exact structure, height, and ROW widths may vary, subject to final engineering design.

(3) Suitability of Preferred and Alternate Routes

The Company identified a Preferred and an Alternate Route (Figure 2-1) after conducting comprehensive siting and outreach activities. The Siting Study documents the route selection process and is discussed in detail in Section 4906-5-04 of this Application.

The siting study involved the collection and evaluation of environmental, cultural, land use, and engineering data, and public input to identify potential routes for the transmission line. Potential routes were evaluated and compared to aid in selecting a Preferred Route and Alternate Route. The Preferred and Alternate Routes are both viable for construction and operation and were selected by the Company for consideration by the OPSB in this Application.

(i) Preferred Route

The Preferred Route from the existing East Leipsic Substation to the existing New Liberty Substation is approximately 16.9 miles in length and is located on the existing centerline for 12.7 miles.

The Preferred Route exits the existing East Leipsic Station to the south for 0.2 mile and turns east for approximately 4.4 miles on the south side of Road E. The route continues down Township Road 103 for 2.1 miles. The route then turns north for 0.5 mile along County Road 53, then east along Township Road 104 for 1.5 miles. The route continues south along County Road 123 for approximately 0.2 mile. It then continues east along County Road 105 for 0.8 miles where it will tie into the Proposed Rader Road Station. The Preferred Route then runs through an agricultural field for approximately one mile to the east then south in the existing ROW for 0.4 mile crossing Rader Creek. The route continues as a rebuild on centerline as it traverses through the Village of McComb Community Park for 0.3 mile then continues 1.5 miles southeast through agricultural fields. At County Road 97, the route diverts around a residential property (0.1 miles), then continues on existing centerline through an agricultural field for approximately 2.7 miles southeast. It then turns south and continues down County Road 139 for 0.5 mile, then runs east along County Road 94 for 0.7 miles where it will then tie into the New Liberty Station.

(ii) Alternate Route

The entirety of the Alternate Route from the existing East Leipsic Substation to the existing New Liberty Substation is approximately 16.7 miles in length and is located on the existing centerline for 13.3 miles.

The Alternate Route exits the existing East Leipsic Substation and runs east for approximately 4.5 miles on the south side of Road E. Along Road E, the Alternate Route diverts around a communications tower and a building associated with the Leipsic Reservoir, which adds length to the transmission line. The route continues down Township Road 103 for approximately two miles as a rebuild on or near the existing centerline. The route then turns north for 0.5 mile along County Road 53, then east along Township Road 104 for 1.5 miles. The route continues through agricultural parcels for approximately 0.9 mile before tying into the Proposed Rader Road Substation. The Alternate Route exits the Rader Road Substation to the east as a rebuild on or

near the existing centerline for approximately one mile through agricultural fields then turns south for 0.3 mile. To minimize impacts to the Village of McComb Community Park, the route turns east along the north side of an existing railroad for 0.2 mile then south for 0.2 mile, before rejoining the existing ROW. The route continues as a rebuild on or near the existing centerline through agricultural fields for approximately 4.2 miles southeast, then turns south along County Road 139 for 0.5 mile, then east along County Road 94 for 0.7 mile, where it will tie into the New Liberty Substation.

(4) Schedule

Construction of the Project is planned to begin in November 2024, and the anticipated in-service date is August 2026.

(B) APPLICANT DESCRIPTION

(1) Company History

AEP Ohio Transmission Company, Inc, or the Company, is a subsidiary of AEP. AEP is a public utility as defined by Ohio Revised Code 4905.02 and 4905.03 and is engaged in the business of supplying electric transmission and distribution service to customers in Ohio.

(2) Current Operations and Affiliate Relationships

AEP was originally incorporated in 1906 as the American Gas and Electric Company. AEP's earliest utility properties provided electric, gas and other services in communities in New Jersey, New York, Pennsylvania, West Virginia, Ohio, Indiana, and Illinois. American Gas and Electric Company became AEP in 1958 and merged with Central and Southwest Corporation in 2000.

AEP is one of the largest electric utilities in the United States, delivering electricity to nearly 5.4 million customers through 224,000 miles of distribution lines in 11 states. AEP owns the nation's largest electricity transmission system, which is a network comprised of more than 40,000 miles and includes more 765-kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined. AEP also ranks among the nation's largest generators of electricity, owning approximately 26,000 megawatts of generating capacity in the U.S. AEP's utility units operate as AEP Ohio, AEP Texas, Appalachian Power (in Virginia and West Virginia), Wheeling Power (in West Virginia), AEP Appalachian Power (in Tennessee), Indiana Michigan Power Company, Kentucky Power Company, Public Service Company of Oklahoma, and Southwestern Electric Power Company (in Arkansas, Louisiana, and east Texas). News releases and other information about the Company can be found at www.AEP.com. AEP provides electricity to nearly 1.5 million customers in Ohio. News and information about AEP can be found at www.AEPOhio.com.

4906-5-03 REVIEW OF NEED AND SCHEDULE

(A) NEED FOR PROPOSED FACILITY

The Company proposes the New Liberty – East Leipsic 138 kV Upgrade Project which consists of rebuilding approximately 18 miles of a combination of 34.5 kV and 69 kV lines between the New Liberty and East Leipsic Substations. Upgrading the line to 138 kV standards will provide a third 138 kV source into the heavily loaded industrial area around the Village of Leipsic.

The primary purpose of the Project is to address baseline reliability issues that were identified around the Leipsic area per the PJM's 2020 analysis. The Project also provides the ancillary benefit of addressing asset renewal needs on facilities in the area. The Leipsic area has seen industrial growth in the last 10 years and is currently serving approximately 115 MVA of load that primarily relies on the East Leipsic – Richland and East Lima – Yellow Creek 138 kV circuits as the major sources for the area. For the loss of these two circuits, the East Ottawa – East Leipsic 69 kV and New Liberty – McComb 34.5 kV branches as well as East Leipsic 138/69 kV transformer #3 were identified as overloading in PJM's 2020 analysis. This outage scenario results in voltages below the Company and PJM criteria at the Yellow Creek 138 kV, Newbery 138 kV, East Leipsic 138 kV, and East Ottawa 69 kV buses.

The baseline violations listed above were included in PJM's 2020 Competitive Window #3 to solicit proposals to address the issues identified in the area. After evaluation of the different proposals that were submitted during the window, PJM selected the proposed Project as the most cost-effective solution to address the area needs. The Project was presented at the PJM TEAC meetings on 11/04/2020 and 1/06/2021 and was assigned a PJM number of b3273. This Project was included in the Company's 2022 Long-Term Forecast Report on page 59 (Appendix 5-1).

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

The East Leipsic – New Liberty 34.5-kV circuit is made up of two different 34.5-kV transmission lines. The lines were originally constructed in 1934 and 1936, and current conditions indicate that the lines are reaching the end of their useful life. As an ancillary benefit of the Project, the conditions identified for these lines, which were presented to PJM stakeholders under the need identifier AEP-2020-OH020 at the 3/19/2020 SRRTEP-W meeting, will no longer require a separate project.

(1) Purpose of the Proposed Facility

The primary purpose of the Project is to address the Company's and PJM's baseline planning violations. The Project also addresses asset renewal needs in the Leipsic and McComb areas, as well as the Ottawa area further to the southwest.

The proposed solution will address the baseline planning violations by rebuilding 17.6 miles of the existing 34.5-kV and 69-kV New Liberty – East Leipsic lines to 138 kV standards. The new line will provide a third 138 kV source to the existing East Leipsic Substation which will support the customers in the area in the event the two existing 138 kV lines at the substation are out of service. The Project will also rebuild 34.5 kV lines that were originally constructed in the 1930's.

(2) System Conditions, Local Requirements, and Other Pertinent Factors

The Leipsic area has seen significant load growth in recent years, primarily due to industrial customer growth. This growth severely taxes the Findlay area 34.5 kV and Ottawa area 69 kV subtransmission networks for outages of the 138 kV feeds into the area. Per the Company and PJM's Transmission Planning Criteria, the 138 and 69 kV systems must stay within prescribed voltage and thermal loading limits under base case and various contingency scenarios. In 2020, PJM identified that the facilities in Tables 3-1, 3-2, and 3-3 would be outside these limits in future years, necessitating the proposed Project. The Project resolves the Leipsic area planning violations by replacing the East Leipsic – New Liberty 34.5 kV circuit with an East Leipsic – New Liberty circuit operated at 138 kV.

(3) Load Flow Studies and Contingency Analyses

Power flow analysis was performed using Siemens PTI PSS/E and PowerGEM's TARA power flow software. Load flow analysis identified contingency conditions resulting in Thermal overloads, Voltage magnitude, and Voltage deviation planning criteria violations according to the Company and PJM planning criteria in the greater Leipsic area. Tables 3-1, 3-2 and 3-3 below summarize the results of the load flow analysis depicting the summer, winter, and light load conditions in 2025. The tables shows circuit, branch and transformer loading percentages and voltage magnitudes and voltage deviations in per unit before and after the New Liberty – East Leipsic 138 kV Upgrade Project is in place. As shown all planning violations are resolved.

The Company's Transmission Planning Criteria for the PJM RTO (FERC Form 715 filing) are posted online at: https://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/. This document discusses thermal loading limits, voltage limits, and other topics. In summary, to meet the Company's planning criteria under applicable tests, transmission facilities must:

- Not reach a loading level that exceeds normal thermal limits under normal conditions
- Not reach a loading level that exceeds emergency thermal limits under contingency conditions
- Maintain voltage between 95% and 105% of nominal voltage under normal conditions
- Maintain voltage between 92% and 105% of nominal voltage under contingency conditions
- Not experience voltage deviations greater than 8% during contingency analysis

Table 3-1. Leipsic Area Transmission System Thermal Performance, 2025 PJM RTEP Case Conditions with the Transmission System Before Improvements in Comparison with the Proposed New Liberty – East Leipsic Project in Place

Issue	Contingency Type	Contingency	Affected Facility	2025 Base Case before Improvements (Branch Emergency loading percentage)	2025 Case After Improvements
Summer Thermal Overload	P7	East Leipsic – Richland 138kV & East Lima – Yellow Creek 138kV	East Ottawa – East Leipsic 69kV	175.61	32
			Leipsic- Deshler Tap 69kV	164.94	24
			Deshler Tap – North Leipsic 69kV	164.03	23
			North Leipsic- East Leipsic 69kV	153.77	16
			East Leipsic 138/69kV XFMR	136.66	13
			Mccomb OP – New Liberty 35kV	112.05	N/A
			Cairo – East Lima 69kV	100.77	35
	P6	Newbery – Yellow Creek 138kV & Richland – East Leipsic 138kV	East Ottawa – East Leipsic	100.86	26
	P6	East Lima – Yellow Creek 138kV & Richland – East Leipsic 138kV	East Ottawa –Leipsic	100.69	28
	P6	Richland – East Leipsic 138kV & East Lima 138/69kV XFMR	East Ottawa – East Leipsic	100.53	26

Table 3-2. Leipsic Area Transmission System Voltage Magnitude Performance, 2025 PJM RTEP Case Conditions with the Transmission System Before Improvements in Comparison with the Proposed New Liberty – East Leipsic Project in Place

Issue	Contingency Type	Contingency	Affected Facility	2025 Base Case before Improvements (Volts Per Unit)	2025 Case After Improvements (Volts Per Unit)
Summer Voltage Magnitude	P6	Richland – East Leipsic 138 & East Lima 138/69kV XFMR	Cairo 69kV	0.8147	0.98
			Columbus Grove 69kV	0.818	0.98
			East Ottawa 69kV	0.8267	1.0
			East Leipsic 69kV	0.7229	1.0
			East Leipsic #1 138kV	0.6619	0.98
			East Leipsic #2 138kV	0.6619	0.98
			Leipsic 69kV	0.7323	1.0
			Newbery 138kV	0.6604	0.98
			North Leipsic 69kV	0.7221	1.0
			Yellow Creek #1 138kV	0.6601	0.98
			Yellow Creek #2 138kV	0.6601	0.98
	P6	Richland – East Leipsic 138kV & Yellow Creek – East Lima 138kV	East Leipsic #1 138kV	0.7472	0.95
			East Leipsic #2 138	0.7472	0.95
			Newbery 138	0.7459	0.95
			Yellow Creek #2	0.7457	0.95
	P6	Richland – East Leipsic 138kV & Newbery-Yellow Creek	East Leipsic 69kV	0.8271	0.99
			East Leipsic #1 138kV	0.7781	0.97
			East Leipsic #2 138kV	0.7781	0.97
			Leipsic 69kV	0.8341	0.99

Issue	Contingency Type	Contingency	Affected Facility	2025 Base Case before Improvements (Volts Per Unit)	2025 Case After Improvements (Volts Per Unit)
			Newbery 138kV	0.777	0.97
			North Leipsic 69kV	0.826	0.99
	P7	East Leipsic – Richland 138kV & East Lima – Yellow Creek 138kV	Columbus Grove 69kV	0.9119	0.99
			East Ottawa 69kV	0.8898	0.99
			East Leipsic 69kV	0.7816	0.98
			East Leipsic #1 138kV	0.719	0.95
			East Leipsic #2 138kV	0.719	0.95
			Leipsic 69kV	0.7913	0.98
			Newbery 138kV	0.7175	0.95
			North Leipsic 69kV	0.7807	0.98
			Yellow Creek #1 138kV	0.7172	0.95
			Yellow Creek #2 138kV	0.7172	0.95
Winter Voltage Magnitude	P6	Richland – East Leipsic 138kV & Yellow Creek – East Lima 138kV	East Leipsic #1 138kV	0.9025	0.98
			East Leipsic #2 138	0.9026	0.98
			NewBery 138	0.9013	0.98
			Yellow Creek #2	0.9012	0.98
	P7	East Leipsic – Richland 138kV & East Lima – Yellow Creek 138kV	East Leipsic 69kV	0.9073	1.01
			East Leipsic #1 138kV	0.858	0.98
			East Leipsic #2 138kV	0.858	0.98
			Leipsic 69kV	.9118	1.01

Issue	Contingency Type	Contingency	Affected Facility	2025 Base Case before Improvements (Volts Per Unit)	2025 Case After Improvements (Volts Per Unit)
			Newbery 138kV	0.8564	0.98
			North Leipsic 69kV	0.9062	1.01
			Yellow Creek #1 138kV	0.8561	0.98
			Yellow Creek #2 138kV	0.8561	0.98
Light Load Voltage Magnitude	P7	East Leipsic – Richland 138kV & East Lima – Yellow Creek 138kV	Newbery 138	0.9195	1.0
			Yellow Creek #1 138	0.9192	1.0
			Yellow Creek #2 138	0.9192	1.0

Table 3-3. Leipsic Area Transmission System Voltage Deviation Performance, 2025 PJM RTEP case conditions with the Transmission System Before Improvements in Comparison with the proposed New Liberty – East Leipsic Project in Place

Issue	Contingency Type	Contingency	Affected Facility	2025 Base Case before Improvements (Voltage magnitude deviation Percentage)	2025 Case After Improvements (Voltage magnitude deviation Percentage)
Summer Voltage Deviation	P7	East Leipsic – Richland 138kV & East Lima – Yellow Creek 138kV	Columbus Grove 69kV	10.433	1.7
			Yellow Creek #1 138kV	28.938	4.1
			Yellow Creek #2 138kV	28.937	4.1
			East Leipsic #1 138kV	28.802	4.1
			East Leipsic #2 138kV	28.801	4.1
			McComb 34kV	9.227	N/A
	P6	East Lima 138/69 XFMR & East Leipsic - Richland	Cairo 69kV	21.7	0.6
			Columbus Grove 69kV	20.59	0.7
			Columbus Grove PP 69kV	20.41	0.7
			East Ottawa 69kV	19.83	0.8
			East Leipsic 69kV	29.67	1.1
			East Leipsic #1 138kV	30.42	1.2
			East Leipsic #2 138kV	30.42	1.2
			North Leipsic 69kV	29.63	1.2
			Yellow Creek #1 138kV	30.41	1.1
			Yellow Creek #2 138kV	30.41	1.1
	P6		North Leipsic 69kV	18.46	1.3
			East Leipsic 69kV	18.46	.13

Issue	Contingency Type	Contingency	Affected Facility	2025 Base Case before Improvements (Voltage magnitude deviation Percentage)	2025 Case After Improvements (Voltage magnitude deviation Percentage)
		Newbery – Yellow Creek 138kV& Richland – East Leipsic 138kV	East Leipsic #1 138kV	21.39	1.4
			East Leipsic #2 138kV	21.39	1.4
	P6	East Lima – East Leipsic 138kV & Richland – East Leipsic 138kV	East Leipsic 69kV	20.9	2.7
			East Leipsic #1 138kV	24.38	3
			East Leipsic #2 138kV	24.37	3
			North Leipsic 69kV	20.87	2.7
			Yellow Creek #2 138kV	24.39	3.1
Winter Voltage Deviation	P6	East Lima – East Leipsic 138kV & Richland – East Leipsic 138kV	East Leipsic #1 138kV	11.4	1.8
			East Leipsic #2 138kV	11.4	1.8
			Yellow Creek #2 138kV	11.42	1.8
Light Load Voltage Deviation	P7	East Leipsic – Richland 138kV & East Lima – Yellow Creek 138kV	Yellow Creek #1 138kV	9.331	1.2
			Yellow Creek #2 138kV	9.33	1.2
			East Leipsic #1 138kV	9.228	1.1
			East Leipsic #2 138kV	9.226	1.1

(4) System Performance Transcription Diagrams

A copy of the transcription diagrams with and without the proposed facility in the summer, winter and light load cases can be provided upon a request from the OPSB staff. Transcription diagrams could contain critical energy infrastructure information and are confidential.

(B) REGIONAL EXPANSION PLANS

(1) Proposed Facility in Long-Term Forecast

(a) Reference in Recent Long-Term Forecast

The Project is referenced in the Company's 2022 Long-Term Forecast Report on page 59 (Appendix 5-1).

(b) Explanation if Not Referenced

Not applicable, see Section 4906-5-03(B)(1)(a) directly above.

(c) Reference in Regional Expansion Plans

The Project was presented at the PJM TEAC meetings on 11/04/2020 and 1/06/2021. The Project was subsequently assigned a PJM number of b3273.

(C) SYSTEM ECONOMY AND RELIABILITY

The Project is necessary to address baseline reliability requirements. The replacement of aging 34.5 kV transmission lines in the area will better support existing customers and load growth in the area and will improve reliability by providing a third source to the East Leipsic Substation. The Project was not selected by PJM as a market efficiency project.

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT

Several alternative proposals were submitted to PJM to resolve the Leipsic area planning violations during the 2020 RTEP Window #3. Alternative solutions included:

- Modification to the FirstEnergy supplemental project s2246 to create a second 138 kV circuit between East Leipsic and Richland Stations;
- Reconfiguring the Ottawa area to create an East Leipsic – North Woodcock 69 kV circuit;
- Constructing greenfield 69 kV ties to FirstEnergy's Maroe Station from East Leipsic.

Both 69 kV solutions would require larger capacitor banks in the area to provide MVAR support during outages of two 138 kV circuits. Additionally the East Leipsic 138/69 kV transformer would need to be replaced with a 130 MVA unit.

PJM selected the conversion of East Leipsic – New Liberty as the most cost-effective solution to address the needs in the area. This solution was the only proposal to also address the asset

renewal needs submitted as part of AEP-2020-OH020 for the East Leipsic – Townwood and New Liberty – Townwood lines.

(E) FACILITY SELECTION RATIONALE

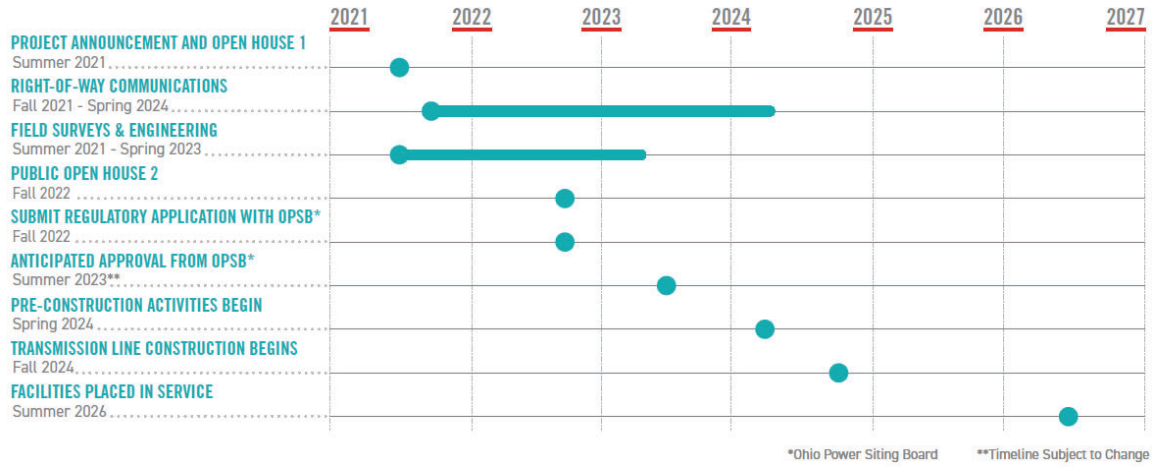
The Company's rationale for constructing the future New Liberty-East Leipsic Upgrade Project was based on PJM's baseline selection. As shown in Tables 3-1, 3-2, and 3-3, this Project resolves the Leipsic area planning violations. Other potential solutions were presented to PJM, and they selected the line conversion as the most cost effective.

(F) PROJECT SCHEDULE

(1) Gantt Schedule Bar Chart

Figure 3-1 provides the project schedule as a Gantt bar chart. Construction of the Project is planned to begin in November 2024, and the anticipated in-service date is August 2026.

Figure 3-1. Project Schedule



(2) Impact of Critical Delays

Failure to move forward with this Project will likely result in PJM implementing operational controls which may include preemptive shedding of a significant amount of load served from the area's transmission and distribution network in order to alleviate the thermal issues. Although load shedding is an approved PJM operational procedure to control thermal overloads, load shedding is not acceptable from the Company's perspective and directly impacts both large commercial and residential customers in the area.

4906-5-04 ROUTE ALTERNATIVES ANALYSIS

(A) ROUTE SELECTION STUDY

The Company, in association with its siting consultant Jacobs Engineering Group, Inc. ("Jacobs"), conducted a transmission line Siting Study for the Project (Appendix 4-1). The principal goal of the Siting Study is to minimize overall impacts on natural and human environments while avoiding indirect routes, unreasonable costs, and special design requirements. Several alternative routes were evaluated in detail and compared to aid the selection of the Preferred and Alternate Routes.

Sensitive land uses evaluated in the Siting Study included residential parcels, commercial parcels, forested areas, potential wetlands, recreational areas, places of worship, historic structures and districts, and public transportation corridors. The Study Area is rural and residential structures and businesses within the study area are sparse; therefore, this criterion did not significantly limit the placement of Alternative Routes for study. Cultural resources were sparse throughout the study area as well and did not significantly limit the development of route alternatives. Ecologically sensitive areas are sparse throughout the area, mostly limited to patches of forested land that also contain some forested wetlands. The Preferred and Alternate routes were selected such that the Project will be mostly constructed within the Company's existing transmission ROW or adjacent to existing roadways that traverse agricultural land. The Preferred and Alternate routes cross shorter distances of recreational land and commercial land.

An ecological resources inventory report and a cultural resources report will be submitted to the OPSB as part of this application. Additional information on Environmental Resources can be found in Section 4906-5-08.

The Company held two public informational meetings, the first of which was conducted in November 2021 via mailed notifications and an interactive website with instructions on how the public could provide comments or questions. The website and mailing provided information on the existing transmission line route to be rebuilt as well as the five focus areas with several route options. At the second and final public informational meeting (in-person, open house forum), the Company presented route options based on more detailed siting analysis and public feedback. The siting team made these selections through comparative evaluations based on quantitative siting criteria and qualitative criteria (such as input from landowner and municipal officials, feasibility of construction, operations, and maintenance). Following the second public informational meeting, slight adjustments were made to some of the route options based on landowner comments and further engineering design considerations. After the second informational meeting, a Preferred and Alternate Route were selected by the siting team.

(1) Study Area Description and Rationale

The proposed Project is in Liberty Township, Portage Township, Pleasant Township, and Village of McComb in Hancock County, Ohio, and Van Buren Township and Village of Leipsic in Putnam County, Ohio. The study area crosses primarily rural land and includes agricultural fields, existing maintained road and transmission ROW, sparse residential and park areas, and sparse commercial

lots. The boundaries of the study area were established to encompass all practical conceptual routes between the Project endpoints. The Study Area for the Project includes approximately 17.6 miles of existing transmission line ROW and an approximate 1,000-foot buffer to each side of the existing electrical transmission centerline. Section 3.2 Study Area Description of the Siting Study report (Appendix 4-1) provides additional rationale for the selection of the Study Area.

(2) Study Area Map

Figure 7-1 in this application provides a map at 1:24,000-scale showing the approximate boundary of the Study Area and the various land uses including residential and commercial structures.

(3) Map of Study Area, Routes, and Sites Evaluated

Maps 1, 2, and 3 in Attachment A of the Siting Study report (Appendix 4-1) illustrate the boundary of the Study Area, focus areas, study segments, and the alternative routes that were evaluated to guide the siting team in selecting the Preferred and Alternate Routes.

(4) Siting Criteria

The list of all quantitative siting constraints and opportunities used in the Siting Study are presented in Attachment B of the Siting Study report (included as Appendix 4-1). Specific evaluation criterion used to assess the alternative routes are presented in Sections 5.1 (Natural Environment), 5.2 (Human Environment), 5.3 (Historic and Archaeological Resources), and 5.4 (Constructability) of the Siting Study. The quantitative siting criteria consists of constraint and attribute data, including but not limited to ecological sensitive resources, parcel boundaries, other utility infrastructure (distribution lines, roadways, commercial antennas, etc.), number of angles, and land use features including, commercial, residential and a recreational areas.

The qualitative criteria considered by the Siting Team in selecting the Preferred and Alternate Routes included constructability factors (feasibility of construction and accessibility for future maintenance) and landowner feedback.

(5) Siting Process for Preferred and Alternate Routes

After the Study Area, siting opportunities, and siting constraints were established, the siting team identified the transmission line sections that could feasibly be rebuilt on or near the existing centerline. Additionally, five focus areas were identified where study segments (which are preliminary alternative routes for evaluation) were drawn based on specific constraints in these areas and where rebuilding on centerline may not be feasible.

For each focus area, various siting criteria were quantified for each study segment; then study segments were compared and refined. Eventually, study segments were developed into alternative routes which were then analyzed against the siting guidelines. Alternative routes were compared and assessed using the quantitative siting criteria for land use, natural and cultural resources, and engineering and construction. Ultimately, through a quantitative and qualitative analysis and comparison of the alternate routes, the siting team identified a Preferred Route and

an Alternate Route to be rebuilt on or near the existing centerline within each focus area. Outside of the defined focus areas, it is expected the Project can be rebuilt on the existing centerline.

The entire siting process, methodology, and results are described in further detail in the Siting Study report in Appendix 4-1.

(6) Route Descriptions and Rationale for Selection

The Preferred Route and Alternate Route from the East Leipsic Substation to the New Liberty Substation are 16.9 and 16.7 miles in length, respectively.

The following summarizes the rationale for selecting the Preferred Route, and thus, the route that the Siting Team considered to best minimize the overall impacts of the Project while meeting the technical, constructability, and need requirements.

The majority of the Preferred Route (and Alternate Route) is proposed to be rebuilt on or near the existing transmission line centerline and will primarily be placed outside of public road ROW. The rebuild sections account for 12.7 miles of the total project length of 16.9 miles. In areas where the Siting Team considered options to rebuild off the existing centerline, Focus Areas were developed. The Preferred Route and Alternate Route in each Focus Area are described below.

- Focus Area 1 – The Preferred Route is the most direct and shortest route, eliminating one mile of length along the existing transmission line route and with no additional impacts to residences or other sensitive resources. In order to reduce the overall length the Preferred Route requires 2.2 miles of new ROW, parallel to Road E and an agricultural field. The Preferred Route also avoids interference with a communications tower and a building associated with the Leipsic Reservoir.

  The Alternate Route shares most of the same alignment as the Preferred Route, but is aligned on the north side of Road E for 0.5 miles along existing transmission ROW. The route crosses Road E three times including a shift in the route to avoid conflicts with the communications tower. The Alternate Route involves 1.5 miles of new ROW.

- Focus Area 2 – The Preferred Route is roadside on one agricultural property owner and will avoid an encroachment where the existing line is near a residence.

  The Alternate Route is also roadside and crosses over six small parcels which coincide with existing transmission line ROW.

- Focus Area 3 – The Preferred Route avoids seven residential parcels without additional route length compared to the alternative routes considered. Additionally, a portion of the Preferred Route uses the existing centerline, thus avoiding impacts to agricultural land operations that would have resulted from the alternative routes in the western portion of Focus Area 3. The three residential parcel encroachments on the north side of the Village of McComb will be avoided with the Preferred Route, but this does result in approximately 0.75 mile of new ROW further into agricultural land.

The Alternate Route requires 0.9 miles of new ROW across agricultural land. Additionally, the route is aligned near the existing transmission line which is close to seven residences, crossing along backyards of the residential parcels.

- Focus Area 4 – The Preferred Route primarily uses the existing centerline including through the Village of McComb's community park and recreational area. The Preferred Route alignment avoids acquisition of new easements that would be required for the Alternate Route, which avoids the recreational area. The Preferred Route can be rebuilt through the park grounds in compliance with the Company's design criteria without relocation of any park buildings or facilities and thus not further impacting the recreational area.

  The Alternate Route would parallel a railroad, cross the railroad at a new point east of the existing crossing, and would require 0.41 miles of new ROW. The route avoids crossing through McComb's community park where the existing transmission line is located.

- Focus Area 5 – The Preferred Route was a result of landowner input and avoids impacts to a residence. A nearby property owner also supported the Preferred route. The Preferred Route in Focus Area 5 minimizes the route length but will require one additional dead-end angle structure.

  The Alternate Route also avoids impacts to the residence while utilizing slight angles in the alignment to avoid the need for a dead-end angle structure that is required for the Preferred Route.

Due to the rural nature of the Study Area, the characteristics of the Preferred and Alternate Routes are similar, though the opportunities and constraints of each route differ. Additional information on the project characteristics, route description, and route selection rationale is provided in the Siting Study report in Appendix 4-1. The Preferred and Alternate Routes within each Focus Area have 15.5 percent of their routes in common, which meets the requirement of Ohio Administrative Code 4906-3-05 for the routes to have not more than 20 percent of routes in common. The percentage in common was calculated based on the total cumulative lengths of the Preferred and Alternate Routes within all five Focus Areas.

(B) COMPARISON TABLE OF ROUTES, ROUTE SEGMENTS, AND SITE

Tables 3, 4 and 5 in Attachment D of the Siting Study report (Appendix 4-1) summarize the natural environment, human environment, and constructability opportunities and constraints of each alternative route considered.

(C) PUBLIC INVOLVEMENT

The Company conducted a public information program to communicate Project planning details, seek feedback from landowners and residents, the media, and local elected officials, and to generally raise awareness of the Project. The program involved conducting two public informational meetings to seek feedback from the community on the Project and the routes being

considered. Additionally, several meetings were held with local municipal officials representing Hancock County, Putnam County, the Village of McComb, and the Village of Leipsic.

(1) First Public Informational Meeting

Starting March 2020, the COVID-19 pandemic limited in-person meetings; therefore, the public informational meeting was modified to an online meeting format to limit large in-person gatherings.

On September 30, 2021, the Company mailed informational packets to the landowners who own property crossed by the focus area study segments, as well as owners of adjacent parcels. The packet included a Project fact sheet (which illustrates general facts about the Project and provides the Project website), individual map identifying their property, information on our siting and right-of-way process, and a comment card with a postage-paid return envelope. Landowners who own property crossed by the rebuild, as well as owners of adjacent parcels, received an introduction letter and Project fact sheet.

The Company hosted a virtual open house with an interactive map and website to inform the public of the Project and receive feedback on the study segments within the five focus areas. The virtual open house was hosted online (www.AEPOhio.com/EastLeipsic-NewLiberty) from September 30 to October 29, 2021. Four landowners expressed concerns on impacts to farm operations and preferred using the existing transmission line. Another comment was received from the Village of East Leipsic notifying the Company of the town's plans to run a water utility line along County Highway E. Within Focus Area 4 (McComb's community park and reservoir area) a landowner stated that poor drainage issues existed along specific study segments near the railroad, and they preferred the transmission line be placed along State Route 613.

Within Focus Area 5 (a more residential area), two homeowners provided feedback during the comment period. One expressed concern that soil compaction would cause damage to their fields during construction. The other homeowner lives along a study segment on County Road 97 and stated they prefer not to have the transmission line along the road opposite their house. Both homeowners preferred the study segments that involved rebuilding on or very near the existing transmission line alignment, where there is an existing residential encroachment.

(2) Second Public Informational Meeting

On October 6, 2022, the Company held a second public informational meeting in person at Findlay Elks Lodge located at 900 West Melrose Avenue in Findlay, Ohio. This meeting was required per the OPSB rules for certificate applications for electric transmission facilities pursuant to O.A.C. 4906-3-03, which provides that an applicant must conduct a public informational meeting no more than 90 days prior to submitting a certificate application for the Project. The Company presented the "existing transmission line to be rebuilt" and "route options for transmission line to be built." Twenty-eight (28) property owners, municipal officials and other members of the community attended the informational meeting. Nine written comments were submitted to the Company at the meeting. All comments were supportive of the Project and provided constructive

input. The owner of the property (nearest to the existing transmission line) within Focus Area 5 proposed a new route alternative for the Company's consideration. The mayor of the Village of McComb stated that their council members prefer the alternative route outside of the McComb Community Park where the existing transmission line is located. After the second public informational meeting, minor adjustments were made to the routes based on specific landowner concerns and engineering design constraints.

4906-5-05 PROJECT DESCRIPTION

(A) PROJECT AREA DESCRIPTION

The map included in this section provides a description of the Project area's geography, topography, population centers, major industries, and landmarks.

(1) Project Area Map

Figure 7-1 provides a map at 1:24,000-scale, showing the land use along the Preferred and Alternate Routes for the Project. This map includes a 1,000-foot buffer on each side of the Preferred and Alternate transmission centerlines (hereafter referred to as the 2,000-foot corridor). These maps depict the Preferred and Alternate routes; existing transmission lines; roads and railroads; major institutions; publicly owned parks and recreational areas; existing gas pipeline and electric transmission line corridors; and population centers and legal boundaries of cities, villages, townships, and counties. There are named streams including Yellow Creek, but no named lakes, canals, and rivers in the Project area. The map uses the Findlay, McComb, and Leipsic (2022) USGS 7.5-minute topographic quadrangles as base maps.

The information on the map was updated by reviewing digital, georeferenced aerial photography, property parcel data from the Putnam and Hancock County Auditor's Offices, and field reconnaissance conducted in July 2021 and March 2022. The aerial photographs are georeferenced, ortho-corrected color images derived from ESRI ArcGIS Online.

(2) Proposed Right-of-Way, Transmission Length, and Properties Crossed

The proposed ROW widths along the Preferred and Alternate Routes vary for a total width between 80 and 100 feet. The ROW widths vary to limit impacts to adjacent properties or to allow the pole structures to be outside of the road ROW boundary, where possible.

Table 5-1 provides information about the Preferred and Alternate Route ROW acreage, length, and properties crossed based on the proposed centerline.

Table 5-1. Right-of-way Area, Length, and Number of Properties Crossed for the Preferred and Alternate Routes

	Route Alternatives	
	Preferred	Alternate
Proposed ROW area (in acres)	199.6	197.1
Length (in miles)	16.9	16.7
Number of properties crossed (by ROW)	160	188
Number of new or supplemented easements required (by parcel)	147	176

(B) ROUTE OR SITE ALTERNATIVE FACILITY LAYOUT AND INSTALLATION

(1) Site Clearing, Construction, and Reclamation

The following paragraphs provide information on the clearing, construction methods, and reclamation operations for the Project.

(a) Surveying and Soil Testing

The selected transmission line route will be surveyed to establish the centerline, ROW, and pole locations. The surveying will be completed using conventional or aerial methods. Topographic features and man-made structures near the approved route that may affect the design will be identified during the survey. Minimal clearing of small trees and brush may be required if the surveyor's line of sight is obstructed. Offsets will be used to survey around large trees and other large obstructions. Profile measurements of the topography will be obtained by conventional or aerial methods. The centerline and ROW will be staked prior to construction.

Soil and rock tests will be performed along portions of the final approved route, if foundations for poles are necessary. Augured test borings will be achieved using a machine-driven auger at least 4-inches in diameter. Soil samples will be obtained at approximately 2.5-foot intervals for the first 10 feet, 5-foot intervals below 10 feet, and at any change in subsurface strata. Sampling will include split barrel samples in non-cohesive soils and thin-walled tube samples in cohesive soils. Typically, the testing will be performed to a depth of 30 to 40 feet. If rock is encountered, a carbide-tipped bit will be drilled 5 to 10 feet into the rock.

(b) Grading and Excavation

Soil surface grading for the Project is not anticipated. Some laydown and set-up areas for construction equipment may require minor local leveling, but this will be restricted to the immediate area. It is anticipated that most self-supporting steel monopole structures will be installed by direct-embed methods. Due to site-specific requirements, some poles may require concrete pier foundations. The excavation for each pier foundation will be approximately 4 to 8 feet in diameter and 20 to 35 feet deep. A portion of the excavated soil will be used for backfill around the foundation, and the excess soil material will be placed around the pole or hauled offsite to an approved spoils disposal site.

(c) Construction of Temporary and Permanent Access Roads and Trenches

Construction access will be required for installation of the pole structures and stringing of the conductor cable or wire. Access roads will require the landowner's input and approval. Preliminary access roads for the Preferred Route are presented on Figures 8-2 through 8-3. Note that these access roads cannot be fully planned and identified until after a final route is approved followed by the Company's contact with affected landowners for transmission line easements. Where access across wetlands or streams is necessary, timber mats or equivalent will be used to minimize the environmental impacts. If field conditions necessitate the modification of the finalized access road locations during construction, the concurrence of the property owner will be

obtained, necessary environmental field studies will be performed, and necessary permits will be updated.

(d) Laying of Cable

During wire stringing operations, areas along the transmission line will be used as setup locations for the wire pulling equipment (such as conductor reels, groundwire reels, and the wire tensioner). Conductor installation will be accomplished using the tension stringing method. Lightweight cables or ropes will be fed through the stringing sheaves mounted on the poles. Conductors will be pulled through under sufficient tension to keep the conductor off the ground to prevent any damage to the conductor. Temporary guard or clearance poles will be used as a safety precaution at locations where the conductors could create a hazard to either crewmembers or the public. The locations and heights of clearance poles will be such that conductors are held clear of other electric distribution lines, communication cables, railroads, and roadways. The stringing operation will be under the observation of transmission line construction crewmembers at all times. The observers will be in radio or visual contact with the operator of the stringing equipment.

(e) Installation of Electric Transmission Line Poles and Structures, Including Foundations

The rebuild will involve replacing the existing wooden poles with steel monopole structures ranging between 75 to 95 feet in height with an approximate right-of-way (ROW) width of 55 feet (where the line is adjacent to road ROW) to 100 feet supporting a single 138-kV circuit. All medium to heavy angle locations may require installation of one concrete foundation with full length anchor bolt cages. The excavation for each concrete foundation will be approximately 4.5 to 8 feet in diameter and 20 to 35 feet deep. The exact structure, height, and ROW widths may vary subject to final engineering design.

(f) Post-Construction Reclamation.

Topsoil at pole excavations will be stockpiled when necessary and protected from erosion. Topsoil will be redistributed over disturbed areas to foster re-vegetation following construction (except in wetland areas). Restoration, including temporary and permanent seeding, will be coordinated with the construction activities to provide re-vegetation and soil stabilization at the earliest reasonable time. Following construction, all pole locations, material storage sites, and temporary access roads will be restored and seeded with a suitable grass seed mixture that will be specified in the erosion and sediment control plan.

Re-vegetation techniques will enhance the ROW for use as possible wildlife habitat. Where stream banks are disturbed, they will be restored by planting of low-growing species, where necessary, to reduce bank erosion. Lawn or garden areas, or paved areas damaged during the construction of the transmission line, will be restored to original condition. Landscaping or landscape plantings damaged during construction will also be restored to original condition or replaced as directed by the affected property owner. After restoration is complete, the Company will periodically inspect the ROW to identify areas of erosion, sedimentation, and inadequate re-vegetation conditions, if any. If such conditions are identified, corrective actions will be implemented.

(2) Facility Layout

(a) Transmission Line Route Map

Figures 8-2 and 8-3 show maps at 1:10,000-scale of the Preferred and Alternate Routes, respectively. These maps illustrate the data required by O.A.C. 4906-5-05(A)(1). Although the additional information required by O.A.C. 4906-5-05(B)(2)(a) (for example, pole structure locations) will not be finalized until a final route is approved by the OPSB and the final engineering design is complete, preliminary locations are provided for the Preferred Route as illustrated in Figure 8-2. The data and information defined in O.A.C. 4906-5-05 (B)(2)(a) includes temporary access roads and proposed locations of transmission line poles and buildings. No fenced-in or secured areas are planned for the Project.

The Company is currently identifying staging areas and laydown areas for the Project. To date, none have been identified within the Project area. After sites are identified, the Company will provide final locations that support this Project.

(b) Proposed Layout Rationale

A detailed description of the reasons for the proposed layout (i.e., the Preferred and Alternate Routes) are presented in the Siting Study (Appendix 4-1).

(c) Plans for Future Modifications

Except as otherwise described in this Application, the Company currently has no plans for future modifications of the proposed Project.

(C) DESCRIPTION OF PROPOSED TRANSMISSION LINES OR PIPELINES

(1) Electric Power Transmission Lines

(a) Design Voltage

The East Leipsic – Rader Road 138-kV Transmission Line and Rader Road – New Liberty 138-kV Transmission Line will be designed for and operated at 138 kV.

(b) Tower Designs, Pole Structures, Conductor Size and Number per Phase, and Insulator Arrangement

The majority of the line will be composed of tangent monopole structures with an alternating configuration (Figure 5-1) with an estimated aboveground height of 75 to 95 feet. The conductor used for the new transmission line will be 1 - 795 thousand circular mil (“kcm”) 26/7 strand aluminum conductor steel-reinforced cable (“ACSR”) conductor per phase. This conductor has a maximum strength of approximately 31,500 pounds (“lbs.”). The new line will use one 7#8 Alumoweld Shield Wire. The 7#8 Alumoweld has a maximum strength of 15,930 lbs. Both the phase conductors and the shield wire will be installed in accordance with the latest version of the National Electric Safety Code. The conductors will be supported by aluminum clamps which will be attached to the insulators. Aluminum suspension clamps will support the shield wires. At dead-

end locations, compression dead-end clamps will be used on both the conductor and the shield wire.

(c) Base and Foundation Design

All medium to heavy angle locations may require installation of one concrete foundation with full length anchor bolt cages. The excavation for each concrete foundation will be approximately 4.5 to 8 feet in diameter and 20 to 35 feet deep.

(d) Cable Type and Size, where Underground

No underground cables are associated with this Project; therefore, this section is not applicable.

(e) Other Major Equipment or Special Structures

No other major equipment or special structures are required for the Project.

(2) Diagram of Electric Power Transmission Substations

No electrical power transmission substations are associated with this specific Project; therefore, this section is not applicable.

4906-5-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP OF PROPOSED FACILITY

The Company will construct, own, operate, and maintain the proposed 138-kV transmission line.

(B) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR ELECTRIC POWER TRANSMISSION FACILITY ALTERNATIVES

The Company is instructed to submit estimates of applicable capital and intangible costs for a variety of components of the Project. Each of the enumerated components is included in Table 6-1. The table also includes estimates of applicable intangible and capital costs for both the Preferred and Alternate Routes of the Project. The items marked as not applicable (-) are components that do not apply to this Project.

Table 6-1. Estimates of Applicable Intangible and Capital Costs for Both the Preferred and Alternate Routes

FERC Account Number	Description	Preferred Route	Alternate Route
350	Land and Land Rights	$612,000	$767,000
352	Structures and Improvements	-	-
353	Substation Equipment	-	-
354	Towers and Fixtures	-	-
355	Poles and Fixtures	$6,914,000	$7,809,000
356	Overhead Conductors and Devices	$2,605,000	$2,606,000
357	Underground Conductors and Insulation	-	-
358	Underground-to-Overhead Conversion Equipment	-	-
359	ROW Clearing and Roads, Trails or Other Access	$2,000	5,000
TOTAL		**10,133,000**	**11,187,000**

FERC = Federal Energy Regulatory Commission

(C) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR GAS TRANSMISSION FACILITY ALTERNATIVES

This Application is for an electric transmission line; therefore, this section is not applicable.

(D) PUBLIC INTERACTION AND ECONOMIC IMPACT

This section of the Application provides information on public interaction and the economic impact of each of the route alternatives.

(1) Counties, Townships, Villages, and Cities within 1,000 feet

Both routes, including all areas within 1,000 feet of the centerlines, are in the Village of Leipsic, Village of McComb, Van Buren Township, Pleasant Township, Portage Township, Liberty Township, and the City of Findlay.

(2) Public Officials Contacted

The Company contacted several local officials to discuss the Project. Appendix 6-1 provides a list of the local public officials, including their office addresses and office telephone numbers, who have been contacted to date or will be provided a digital or hard copy of the Application.

(3) Planned Public Interaction

The Company's planned public interaction included mailing letters to residents, tenants, and elected officials, issuing a public notice and a news release to the local media, creating a project website and hosting two public informational open houses. During the construction of the Project, the Company will maintain updates on its website, retain ROW land agents that discuss Project timelines, construction and restoration activities, and convey this information to affected owners and tenants. Copies of informational materials available at the public open houses are included in Appendix 6-2.

During the construction of this Project, the Company will maintain Project updates on its website, retain ROW land agents to discuss Project timelines, construction and restoration activities, and convey this information to affected owners and tenants. Copies of informational materials available at the public open house are included in Appendix 6-2.

Throughout the duration of the Project, the public may contact Maggie Beggs, Project Outreach Specialist, at 380-205-5178, or e-mail mrbeggs@aep.com to ask questions or provide comments. To access the Project's website, visit https://aeptransmission.com/ohio/NewLiberty-EastLeipsic/.

The public can access copies of this Application by:

- Going to the local Library
- Going to http://opsb.ohio.gov/ and search for the Project's case number

The Company is logging comments and information provided through its public interaction program.

At least seven days prior to any construction activities, a ROW agent from the Company will notify the landowner or the tenant by mail, telephone, or in person, depending on landowner preference.

(4) Liability Insurance or Compensation

The Company's insurance program for construction and operation of the proposed facility is outlined below

- The Company maintains bodily injury and property damage liability insurance with limits of at least $1,000,000 for each occurrence.
- The Company is a qualified self-insuring employer under the State of Ohio Worker's Compensation law. The Company maintains insurance as required by the Industrial Commission of Ohio statutes.

(5) Tax Revenues

The Preferred and Alternate Routes are located within Hancock and Putnam Counties. Local school districts, park districts, and fire departments will receive tax revenue from the Project. The Company will pay property taxes on utility facilities in each jurisdiction. The approximate annual property taxes associated with the Preferred and Alternate Routes over the first year after the Project is completed are approximately $431,000 and $476,000, respectively.

Based on the 2021 tax rates, the following information in Table 6-2 includes preliminary estimates for these taxing authorities:

Table 6-2. Estimates of Tax Revenue for Both the Preferred and Alternate Routes

County	Levy	Preferred	Alternate
Hancock	Findlay-Hancock Co Public Library	500	600
	Hancock Co. Park District	4,700	5,200
	Hancock County	54,300	60,800
	Liberty Benton Lsd	43,000	48,000
	Liberty Twp	4,100	4,600
	Mc Comb Lsd	155,200	174,000
	Mccomb Corp	400	-
	Mccomb Public Library District	4,800	5,400
	Northwest Hancock Fire District	9,800	11,000
	Pleasant Twp	4,700	5,200
	Pleasant Twp Exc Mc Comb Corp	5,500	6,400
	Pmp Jt Ambulance District	21,400	24,000
	Portage Twp	4,200	4,700
Hancock Total		312,600	349,900
Putnam	Leipsic Corp	1,600	1,600
	Leipsic Lsd	79,200	84,200
	Putnam County	24,700	26,300
	Van Buren Twp	4,500	4,700
	Van Buren Twp Exc Belmore & Leipsic	8,800	9,400
Putnam Total		118,800	126,200
Grand Total		**431,400**	**476,100**

4906-5-07 HEALTH AND SAFETY, LAND USE, AND REGIONAL DEVELOPMENT

(A) HEALTH AND SAFETY

(1) Compliance with Safety Regulations

The construction and operation of the Project will comply with the requirements specified in the North American Electric Reliability Corporation's mandatory Reliability Standards, the National Electrical Safety Code, and the Public Utilities Commission of Ohio, and will meet all applicable safety standards established by the OSHA.

Safety is the highest priority for the Company. Our priority towards employee and public safety is exemplified by the Company's policy as stated in the Company Safety Manual:

> *The Company system holds in high regard the safety and health preservation of its employees. Accidents injure people, damage equipment, destroy materials, and cause needless personal suffering, inconvenience, and expense. We believe, "No operating condition or urgency of service can ever justify endangering the life of anyone."*
>
> *To this end, we will constantly work toward the following:*
>
> - *The maintenance of safe and healthful working conditions,*
> - *Consistent adherence to proper operating practices and procedures designed to prevent injuries and illnesses,*
> - *Conscientious observance of governmental and company safety regulations.*

The Company also administers a contractor safety program. Contractors are required to maintain internal safety programs and to provide safety training.

(2) Electric and Magnetic Fields

In accordance with the OPSB requirements specified in O.A.C 4906-5-07(A)(2), the following subsections discuss the analysis of electric and magnetic fields (EMFs) associated with the Project.

(a) Calculated Electric and Magnetic Field Strength Levels

EMF calculations for winter normal conductor rating, emergency line loading, and normal maximum loading are provided for the proposed single-circuit line configuration representative of the most common structure design planned for the Project. This configuration, representing the steel monopole design, is shown in Figure 5-1. EMF levels were computed within the ROW of the line configuration at the point of minimum ground clearance, where EMF is the highest. Lower EMF levels are expected beyond the ROW edge. Because the line configurations associated with the Preferred and Alternate Routes are identical, EMF levels produced by these configurations in any route selected for the Project would be the same.

Factors that affect EMF include the ROW width, operating voltage, current flow magnitude, phase configuration, conductor height above ground, electrical unbalance, and other nearby objects. Nominal voltages and balanced conditions are assumed, with line conductors arranged in a configuration depicted in Figure 5-1. No trees, shrubs, buildings, or other objects that can block EMF are assumed in proximity to the proposed line.

All calculations were obtained at the height of 3.28 feet (1 meter) above ground using the Electric Power Research Institute (EPRI) EMF Workstation computer program. 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.

Our results, calculated using EPRI's EMF Workstation 2015 software, are summarized below. Study was performed for the Both East Leipsic – Rader Road 138 kV Line (Table 7-1) and Rader Road - New Liberty 138 kV Line (Table 7-2) sections separately.

Table 7-1. EMF Calculations for East Leipsic – Rader Road 138 kV Line

Condition	Circuit Load (amperes)	Phasing Arrangement	Ground Clearance (ft)	Electric Field (kV/m)*	Magnetic field (mG)*
New Liberty-East Leipsic 138-kV Circuit					
(1) Normal Max. Loading^	61.57	A-B-C	28.6	0.27/1.25/0.24	1.89/6.68/2.09
(2) Emergency Line Loading^^	442.74	A-B-C	25	0.28/1.57/0.25	14.44/60.94/16.07
(3) Winter Conductor Rating^^^	105.13	A-B-C	28.6	0.27/1.25/0.24	3.23/11.4/3.56

*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.

Ft= feet; kV/m = kilovolt per meter; mG = milligauss

^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.

Table 7-2. EMF Calculations for Rader Road – New Liberty 138 kV Line

Condition	Circuit Load (amperes)	Phasing Arrangement	Ground Clearance (ft)	Electric Field (kV/m)*	Magnetic field (mG)*
New Liberty-East Leipsic 138-kV Circuit					
(1) Normal Max. Loading^	61.57	A-B-C	27.6	0.60/1.55/0.60	3.71/13.73/3.74
(2) Emergency Line Loading^^	442.74	A-B-C	23.8	0.61/2.01/0.61	28.55/126.89/28.79
(3) Winter Conductor Rating^^^	105.73	A-B-C	27.6	0.60/1.55/0.60	6.34/23.45/6.39

*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.
Ft= feet; kV/m = kilovolt per meter; mG = milligauss
^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.

In accordance with O.A.C. 4905-5-07 (2)(a), EMF strength values are provided for the most utilized pole configuration for the Project. Additional pole and conductor configurations were not modeled because the 11 residences located within 100 feet of the Preferred Route centerline (and 18 residences located within 100 feet of the Alternate Route centerline) do not constitute more than 10 percent of the total line length or more than one mile of the total line length being certificated.

(b) Current State of EMF Knowledge

Electric and magnetic fields occur naturally in the environment. An electric field is present between the earth and its atmosphere, and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields commonly are measured in kilovolts per meter (kV/m); higher voltages produce stronger electric fields. Magnetic fields are created by the flow of current in a wire. As current increases, the magnetic field strength also increases; these fields are measured in units known as gauss, or milligauss (mG).

Electric fields are blocked by trees, shrubs, buildings, and other objects. Magnetic fields are not easily blocked; they can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, many epidemiologic studies examined the possible role of

magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to replicate those results consistently in other studies. Similarly, inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table 7-3.

Table 7-3. Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
AC Adapters	3	1.4 – 863	0 -7.5	0 – 0.8
Blood Pressure Monitors	4	4.2 – 39.6	0 – 0.3	0 -0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 – 779	0.3 – 6.5	0.8 – 40.9
Compact Fluorescent Bulbs	15	0 – 32.8	0 – 0.1	0 – 0.6
Compact Fluorescent Bulb Ballast	1	8.5 – 23.5	0 – 0.1	0 -0.1
Computers, Desktop	3	3.8 – 68.9	0 – 1.1	0.1 – 0.5
Computers, Laptop	4	0 – 5.1	0	0 – 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 – 29.6	0 – 0.2	0
Dimmer Switches	4	11.5 – 32.1	0 – 0.8	0 – 0.8
DVD Players	5	0 – 28.9	0 – 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 – 4642	17.1 - 155	28.3 – 61.5
Electric Toothbrushes	5	3.6 – 742	0 – 4.8	3.6 - 742
Electric Toothbrush Chargers	5	0 – 4.2	0	0
External Hard Drives	4	0.6 – 1.7	0	0
Gaming Consoles	10	0 – 215	0 – 0.5	0 – 0.6
GPS, Handheld	5	0 – 0.1	0	0
Hobby Tools	2	126 – 438	1.4 – 2.4	1.4 – 438
Hot Glue Guns	3	0 – 0.9	0	0
LCD Computer Monitors	4	0 – 4.5	0	0
LCD Televisions	4	1.1 – 3.9	0 – 2.5	0 – 0.6

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
Massagers/Massage Chairs	3	81.9 – 500	0.6 – 2.3	214 – 500
MP3 Players	5	0	0	0
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 – 4841	0.5 – 102	0.5 – 33.4
Plasma Televisions	2	45.1 – 73.6	1.4 – 2.2	0 – 0.1
Power Tools – Corded	3	784 – 982	8.8 – 31.3	46.8 - 123
Power Tools – Cordless	6	9.0 – 227	0 – 2.2	0 – 13.7
Printers	5	0.1 – 6.2	0 – 0.3	0 – 0.3
Scanners	3	0.6 – 6.7	0 – 0.3	0
Security System Panels	3	0 – 0.3	0	0
Tankless Hot Water Heater	1	10.1 – 21.9	1.2	0.2
Track Lighting	5	0.2 – 4.0	0 – 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 – 2226	0.6 – 23.3	0.1 – 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 – 0.5	0	0 – 0.3

Source: Electric Power Research Institute, 2010

As part of the National Energy Policy Act of 1992, U.S. Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) program. The National Institute of Environmental Health Sciences (NIEHS) was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency "EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard." Nonetheless, the report stated, "this finding is insufficient to warrant aggressive regulatory concern." (NIEHS, 1999)

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection (ICNIRP) wrote in its review of the epidemiologic literature on EMF and health:

> "…given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relation to EMF exposure can be regarded as established (ICNIRP, 2001)."

In addition, in 2001, International Agency for Research on Cancer (IARC) published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power frequency "magnetic fields are 'possibly carcinogenic to humans,' based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia" (IARC, 2001). IARC assigns its "possibly carcinogenic to humans" classification (Group 2B) if there is "limited evidence" of carcinogenicity in both humans and experimental animals, or if there is "sufficient evidence" in animals, but "inadequate evidence" in humans. Group 2B includes some 285 "agents" such as coffee, pickled vegetables, carpentry, textile manufacturing, and gasoline, among others.

A comprehensive assessment of the EMF health risks was published by the World Health Organization (WHO) in 2007. In its assessment, WHO wrote: "Scientific evidence suggesting that every day, chronic, low-intensity (above 0.3-0.4 µT [microTeslas; 3-4 mG]) power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia" (WHO, 2007). It added, however:

> "…virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern (WHO, 2007)."

Regarding acute effects, WHO noted, "Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz [kilohertz] that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection for acute effects" (WHO, 2007).

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exist to support the cause-and-effect relationship.

In view of the scientific evidence, the Institute of Electrical and Electronics Engineers (IEEE) and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the public. These guidelines focus on prevention of acute neural stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6-2002 recommends the following limits as shown in Table 7-4 (IEEE, 2002).

Table 7-4. Recommended Power Frequency EMF Limits

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

* 10.0 kV/m within power line ROW

To address public concerns about EMF, the Government of Canada in 2012 updated its website with the latest knowledge on the subject. It contains the following statements on the EMF health-related risks: "Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors" (Healthy Canadians, 2012). Similarly, in 2013, the updated website of the WHO concludes: "to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health".

The Company has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject. In addition, the Company is a member of Electric Power Research Institute, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory, and exposure studies.

(c) Line Design Considerations

Design alternatives were not considered because of EMF and their strength levels. Transmission lines, when energized, generate EMF. Laboratory studies have failed to establish a material correlation between exposure to EMF and effects on human health. However, some people are concerned that EMF has impacts on human health. Because of these concerns, EMF associated with the new circuits was calculated in Tables 7-1 and 7-2. The EMF was computed assuming the highest possible EMF values that could exist along the proposed transmission line. Normal daily EMF levels will operate below these maximum load conditions. Based on studies from the National Institutes of Health, the magnetic field (mG) associated with emergency loading at the highest EMF value for this transmission line is lower than those associated with normal household appliances like microwaves, electric shavers, and hair dryers. For additional information regarding EMF, the National Institute of Health has posted information on their website:

https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

(d) EMF Public Inquiries Policy

Information on electric and magnetic fields is available on the Company's website (https://www.aepohio.com/info/projects/emf/); it describes the basics of EMF theory, scientific research activities, and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities in this Project.

The Company occasionally receives requests from customers for EMF measurements on their properties. These measurements are provided free of charge to the customers.

(3) Estimate of Radio, Television, and Communications Interference

Radio interference can be experienced in the AM broadcast band (535-1605 kilohertz [kHz]) and FM band (88-108 megahertz [MHz]), caused by transmission line gap-type discharge (1-1000 MHz). Dielectric discharge due to air ionization, known as corona, is not a concern with 138 kV transmission planned in this Project. Gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected, or additional mitigation measures can be applied to eliminate the interference source. Today's digital television signals react differently to interference than the pre-2009 analog signals. Common problems with analog television included ghosting of images, noise from weak signals, and other problems, which degraded the quality of the image and sound, although the programming was still watchable. With digital television, reception of the signal must be very nearly complete. Otherwise, audio and video are not usable. Television signals, which are transmitted at frequencies above 50 MHz, can be affected by gap discharged if received from air broadcasts (by "rabbit ears"). These problems have largely been addressed with the use of cable television.

(4) Noise from Construction, Operations, and Maintenance

(a) Blasting Activities

Dynamiting and blasting activities will not be necessary during construction of the Project.

(b) Operation of Earth Moving and Excavating Equipment

During the construction phase of the transmission line installation, a temporary increase in noise will result from the construction equipment used to install pole structures and associated equipment, and clear portions of the transmission line ROW of vegetation. Standard construction techniques will be used and procedures will comply with applicable OSHA standards. Therefore, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Project is estimated to be approximately 20 to 22 months.

(c) Driving of Piles, Rock Breaking or Hammering, and Horizontal Directional Drilling

Driving of piles is not anticipated during construction of the Project. If required, there will be a temporary increase in noise during construction only.

(d) Erection of Structures

Structures will be installed by vehicle-mounted cranes or equivalent equipment. Self-supporting steel poles will require delivery of concrete for foundation construction, where needed, including excavation work for the foundation. Any increase in noise will be temporary and likely minimal.

(e) Truck Traffic

An increase in truck traffic is anticipated during the construction of the Project for equipment access and equipment delivery. No other additional traffic is anticipated for the Project beyond periodic mowing or removal of dangerous trees from the ROW.

(f) Installation of Equipment

The equipment will be installed using standard practices and equipment. Any noise increase will be minor and temporary.

(B) LAND USE

(1) Map of the Site and Route Alternatives

Maps at 1:24,000-scale, including the area 1,000 feet on either side of the centerline, are presented as Figure 7-1 (refer to Section 4906-5-05) and include the following information:

- Centerline for the Preferred and Alternate Routes
- Existing substation locations
- Land use types, road names, structures, and incorporated areas and population centers

(2) Impact on Identified Land Uses

Land use in the Project's Study Area is primarily agricultural with some residential and commercial land uses in the center of Leipsic and McComb.

Various land use types and land use features for the Preferred and Alternate Routes are compared in Tables 7-5 to 7-7. The estimates of each land use type being crossed by the transmission line, land use within the construction ROW and the permanent ROW (linear feet, acreage, and percentages) were determined using GIS software calculations.

The potential disturbance area during construction activities (excavation for concrete foundations, equipment traffic, etc.) consists of the 80 to 100-foot-wide construction ROW. The construction ROW will be restored by paving road ROW and soil grading, seeding, and mulching where vegetation impacts occur. Thus, the permanent impact to the ROW is primarily limited to removing existing trees and other vegetation. Property owners may continue to use most of the ROW area for general uses that do not affect the safe and reliable operation of the transmission line, such as lawn maintenance.

Table 7-5. Length and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route*		Alternate Route*	
	Linear Feet	Percent	Linear Feet	Percent
Agricultural	60,906	68	58,199	60
Commercial	3,960	4	4,503	6
Industrial	0	0	0	0
Institutional	0	0	0	0
Recreational	1,614	2	96	0.1
Residential	6,402	7	8,356	11
Road Right-of-Way	16,157	18	16,781	23
Vacant	0	0	0	0
Total	**89,040**	**100%**	**87,936**	**100%**

* Numbers in the table are for the route centerlines.

Table 7-6. Acreage and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route*		Alternate Route*	
	Acreage	Percent	Acreage	Percent
Agricultural	128.9	84	128.6	83
Commercial	7.9	5	8.6	6
Industrial	0.0	0	0.0	0
Institutional	0.0	0	0.0	0
Recreational	3.7	2	1.6	1
Residential	11.2	7	14.0	9
Road Right-of-Way	1.9	1	2.7	2
Vacant	0.0	0	0.0	0
Total	**153.6**	**100%**	**155.5**	**100%**

*Numbers in the table are for the planned potential disturbance area (80 or 100 feet, dependent on location, with the exception of where road ROW overlaps the ROW).

Table 7-7. Number of Sensitive Features Within or Near the Potential Disturbance Area for the Route Alternatives

	Route Alternatives	
	Preferred	**Alternate**
Length (in miles)	16.9	16.7
Features within the Potential Disturbance Area of Route Alternatives*		
Historic Structures (OHI)	0	0
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	0
Residences	2	5
Commercial Buildings	0	1
Industrial Buildings	0	0
Schools and Hospitals	0	0
Churches and Civic Buildings	0	0
Recreational Lands	1	1
Airports	0	0
Features within 1,000 feet of Route Alternatives (centerline)		
Historic Structures (OHI)	0	0
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	1	1
Residences	209	217
Commercial Buildings	21	22
Industrial Buildings	1	1
Schools and Hospitals	0	0
Churches and Civic Buildings	1	1
Recreational Land	1	1
Airports	0	0

* The planned potential disturbance area is 80 or 100 feet, dependent on location, with the exception of where road ROW overlaps the transmission ROW.
OHI = Ohio Historic Inventory

(a) Residential

Preferred Route: The Preferred Route is within 1,000 feet of 209 residences, two of which are within the planned potential disturbance area. As shown in Table 7-6, residential land makes up seven percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of 217 residences, five of which are within the planned potential disturbance area. As shown in Table 7-6, residential land makes up 11 percent of the Alternate Route ROW.

Based on the Preferred and Alternate Routes being primarily within road ROW, the residences within the Preferred Route ROW and Alternate Route ROW will likely not be impacted by the Project.

(b) Commercial

Preferred Route: The Preferred Route is within 1,000 feet of 21 commercial buildings, none of which are within the planned potential disturbance area. As shown in Table 7-6, commercial land makes up five percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of 22 commercial buildings, one building is within the planned potential disturbance area. As shown in Table 7-6, commercial land makes up six percent of the Alternate Route ROW.

Based on the Preferred and Alternate Routes being primarily within road ROW, the Company does not anticipate any adverse impacts to commercial land uses as a result of the Project.

(c) Industrial

Preferred Route: The Preferred Route is within 1,000 feet of one industrial building which is not in the planned potential disturbance area. As shown in Table 7-6, industrial land makes up 0 percent of the Preferred Route ROW and the Preferred Route does not impact areas actively supporting industrial operations.

Alternate Route: The Alternate Route is within 1,000 feet of one industrial building, which is not in the planned potential disturbance area. As shown in Table 7-6, industrial land makes up 0 percent of the Alternate Route ROW.

As such, the Company does not anticipate any adverse impacts to industrial land uses as a result of the Project.

(d) Institutional (School, Hospitals, Churches, and Civic Buildings)

Preferred Route: The Preferred Route is within 1,000 feet of one church or civic building. No schools or hospitals were identified within 1,000 feet. No institutional buildings are located within the planned disturbance area. As shown in Table 7-6, institutional land makes up zero percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is within 1,000 feet of zero schools or hospitals and one churches or civic buildings, none of which are in the planned potential disturbance area. Based on the Alternate Route primarily being within road ROW, these structures will not be impacted by the Project. As shown in Table 7-6, institutional land makes up zero percent of the Alternate Route ROW.

As such, the Company does not anticipate any adverse impacts to institutional land uses as a result of the Project.

(e) Recreational

Recreational land (Village of McComb Community Park) is within 1,000 feet of the Preferred and Alternate Routes. The park is within the planned potential disturbance area of the Preferred and Alternate Routes. As shown in Table 7-6, recreational land makes up two percent of the Preferred and one percent of the Alternate Route ROW. The Preferred Route directly crosses the Village of McComb Community Park; however, the transmission line will be rebuilt in the existing transmission ROW and will avoid impacts to recreational equipment. As such, the Company does not anticipate any adverse impacts to recreational land uses as a result of the Project.

(f) Agricultural

As shown in Table 7-6, approximately 84 percent (128.9 acres) of the Preferred Route ROW and 83 percent (128.6 acres) of the Alternate Route ROW crosses agricultural lands. A discussion of agricultural land and Agricultural District Land is provided in Section (C) below.

(g) Vacant

No vacant land is within the planned potential disturbance area or within 1,000 feet of the Preferred and Alternate Routes. As shown in Table 7-6, vacant land makes up zero percent of the Preferred and Alternate Routes ROW.

(3) Impact to Structures

(a) Structures within 200 feet of Proposed Right-of-Way

There are 54 structures (i.e., residences, commercial, industrial, schools, hospitals, churches, civic buildings, airports, and outbuildings) within 200 feet of the Preferred Route ROW and 60 structures within 200 feet of the Alternate Route ROW. There are 35 residences within 200 feet of the Preferred Route ROW and 40 residences within 200 feet of the Alternate Route ROW. There are 16 commercial buildings within 200 feet of the Preferred Route and 16 commercial buildings within 200 feet of the Alternate Route ROW. There are no industrial buildings, schools, hospitals, churches, civic buildings or airports within 200 feet of the Preferred or Alternate Route ROWs. One recreational structure is within 200 feet of both the Preferred and Alternate Route ROWs. The remaining structures crossed include outbuildings, such as, garages and/or barns. There are 13 outbuildings within 200 feet of the Preferred Route ROW and 13 outbuildings within 200 feet of the Alternate Route ROW.

(b) Destroyed, Acquired, or Removed Buildings

Mitigation for the prohibition of the future installation of structures (by property owners or others) within the ROW and vegetative clearing and maintenance activities for the transmission line will be determined as part of the Company's acquisition of the ROW for this Project, as part of the negotiated settlement between the Company and the property owner, or as determined in appropriation proceedings. If an existing septic system in the transmission ROW is impacted by

construction, operation, or maintenance of the proposed Project, the septic system will be repaired or replaced by the Company as necessary to meet the appropriate installation requirements.

(c) Mitigation Procedures

Mitigation procedures will be implemented to minimize impacts to privately-owned structures. Mitigation measures will be determined as part of the Company's acquisition of the ROW for this Project, the negotiated settlement between the Company and the property owner, or as determined in appropriation proceedings. If an existing septic system located in the transmission ROW is impacted by construction, operation, or maintenance of the proposed Project, the septic system will be repaired or replaced by the Company as necessary.

(C) AGRICULTURAL LAND IMPACTS

The potential impacts of the Project on agricultural land use include potential damage to crops that may be present, disturbance of underground field drainage systems, compaction of soils and potential for temporary reduction of crop productivity. Agricultural land used for crop cultivation within the Preferred and Alternate Route ROWs is estimated at 128.9 acres and 128.6 acres, respectively.

(1) Agricultural Land Map

The various categories of agricultural land use and Agricultural District lands are depicted on Figure 7-2 for both the Preferred and Alternate Routes.

(2) Impacts to Agricultural Lands and Agricultural Districts

The Putnam County Auditor and Hancock County Auditor were contacted to obtain information on current Agricultural District lands records. The centerline and ROW of the Preferred Route crosses seven Agricultural District parcels. Agricultural Districts crossed are depicted in Figure 7-2. The data were received from the Putnam County Auditor on November 8, 2022 and the Hancock County Auditor on November 7, 2022. The provided data fulfill the requirement of O.A.C. 4906-5-07 (C)(1)(b), which states these data must be collected not more than 60 days prior to submittal.

(a) Acreage Impacted

Table 7-6 quantifies the affected acreage of agricultural land use (e.g., crop cultivation, Agricultural District lands, and pasture or open land). The agricultural land use was based on aerial imagery and field observations.

(b) Evaluation of Construction, Operation, and Maintenance Impacts

The following subsections include an evaluation of the impact of the construction, operation, and maintenance of the proposed transmission line and the following agricultural facilities and practices within the project area, where present.

(c) Field Operations

Field operations such as plowing, planting, cultivating, spraying, and harvesting of cultivated crops will only be interrupted for a portion of the growing season or a portion of the dormant season for agricultural operations. Property owners will be compensated for crop damages resulting from the Company's construction activities. No significant impacts to livestock operations or grazing areas are anticipated. Property owners may continue to use most of the ROW area for general uses after construction contingent upon the use having no adverse impact on the safe and reliable operation of the transmission line such as lawn maintenance, crop cultivation, and livestock.

(d) Irrigation

There are no known irrigation systems within the proposed ROW for either route. The Company will identify the presence of any such systems through contact with landowners once the final route is approved. Any system that must be relocated will be coordinated with the landowner to avoid affecting the irrigation system's operation and avoid any cost incurred by the landowner.

(e) Field Drainage Systems

Damage to field tile systems is unlikely given the installation of mostly direct-embed steel pole structures and a relatively short construction duration, but the Company will restore damaged systems to their pre-construction condition. The Company will also work with the agricultural landowners to resolve conflicts with field drainage systems and other facilities that are crossed by the Project, where necessary.

(f) Structures Used for Agricultural Operations

There are no agricultural operation structures within 200 feet of the ROW that will be adversely affected by the construction and operation of the transmission line.

(g) Agricultural Land Viability for Agricultural Districts

The Preferred Route ROW and Alternate Route ROW cross seven Agricultural District parcels. At the time of survey, most of this land was being used for agricultural purposes. Due to the limited amount of disturbance after construction in these locations, no significant impacts on the viability of the Agricultural District lands is anticipated.

(h) Mitigation Procedures

Mitigation for damage to existing crops and the compaction of soils is provided as compensation to the property owner as specified in the easement for the ROW. The specific terms of the easement regarding crop damage or soil compaction are determined as part of the Company's acquisition of the ROW for the Project, as part of the negotiated settlement between the Company and the property owner, or as determined in appropriation proceedings. Additionally, the Company and the contractors hired to work on the Project have extensive experience in transmission line construction. Both the Company and the selected contractors will work to minimize agricultural impacts during construction of the Project.

(i) Avoidance or Minimization of Damage

To minimize damage to agricultural land, the Company will place poles beyond or at the edges of agricultural fields and will primarily install single tangent poles to support the transmission line. This mitigation effort should limit disruption of plow patterns and minimize the creation of areas where weeds and other non-crops can grow in relation to construction of the transmission line. In instances where there is damage in the ROW, compensation for this limited impact will be provided to the property owner.

(ii) Field Tile System Damage Repairs

Concerns over interference with irrigation systems will be addressed on a case-by-case basis with the individual property owner. In general, the Company will provide mitigation for damage to underground drainage systems from construction, operation, and maintenance activities by repairing or replacing damaged sections of the drainage systems as necessary.

(iii) Segregation and Restoration of Topsoil

Excavated topsoil will be segregated and stockpiled where necessary to maintain long-term agricultural uses. Top soil will also be de-compacted and restored to original conditions, unless otherwise agreed to by the landowner.

(D) LAND USE PLANS AND REGIONAL DEVELOPMENT

This section of the Application provides information on land use plans and regional development.

(1) Impacts to Regional Development

This Project is expected to support regional development in Hancock County and Putnam County through increased reliability and availability of electric power to residential, commercial, institutional, and industrial users throughout the region. No negative impacts on regional development are foreseen for this Project. A more detailed discussion of the need for this Project and how it will affect regional development is included in Section 4906-5-03 of this Application.

(2) Compatibility of Proposed Facility with Current Regional Land Use Plans

Representatives from Hancock County and Putnam County were contacted for information regarding pending development plans and regional land use plans. AEP Public Outreach staff and other staff including AEP's consultants held a virtual meeting with the county representatives on May 28, 2021 and August 3, 2021. AEP was informed that the planned transmission line upgrade Project should not conflict with any regional land use development plans for Putnam or Hancock County. The county representatives were only aware of potential road improvement or repaving projects and the possible installation of a new water line near the Leipsic Reservoir in Putnam County.

(E) CULTURAL AND ARCHAEOLOGICAL RESOURCES

Cultural resource studies of the Project area were conducted on behalf of the Company. The studies included a background records check and literature review using data files from the Ohio

Historic Preservation Office (OHPO) and the completion of a Phase I archaeological survey and an architectural survey for the Preferred Route and the Alternate Route. Reports were prepared in accordance with the OHPO History/Architecture Guidelines (2014) and prepared in a manner that is suitable for review regarding Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]). The Phase I reports were submitted to the OHPO and will be provided directly to the OPSB because of the sensitive nature of the location information for archaeological sites.

Based on the desktop literature review, there are no registered landmarks of historic, religious, scenic, natural, or other cultural significance listed on the National Register of Historic Places (NRHP) within 1,000 feet of the Preferred or Alternate Routes. However, three newly identified architectural resources, six newly identified archaeological sites, and one previously identified archaeological resource are located within 1,000 feet of the Preferred or Alternate Routes. Cultural resources already in the public domain (OHI structures) are identified on Figure 7-1.

(1) Cultural Resources in Study Corridor

Cultural resources studies involved background research utilizing data files from the OHPO online mapping system for both the Preferred and Alternate Routes. In addition, a Phase I archaeological reconnaissance survey and an architectural investigation were conducted for the Preferred Route and the Alternate Route. Although there are no NHRP listed cultural resources, there are seven archaeological sites and 75 architectural resources within 1,000 feet of the Preferred Route and seven archaeological sites and 41 architectural resources within 1,000 feet of the Alternate Route.

Prior to conducting the cultural resources surveys, a 1,000-foot buffer was used to identify previously known cultural resources and to provide information on the probability of identifying cultural resources in the potential disturbance area. The OHPO online mapping database was used to review the OHI, Determinations of Eligibility, the NRHP, historic cemeteries, historic bridges, national historic landmarks, and previous cultural resources surveys.

The literature review identified one archaeological site (33PU0168) within the study corridor. The archaeological site is not considered eligible for listing on the NRHP. The archival and literature review did not identify any OHIs, NRHP listings, DOEs, OGS cemeteries, nor any previously conducted professional surveys with an architectural component.

Field investigations of the potential disturbance area of the Preferred Route and the Alternate Route were conducted in March and April 2022. The Phase I archaeological survey of the Preferred Route and the Alternative Route identified six previously unrecorded archaeological sites. They include five isolated finds and one low-density scatter. These sites are not considered to be significant and are not eligible for listing on the NRHP. No further archaeological work is deemed necessary.

The above-ground resources survey for the Preferred Route identified 75 architectural resources 50 years of age or older. Building types and styles are consistent with patterns of settlement in the area. Most of the resources are vernacular exhibiting no academic style. The resources are

primarily single-family residences dating from the mid-to-late-19th century to 1972. The field investigation confirmed that none of the OHI properties retain enough integrity or possess historic significance warranting individual NRHP nomination. Therefore, no historic properties will be affected, and no further architectural assessment is considered necessary for the Preferred Route.

The above-ground resources survey for the Alternative Route identified 41 architectural resources 50 years of age or older. Building types and styles are consistent with patterns of settlement in the area and most of the resources are vernacular exhibiting no academic style. The resources are primarily single-family residences and barns dating from the late-19th century to 1972. Survey confirmed that none of the OHI properties retain enough integrity or possess historic significance warranting individual NRHP nomination. Therefore, no historic properties will be affected, and no further architectural assessment is considered necessary for the Alternative Route.

(2) Construction, Operation, and Maintenance Impacts on Cultural Resources

Based on the results of the cultural resources desktop review and architectural and historical resources survey conducted to date, no unique impacts to known significant cultural resources associated with the construction, operation, and maintenance of the proposed Project are anticipated.

(3) Mitigation Procedures

Based on the results of the desktop review and the cultural resources surveys conducted, no impacts to known and recorded archaeological sites or historic properties are anticipated; therefore, no mitigation is proposed at this time.

(4) Aesthetic Impact

(a) Visibility of the Proposed Facility

The Project will be constructed on relatively flat terrain and may be visible to residences and along roadways. However, the majority of the Preferred and Alternate Routes parallel other existing linear infrastructure, such as roadways, railroads, and other utility corridors or use the existing ROW, where transmission line has been in-service since the 1930's. The upgraded facilities will not have a significant impact on the overall visual landscape.

(b) Facility Effect on Site and Surrounding Area

The viewshed along both the Preferred and Alternate Routes may be altered by the presence of the transmission line, as it will be constructed using more modern materials, such as steel, and will be generally taller than the existing facilities. The degree of visual impact may vary depending on exact viewpoint. The majority of the Preferred and Alternate Routes parallel other linear infrastructure, such as roadways, railroads, and other utility corridors or use the existing ROW. Aesthetic impacts are reduced in areas where the transmission line follows or replaces similar facilities as it would create an incremental visual change in the existing visual setting.

(c) Visual Impact Minimization

The ability to minimize visual impacts of the Project is constrained by engineering requirements and the existing land use. The Company has limited the potential aesthetic impacts of the transmission line to the extent possible through the route selection process, and where practical, proposes to build within existing transmission line ROW.

4906-5-08 ECOLOGICAL INFORMATION AND COMPLIANCE WITH PERMITTING REQUIREMENTS

The Company conducted a study to assess the potential effects of construction and operation of the proposed Project on the ecology of the project area. A map and literature search was conducted for a 1,000-foot buffer on either side of the centerline of both the Preferred and Alternate Routes. A field survey of ecological habitat and features was performed within 150 feet on either side of the centerline for both the Preferred and Alternate Routes (hereafter referred to as the Field Survey Area). This section describes the Company's ecological study methods and results for both the Preferred and Alternate Routes.

(A) ECOLOGICAL MAP

Maps at a scale of 1:24,000 including the 1,000 feet buffer on either side of the centerline (referred to as the 2,000-foot corridor) of the Preferred and Alternate Routes are presented as Figures 7-1 and 7-2. These maps depict the transmission line alignments, substation locations, and land use classifications, including vegetative cover. Features within 1,000 feet of the proposed routes were identified from published data and, where accessible, verified by the field ecological survey.

An ecological overview map is provided as Figure 8-1. More detailed maps at 1:10,000 scale depicting field-delineated waterbody and wetland features, lakes, ponds, reservoirs, slopes of 12 percent or greater, wildlife areas, nature preserves, and conservation areas within the 2,000-foot corridor are provided as Figures 8-2 and 8-3.

(B) FIELD SURVEY REPORT FOR VEGETATION AND SURFACE WATERS

The ecological survey of the Field Survey Area was conducted in March 2022 by the Company's consultant, Jacobs. The field survey was preceded by a review of published mapping, aerial photography, protected Federal and State-listed species lists, and ecological information within at least 1,000 feet of either side of the Preferred and Alternate Route centerlines. Map sources included USGS 7.5-minute quadrangle topographic maps, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, and U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey maps.

Published information on existing flora and fauna was requested from the ODNR-Division of Wildlife (DOW) Ohio Natural Heritage Program. This request included of records of state-listed species within one mile of the Project. The information provided by the ODNR-DOW indicated 14 records of federal- or state-threatened or endangered species, or species of special concern, within one mile of the Preferred and Alternate Routes. More detail on the data provided by the ODNR-DOW is provided in Section 4906-05-08(C)(1).

(1) Vegetative Communities, Wetlands, and Streams in Study Area

(a) Vegetative Communities

Vegetative communities and land cover types within the Field Survey Area include agricultural and pasture/hayfields, old field, scrub/shrub, forested, residential and commercial, recreational parks, and wetlands, in addition to the identified waterbodies. Approximately 9% of the Field Survey Area also included unvegetated surfaces such as roadways, railroads, and gravel lots/pads. Habitat descriptions are provided below. Details on the anticipated impacts from construction of the proposed Project are provided in Section 4906-05-08(B)(3)(a) below and in Table 8-5.

(i) Agricultural and Pasture/Hayfields

Areas currently used or recently used for farming purposes which may include existing row crops, grazing pastures, or hayfields. Corn and soybeans were observed in most of the crop fields. Livestock pastures and hayfields were dominated by a variety of grass species. The two dominant grasses observed were tall fescue (*Schedonorus arundinaceus*) and Japanese bristlegrass (*Setaria faberi*). Approximately 78% of the Field Survey Area was composed of agricultural and pasture/hayfields.

(ii) Delineated Wetlands

Areas that satisfy wetland criteria as defined in the USACE Delineation Manual (Environmental Laboratory 1987) and regional supplements. Approximately 2% of the Field Survey Area was composed of delineated wetlands. Dominant plant species typically found in wetlands crossed by the Project are listed below.

Dominant plant species observed within PEM wetlands include the following:

- Narrowleaf cattail (*Typha angustifolia*)
- Woolgrass (*Scirpus cyperinus*)
- Reed canary grass (*Phalaris arundinacea*)
- Various *Carex spp.* (e.g., *C. lurida, C. frankii, C. lupulina*)
- Common rush (*Juncus effusus*)

Dominant plant species observed within PSS wetlands include the following:

- Green ash (*Fraxinus pennsylvanica*)
- Silky dogwood (*Cornus amomum*)
- Reed canary grass (*Phalaris arundinacea*)
- Common rush (*Juncus effusus*)

Dominant plant species observed within PFO wetlands include the following:

- Red maple (*Acer rubrum*)
- Green ash (*Fraxinus pennsylvanica*) (high mortality due to Emerald Ash Borer)
- Eastern cottonwood (*Populus deltoides*)

- Shellbark hickory (*Carya laciniosa*)
- Silky dogwood (*Cornus amomum*)
- Virginia wildrye (*Elymus virginicus*)

(iii) Forested

Areas that are dominated by primarily upland forested vegetation, such as maples (*Acer* spp.), oaks (*Quercus* spp.), shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), and other upland tree species. This community may have some upland vegetation in the shrub or herbaceous strata, but the predominant vegetation is comprised of upland tree species. Approximately 4% of the Field Survey Area was composed of forested vegetation.

(iv) Old Field

Herbaceous cover exists in successional old field communities. Old-field plant communities are at the earliest stages of recolonization following disturbance. This community type is typically short-lived (less than 10 years), progressively giving way to shrub and forest communities unless periodically re-disturbed, in which case they remain as fallow fields. Old-field areas are located in inactive pastures, clear cut areas, and within occasionally maintained portions of the transmission line ROW. Dominant species included smooth brome (*Bromus inermis*), tall fescue (*Schedonorus arundinaceus*), Queen Anne's lace (*Daucus carota*), tall goldenrod (*Solidago altissima*), and common mullein (*Verbascum thapsus*). Approximately 1% of the Field Survey Area was composed of old field vegetation.

(v) Recreational Parks

Areas such as parks where the public can hike, fish, or engage in other outdoor activities. These landscaped areas contain frequently mowed grasses and forbs. Vegetation identified in recreational park properties include a variety of herbaceous grasses and forbs typically found in new field communities. The two dominant grasses observed were tall fescue (*Schedonorus arundinaceus*) and Japanese bristlegrass (*Setaria faberi*). The dominant forb species include common dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), and broadleaf plantain (*Plantago major*). The vegetation on recreational park properties are, for the most part, regularly maintained through mowing. Approximately 2% of the Field Survey Area was composed of recreational park properties.

(vi) Residential and Commercial

Areas where residential and commercial properties are present. This includes associated yards, outbuildings (garages, sheds, etc.), gardens, golf courses, and other maintained landscaped areas associated with the residential and commercial properties. These landscaped areas contain frequently mowed grasses and forbs. Vegetation identified on residential and commercial properties include a variety of herbaceous grasses and forbs typically found in new field communities. The two dominant grasses observed were tall fescue (*Schedonorus arundinaceus*) and Japanese bristlegrass (*Setaria faberi*). The dominant forb species include common dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), and

broadleaf plantain (*Plantago major*). The vegetation on the residential and commercial properties are, for the most part, regularly maintained through mowing. Approximately 8% of the Field Survey Area was composed of residential and commercial properties.

(vii) Scrub/Shrub

Areas that are dominated by primarily upland shrub vegetation, such as sumacs (*Rhus* spp.), raspberries (*Rubus* spp.), multiflora rose (*Rosa multiflora*), apple or crabapples (*Malus* spp.), hawthorns (*Crataegus* spp.), saplings of trees identified in the above upland forested species description, and other upland shrub species. This community may have some upland vegetation in the herbaceous or tree strata, but the predominant vegetation is comprised of upland shrub species. Approximately 1% of the Field Survey Area was composed of scrub/shrub vegetation.

(b) Wetlands

According to the U.S. Army Corps of Engineers (USACE), a wetland is defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of hydrophytic vegetation typically adapted for life in saturated (hydric) soil conditions.

The Company's consultant used the methodology described in the 1987 Technical Report Y-87-1, USACE Wetlands Delineation Manual (USACE, 1987) and subsequent guidance documents including the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE, 2010) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) (USACE, 2012). Additionally, each identified wetland was evaluated in accordance with the Ohio Rapid Assessment Method (ORAM) developed by Ohio Environmental Protection Agency (OEPA) (Mack, 2001). Wetlands were categorized in accordance with the latest quantitative score calibration procedure (OEPA, 2001). To identify whether potential wetlands exist along the Preferred and Alternate Routes, a desktop study of available resources was performed prior to the field wetland delineations. Resources used for the desktop survey included aerial photography, USFWS NWI maps, and the NRCS soil survey and hydric soil list for Putnam County and Hancock County which were reviewed for areas within 1,000 feet of the Preferred and Alternate Routes (NRCS, 2019).

(i) Summary of National Wetland Inventory Data

USFWS NWI data, including lakes, freshwater wetlands, and riverine areas, were mapped within 1,000 feet of the Preferred and Alternate Routes, and reviewed to guide the field ecological survey as one factor in identifying potential wetland (USFWS, 2022a). The NWI-mapped areas for the Preferred and Alternate Routes are shown on Figures 8-2 and 8-3, respectively. Table 8-1 summarizes the NWI data by wetland classification and habitat type. The actual extent and type of field-delineated wetlands along the routes are discussed in the next section.

Table 8-1. NWI Wetlands within 1,000 feet of the Preferred and Alternate Routes

Wetland Type	NWI Code	NWI Habitat Type*	Count – Preferred Route	Count – Alternate Route
Lake	L1UBHx	Lacustrine limnetic unconsolidated bottom, permanently flooded, excavated	1	1
Lake	L2UBK	Lacustrine littoral unconsolidated bottom, artificially flooded	1	1
Freshwater Emergent Wetland	PEM1C	Palustrine emergent, persistent, seasonally flooded	1	1
Freshwater Forested/Shrub Wetland	PFO1C	Palustrine forested, broad-leaved deciduous, seasonally flooded	12	12
Freshwater Pond	PUBG	Palustrine unconsolidated bottom, intermittently exposed	4	4
Freshwater Pond	PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	22	23
Riverine	R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	4	4
Riverine	R4SBC	Riverine intermittent streambed, seasonally flooded	11	11
Riverine	R5UBFx	Riverine unknown perennial unconsolidated bottom, semipermanently flooded, excavated	2	2
Riverine	R5UBH	Riverine unknown perennial unconsolidated bottom, permanently flooded	2	2
Total Number of NWI Wetlands:			**60**	**61**

Notes:
* USFWS, 2016

(ii) Field-Delineated Wetlands

Fourteen wetlands, totaling approximately 8.0 acres, were delineated within the Field Survey Area. All wetlands were identified in areas where the Preferred and Alternate Routes overlap. These field-delineated wetlands for the Preferred and Alternate Routes are mapped on Figures 8-2 and Figures 8-3, respectively. Detailed information on each wetland is provided in Table 8-2. Additional information on field methodology and classification can be found in Appendix 8-2. The anticipated temporary construction impacts, where unavoidable, on these wetlands are included in Table 8-2 and further discussed in Section 4906-5-08(B)(3)(b).

Table 8-2. Delineated Wetlands within the Environmental Field Survey Area

Wetland Name	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Preferred Route		Alternate Route	
						Acreage within Potential Disturbance Area/ROW[c]	Linear Feet Crossed by Centerline	Acreage within Potential Disturbance Area/ROW[c]	Linear Feet Crossed by Centerline
Wetland EN-01	8-2A, 8-3A	PFO	38.0	Category 2	1.14	0.32	0	0.32	0
Wetland EN-02	8-2C, 8-3C	PFO	34.5	Category 2	0.84	0.19	0	0.19	0
Wetland EN-03	8-2D, 8-3D	PEM	32.0	Category 2	<0.01	<0.01	0	<0.01	0
		PFO			0.27	0.00	0	0.01	0
Wetland EN-04	8-2G, 8-3G	PEM	16.0	Category 1	0.10	0.00	0	<0.01	0
Wetland EN-05	8-2G, 8-3G	PSS	24.0	Category 1	0.39	0.08	37	<0.01	0
Wetland EN-06	8-2G, 8-3G	PSS	25.0	Category 1	0.07	0.07	111	0.07	111
Wetland EN-07	8-2H, 8-3H	PEM	17.5	Category 1	0.54	0.24	136	0.24	136
Wetland EN-08	8-2H, 8-3H	PFO	42.5	Category 2	0.76	0.00	0	0.00	0
Wetland EN-09	8-2I, 8-3I	PFO	48.5	Category 2	0.19	0.00	0	0.00	0
Wetland EN-10	8-2I, 8-3I	PSS	25.0	Category 1	0.27	0.02	0	0.02	0
Wetland EN-11	8-2I, 8-3I	PEM	31.5	Category 2	0.35	0.34	330	0.34	330
		PFO			0.34	0.07	0	0.07	0
Wetland EN-12	8-2I, 8-3I	PFO	54.5	Category 2	0.33	0.00	0	0.00	0
Wetland EN-13	8-2I, 8-3I	PFO	42.0	Category 2	0.06	0.00	0	0.00	0
Wetland EN-14	8-2J, 8-3J	PEM	41.5	Category 2	1.00	0.99	651	0.99	651
		PFO			0.88	0.11	0	0.11	0
		PSS			0.38	0.38	301	0.38	301
Totals[d]					**8.00**	**2.81**	**1,711**	**2.74**	**1,674**

Wetland Name	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Preferred Route		Alternate Route	
						Acreage within Potential Disturbance Area/ROW[c]	Linear Feet Crossed by Centerline	Acreage within Potential Disturbance Area/ROW[c]	Linear Feet Crossed by Centerline

Notes:
a Wetland Type: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested.
b The total width of the Field Survey Area was 300 feet.
c The width of the potential disturbance area and the final maintained ROW is planned to be 80 to 100 feet.
d Total may vary slightly from the sum of their parts due to rounding.

(c) Waterbodies

(i) Field-Delineated Streams

Streams and drainage channels were delineated and assessed during the ecological survey of the Preferred and Alternate Routes. A total of 22 streams were identified within the Field Survey Area. Streams with drainage areas greater than one-square mile or maximum pool depths greater than 40 centimeters (cm) were assessed using the OEPA Qualitative Habitat Evaluation Index (QHEI). The QHEI is one measure that is used by OEPA, in association with biotic sampling, to determine a stream's aquatic life use designation in accordance with the Ohio water quality standards (OEPA, 2006). The QHEI method classifies streams based on their drainage area. Streams that drain greater than or equal to 20 square miles are classified as "larger streams," while those that drain less than 20 square miles are classified as "headwaters." Six streams were evaluated using QHEI methodology, all of which crossed both the Preferred and Alternate Routes where the routes overlapped. Field personnel completed the QHEI near the proposed centerline of the transmission line crossing when possible.

The OEPA's Headwater Habitat Evaluation Index (HHEI) is used to evaluate streams with a drainage area less than or equal to one-square mile, and maximum pools depths less than or equal to 40 cm (OEPA, 2020). The HHEI is generally used to assess Primary Headwater Habitat (PHWH) streams that typically fall under the classification of first or second-order streams. The HHEI rates a stream based on its physical habitat and uses that information to determine the biological potential of the stream. The physical habitats scored for the HHEI are substrate type, pool depth, and bank full width. Scores for Class I PHWH Streams range from 0 to 29.9; scores for Class II PHWH Streams range from 30 to 69.9; and scores for Class III PHWH Streams range from 70 to 100. A "Modified" qualifier may be added as a prefix to Class I or Class II if evidence of anthropogenic alterations, such as channelization and bank stabilization, are observed. A higher score and PHWH class correspond with a more continuous flow regime, corresponding with better quality and more diverse habitat. The flow regime determines the physical habitat of the stream and is therefore indicative of the biological communities it can support. Eleven streams were evaluated using HHEI methodology. All 11 streams were along both the Preferred and Alternate Routes where the routes overlapped. Where possible, the HHEI evaluations were completed near the proposed centerline of the transmission line crossing. Multiple HHEI evaluations were completed at streams that exhibited significant change in either flow regime, substrate, size and/or other characteristics which could potentially significantly change the stream's score.

The OEPA has established aquatic life use designations for streams throughout Ohio as outlined in the Ohio Administrative Code (OAC) Chapter 3745-1-07. There were five delineated streams that had a designated aquatic life use defined under OAC Chapter 3745-1. Jacobs defaults to the assigned OAC designations and therefore did not assess these streams.

Table 8-3. Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Max. Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Linear Feet within Field Survey Area[a]	Preferred Route		Alternate Route	
										Crossed by Centerline	Linear Feet within Potential Disturbance Area/ROW[b]	Crossed by Centerline	Linear Feet within Potential Disturbance Area/ROW[b]
Stream EN-01 UNT to Little Yellow Creek	8-2A, 8-3A	Intermittent	20	5	HHEI	43	-	Modified Class II	423	Yes	276	Yes	276
Stream EN-02 Little Yellow Creek	8-2A, 8-3A	Perennial	12	10	-	-	LRW	-	338	Yes	107	Yes	107
Stream EN-03 UNT to Yellow Creek	8-2A, 8-2B, 8-3A, 8-3B	Intermittent	9	3	HHEI	47	-	Modified Class II	301	No	0	No	0
Stream EN-04 UNT to Yellow Creek	8-2A, 8-2B, 8-3A, 8-3B	Intermittent	20	3	HHEI	31	-	Modified Class II	8,238	Yes	6,255	Yes	6,334
Stream EN-05 Yellow Creek	8-2B, 8-3B	Perennial	30	36	-	-	WWH	-	357	Yes	92	Yes	92
Stream EN-06 UNT to Yellow Creek	8-2B, 8-3B	Perennial	20	10	QHEI	29.5	-	Very Poor	394	Yes	61	Yes	61
Stream EN-07 UNT to Yellow Creek	8-2C, 8-3C	Intermittent	9	8	HHEI	58	-	Modified Class II	2,896	Yes	630	Yes	630
Stream EN-08 UNT to Yellow Creek	8-2C, 8-3C	Intermittent	8	7	HHEI	59	-	Modified Class II	172	Yes	66	Yes	66

Stream ID Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Max. Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Linear Feet within Field Survey Area[a]	Preferred Route		Alternate Route	
										Crossed by Centerline	Linear Feet within Potential Disturbance Area/ROW[b]	Crossed by Centerline	Linear Feet within Potential Disturbance Area/ROW[b]
Stream EN-09 UNT to Yellow Creek	8-2C, 8-3C	Intermittent	14	14	HHEI	58	-	Modified Class II	2,802	Yes	508	Yes	508
Stream EN-10 UNT to Yellow Creek	8-2C, 8-3C	Intermittent	9	8	HHEI	55	-	Modified Class II	325	Yes	101	Yes	101
Stream EN-11 West Creek	8-2D, 8-3D	Perennial	18	30	-	-	WHH	-	693	Yes	141	Yes	105
Stream EN-12 UNT to Needles Creek	8-2D, 8-3D	Intermittent	10	5	QHEI	32.5	-	Poor	300	Yes	60	Yes	60
Stream EN-13 UNT to Needles Creek	8-2E, 8-3E	Intermittent	8	15	QHEI	33	-	Poor	301	Yes	67	Yes	67
Stream EN-14 Needles Creek	8-2E, 8-3E	Perennial	7	10	-	-	WWH	-	300	Yes	67	Yes	67
Stream EN-15 UNT to Needles Creek	8-2F, 8-3F	Intermittent	8	5	HHEI	54	-	Modified Class II	114	No	8	No	8
Stream EN-16 UNT to Rader Creek	8-2F, 8-3F	Perennial	15	20	QHEI	54	-	Fair	466	Yes	107	Yes	107
Stream EN-17 Rader Creek	8-2G, 8-3G	Perennial	50	30	-	-	WWH	-	932	Yes	738	Yes	672

Stream ID Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Max. Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Linear Feet within Field Survey Area[a]	Preferred Route		Alternate Route	
										Crossed by Centerline	Linear Feet within Potential Disturbance Area/ROW[b]	Crossed by Centerline	Linear Feet within Potential Disturbance Area/ROW[b]
Stream EN-18 UNT to Blanchard River	8-2I, 8-3I	Intermittent	30	12	HHEI	52	-	Modified Class II	90	No	0	No	0
Stream EN-19 UNT to Blanchard River	8-2J, 8-2K, 8-3J, 8-3K	Intermittent	25	30	QHEI	56	-	Good	577	Yes	129	Yes	129
Stream EN-20 UNT to Blanchard River	8-2K, 8-3K	Perennial	12	12	QHEI	41	-	Poor	311	Yes	50	Yes	50
Stream EN-21 UNT to Blanchard River	8-2K, 8-3K	Ephemeral	1.5	3	HHEI	32	-	Modified Class II	110	No	17	No	17
Stream EN-22 UNT to Blanchard River	8-2K, 8-3K	Ephemeral	2	1	HHEI	22	-	Modified Class I	117	No	0	No	0
Total									**20,557**		**9,482**		**9,459**

Notes:
a The total width of the Field Survey Area was 300 feet.
b The width of the potential disturbance area and the final maintained ROW is planned to be 80 to 100 feet.
c Total may vary slightly from the sum of their parts due to rounding.
UNT = unnamed tributary
WWH = warmwater habitat
LRW = limited resource water

(ii) Lakes, Ponds, and Reservoirs

No major lakes or reservoirs were observed within the Field Survey Area. Six ponds totaling 1.41 acres were observed in the Field Survey Area and along the Preferred Route. Five of the ponds, totaling 1.01 acres, were along the Alternate Route. Ponds within the Field Survey Area are shown on Figures 8-2 and 8-3 and are summarized in Table 8-4.

Table 8-4. Delineated Ponds within the Field Survey Area

Feature Name	Figure	Acreage within Field Survey Area	Preferred Route		Alternate Route	
			Acreage within ROW [a]	Linear Feet Crossed by Centerline	Acreage within ROW [a]	Linear Feet Crossed by Centerline
Pond EN-01	8-2B, 8-3B	0.07	0.00	0	0.00	0
Pond EN-02	8-2C, 8-3C	0.02	0.00	0	0.00	0
Pond EN-03	8-2G, 8-3G	0.40	0.00	0	0.00	0
Pond EN-04	8-2H, 8-3H	0.45	0.22	150	0.22	150
Pond EN-05	8-2I, 8-3I	0.21	0.16	135	0.16	135
Pond EN-06	8-2J, 8-3J	0.26	0.00	0	0.00	0
Total		**1.41**	**0.38**	**285**	**0.38**	**285**

Notes:
a "0" indicates the pond is not within the ROW.
b Total may vary slightly from the sum of their parts due to rounding.

(2) Map of Facility, Right-of-Way, and Delineated Resources

Detailed maps at 1:10,000 scale depicting the delineated water features, Field Survey Area, and proposed ROW for the Preferred and Alternate Routes are provided as Figures 8-2 and 8-3, respectively.

(3) Construction Impacts on Vegetation and Surface Waters

(a) Construction Impacts on Vegetation

The construction impacts on vegetation along the Preferred and Alternate Routes will be limited to initial clearing of vegetation within the 80-foot or 100-foot ROW for the proposed transmission line and the defined access roads. Specific locations for access roads will be identified at the time of the Company transmission line easement acquisition process. Trees adjacent to the proposed ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative wastes (such as tree limbs and trunks) generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual landowner requests. The approximate vegetation impacts, based on GIS analysis, along the Preferred and Alternate Route ROWs are provided in Table 8-5.

Table 8-5. Approximate Vegetation Impacts Along the ROW

Land Use Type	Preferred Route			Alternate Route		
	Length of Route (feet)	Length of Route (miles)	Acreage within ROW	Length of Route (feet)	Length of Route (miles)	Acreage within ROW
Agricultural and Pasture/Hayfields	67,917	12.9	121.6	68,618	13.0	122.8
Delineated Wetlands	1,711	0.3	2.9	1,674	0.3	2.8
Forested	1,788	0.3	5.8	2,185	0.4	6.2
Old Field	544	0.1	0.8	369	0.1	0.5
Recreational Parks	1,551	0.3	3.6	802	0.2	1.5
Residential and Commercial	8,398	1.6	12.0	9,460	1.8	13.4
Scrub/Shrub	608	0.1	1.2	591	0.1	1.4

(b) Construction Impacts on Wetland

Preferred Route: During wetland and waterbody delineations, nine wetlands were identified along the Preferred Route within the proposed ROW (varying from 55 – 100 feet), totaling 2.9 acres. The delineated wetlands are shown on Figures 8-2A through 8-2R. Detailed information about each feature can be found in Table 8-2 in Section 4906-5-08(B)(b)(ii). Six of these wetlands are crossed by the Preferred Route centerline, totaling 1,711 linear feet. Impacts to the wetlands will be avoided by placing transmission line structures outside of wetland boundaries, where practical. Where temporary construction access through a wetland cannot be avoided, the crossing will occur during dry conditions or protective construction matting will be used to minimize impacts from construction vehicles.

Wetland ORAM categories delineated in the Preferred Route ROW are detailed below:

- Category 1 wetlands: Four Category 1 wetlands with ORAM scores ranging from 17.5 to 25 were identified within the ROW, totaling 0.41 acre. Approximately 0.17 acre of PSS wetland will be impacted during construction.

- Category 2 wetlands: Five Category 2 wetlands with ORAM scores ranging from 31.5 to 41.5 were identified within the ROW, totaling 2.4 acres. Approximately 0.38-acre of PSS wetland will be impacted during construction. Approximately 0.69 acres of PFO wetland would be impacted during construction.

- Category 3 wetlands: No Category 3 wetlands will be crossed; therefore, no construction impacts are anticipated.

Alternate Route: During wetland and waterbody delineations, ten wetlands were identified along the Alternate Route ROW (varying from 55 to 100 feet), totaling 2.8 acres. The delineated wetlands are shown on Figures 8-3A through 8-3S. Detailed information about each feature can be found in Table 8-2 in Section 4906-5-08(B)(b)(ii). Five wetlands are crossed by the centerline of the proposed Alternate Route, totaling 1,674 linear feet. Impacts to wetlands will be avoided by placing transmission line structures outside wetland boundaries, where practical. Where temporary construction access through a wetland cannot be avoided, the crossing will occur during dry conditions or matting will be used to minimize impacts.

Wetland ORAM categories delineated in the Alternate Route ROW are detailed below:

- Category 1 wetlands: Five Category 1 wetlands with ORAM scores ranging from 16 to 25 were identified within the proposed ROW, totaling 0.35 acre. Approximately 0.1 acre of PSS wetland will be impacted during construction.

- Category 2 wetlands: Five Category 2 wetlands with ORAM scores ranging from 31.5 to 41.5 were identified within the ROW, totaling 2.49 acres. Approximately 0.38-acre of PSS wetland will be impacted during construction. Approximately 0.7 acres of PFO wetland would be impacted during construction.

- Category 3 wetlands: No Category 3 wetlands will be crossed; therefore, no construction impacts are anticipated.

Through appropriate planning and permitting, care will be taken near wetlands to avoid or minimize filling and sedimentation during construction. Selective clearing will be required to remove specific types of woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line. Where wooded or forested wetlands occur within the ROW, the trees will be removed.

To minimize soil erosion and sedimentation during construction, BMPs such as silt fences and construction matting will be implemented as required during construction. Sedimentation potential at wetlands will be minimal as structure replacement outside of wetlands is preferred Construction equipment will only cross wetlands if necessary and will do so using construction matting if wet conditions require.

Disturbance of soils in wetland areas during construction will be minimized. No new permanent fill material will be placed in any wetland area. Four existing pole structures within wetlands will be replaced during construction. Installation of a pole or guy wires within a wetland will be accessed using construction matting if wet conditions exist at the time of construction. No excavation other than the boring or excavation of a hole for pole installation will be performed within the wetland. In the event that pole placement is required within a wetland, no additional fill will be placed in the wetlands beyond the placement of the pole structure and borehole backfill.

Wetland areas will be clearly staked prior to clearing to minimize incidental vehicle impacts. Other than the possibility of pole locations being in wetlands as discussed above, operation of heavy mechanized equipment is not planned within any identified wetland areas. However, some construction equipment may need to cross wetland areas on construction matting if wet conditions exist at the time. Woody vegetation in wetlands will be hand-cut by chain saws or other non-mechanized techniques to avoid soils being compacted. When necessary, rubber-wheeled vehicles, or vehicles equipped with tracks, will be used to remove vegetation debris. The Company will perform all construction work in accordance with the conditions and requirements of regulatory permits obtained for the Project.

(c) Construction Impacts on Waterbodies

The Preferred and Alternate Route centerlines both cross 17 streams. Detailed information about each feature can be found in Table 8-3 in Section 4906-05-08(B)(c)(i).

Approximately 9,482 linear feet of stream are within the Preferred Route ROW, while approximately 9,459 linear feet are within the Alternate Route ROW.

No streams will be filled or permanently impacted. Some streams may have to be crossed by construction vehicles. Final, exact pole locations have not been determined, although preliminary locations have been identified. Access paths to proposed pole locations will be evaluated when more detailed engineering is performed and landowner negotiations progress. If a new stream crossing were necessary, it would comply with one of the following three proposed methods to cross streams:

- Temporary stream ford
- Temporary culvert stream crossings
- Temporary access bridge

Temporary stream fords are proposed for crossing low quality ephemeral and intermittent streams with a drainage basin less than 1 square mile. This will involve minimum clearing necessary to gain access to the stream and for passage of construction vehicles.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting rather than grubbing to promote revegetation after construction.

- Sediment-laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management devices. Silt fences will be used as needed according to local topographic conditions.

- Following completion of the work, the areas cleared for the temporary access crossing will be stabilized through plantings of woody species where appropriate. Areas of exposed

soil will be stabilized in accordance with the stormwater pollution prevention plan (SWPPP) for the Project.

Culvert stream crossings are proposed for crossing marginal quality perennial, ephemeral, and intermittent streams with a drainage basin of less than 1 mile. These crossings may be removed or remain in place to provide maintenance access to the line (critical if service is to be reliable).

- Stream disturbance will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand-cutting techniques rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.

- Sediment laden runoff will be controlled to minimize its flow from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management devices. Silt fence will be used as needed according to local topographic conditions.

- Culvert pipes will be placed on the existing streambed to avoid a drop or waterfall at the downstream end of the pipe, which would be a barrier to fish migration. Crossings will be placed in shallow areas rather than pools.

- Culverts will be sized to be at least three times the depth of the normal stream flow at the crossing location.

- There will be a sufficient number of culvert pipes to cross the stream completely with no more than a 12-inch space between each one.

- Stone, rock, or aggregate of ODOT number 1 as a minimum size will be placed in the channel, and between culverts. To prevent washouts, larger stone may be used with gabion mattresses. No soil will be placed in the stream channel.

- After construction is complete, some rock aggregate and structures such as culvert pipes used for the crossing will be left in place if approved by the landowner. Care will be taken so that aggregate does not create an impoundment or impede fish passage. Structures such as gabion mattresses will be removed.

- Stream banks will be stabilized, and woody species planted as appropriate.

Temporary access bridges or culvert stream crossings will be used for high quality perennial, ephemeral, and intermittent streams, and streams with a drainage basin greater than one-square mile.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as

narrow as possible. Clearing will be done by hand cutting rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.

- Sediment laden runoff will be controlled to minimize flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence will be used as needed according to local topographic conditions.

- Bridges will be constructed to span the entire channel. If the channel width exceeds 8 feet, then a floating pier or bridge support may be placed in the channel. No more than one pier, footing, or support will be allowed for every 8 feet of span width. No footings, piers, or supports will be allowed for spans of less than 8 feet.

- No fill other than clean stone, free from soil, will be placed in the stream channel.

These crossings will be addressed in the Project SWPPP. Some of the access routes may be left in place for maintenance activity. Details on the proposed access road stream crossing methods will be provided to the OPSB separately.

Impacts to ponds are not anticipated by the construction, operation, or maintenance of the proposed transmission line. BMPs, including silt fence or filter sock, will be used as appropriate during construction to minimize runoff siltation.

(4) Operation and Maintenance Impacts on Vegetation and Surface Water

During construction of the transmission line along either of the proposed routes, the impacts on vegetation are anticipated to be minor. The potential impacts on woody and herbaceous vegetation along either of the proposed routes will be limited to construction and maintenance activities on areas that are being constructed outside of road ROWs. Periodic selective removal of vegetation that interferes with the operation of the transmission line will be required as maintenance. No impacts to streams or wetlands are anticipated.

(5) Mitigation Procedures

The following mitigation procedures will be used during construction, operation, and maintenance of the proposed Project to minimize the impact on vegetation. A SWPPP will also be prepared and implemented, and will be made available onsite during Project construction.

(a) Site Restoration and Soil Stabilization

A SWPPP will be developed specifically for the Project and specified BMPs will be implemented during construction to control erosion and sedimentation. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation. Seeding in non-wetland and non-agricultural areas is advantageous to control erosion on areas disturbed by construction activities.

(b) Contingency Plan Stream and Wetland Crossings

The Project does not include a stream or wetland crossing by horizontal direction drill. Therefore, a detailed frac-out contingency plan will not be required for the Project.

(c) Demarcation and Protection Methods

Wetlands, streams, and any other environmentally sensitive areas will be clearly staked, flagged, or fenced in accordance with the SWPPP prior to beginning any clearing to minimize incidental impacts. BMPs such as silt fences and construction matting will be implemented as required during construction.

(d) Procedures for Inspection and Repair of Erosion Control Measures

Procedures for inspection and repair of erosion control measures, especially after rainfall events will be outlined in the SWPPP.

(e) Stormwater Runoff Measures

BMPs, including silt fence or filter socks, will be used as appropriate during construction to minimize runoff and sedimentation. Measures to divert stormwater runoff away from fill slopes and other exposed surfaces will be outlined in the SWPPP.

(f) Vegetation Protection Methods

Vegetation that occurs within wetland areas may require periodic cutting. Maintenance cutting of woody vegetation in wetland areas would occur by hand with chain saws or other non-mechanized techniques. Cutting of woody vegetation in wetlands and near stream banks will be limited to removal of only the cut back required to safely perform construction and continue operation of the transmission line. The Company will adhere to regulatory permit requirements and conditions that will be obtained or authorized for the Project, including specifying that no mechanized clearing of vegetation be performed within the prescribed distance of a wetland or waterbody as discussed below.

(g) Clearing Methods

The Company will not conduct mechanized clearing within 25 feet of any stream and will only clear (using hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe and reliable construction and operation of the transmission line. Selective clearing will be required to remove woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line. Where wooded wetlands occur within the ROW, the trees will be removed. Trees adjacent to the proposed transmission line ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe and reliable operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on landowner requests.

(h) Expected Use of Herbicides

The Company does not anticipate using herbicides during the construction and operation of the Project.

(C) LITERATURE SURVEY OF PLANT AND ANIMAL LIFE POTENTIALLY AFFECTED

Both the Preferred and Alternate routes have potential habitat for wildlife species. Lists of commercial and recreational species were created using professional experience, wildlife siting, and ODNR-DOW documents and field guides.

Lists of protected species are typically based on their range within Putnam and Hancock Counties, as reported in correspondence from the ODNR-DOW and the review of USFWS county species distribution lists. Details on the expected impacts of construction, operation, maintenance, and mitigation procedures can be found following the threatened and endangered, commercial, and recreational species descriptions.

(1) Project Vicinity Species Descriptions Protected Species

A consultation request was submitted to the USFWS, and their e-mail response was received on April 14, 2022. USFWS confirmed that two federally listed bat species (Table 8-6) may occur in the study area and recommended avoiding tree removal wherever possible and if tree clearing cannot be avoided, clearing between October 1 and March 31.

A consultation request was submitted to the ODNR, and their e-mail response was received on April 1, 2022. ODNR stated that the entire state of Ohio is within range of four state-endangered bat species. If tree cutting must occur, ODNR-DOW recommends cutting between October 1 and March 31 and if possible, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, and trees greater than 20 inches in diameter. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. DOW also recommends that a desktop habitat assessment be conducted to determine if a potential hibernaculum is present within 0.25 miles of the project area, which would require additional coordination. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

All environmental compliance requirements and conditions will be determined through the Company's permit applications and authorizations in cooperation with the ODNR. Additional notes from ODNR's consultation letter are as follows:

- The project is within range of five listed mussel species and one listed fish species. No in-stream work is anticipated, so this Project is not likely to impacts these species.
- Kirtland's snake, a state threatened species, is not likely to be impacted based on the Project's location, type of habitat, and type of work proposed.

- The Project is within range of the black-crowned night-heron, a state threatened bird that roosts in trees near wetlands and waterbodies. ODNR recommends avoiding construction in this habitat during the nesting period of May 1 to July 31. If the habitat is not impacted, the Project is not likely to impact this species.
- The Project is within range of the least bittern, a state threatened bird that uses dense emergent wetlands. ODNR recommends avoiding construction in this habitat during the nesting period of May 1 to July 31. If the habitat is not impacted, the project is not likely to impact this species.

- The Project is within range of the northern harrier, a state endangered bird that nests in large marshes and grasslands. ODNR recommends avoiding construction in this habitat during the nesting period of April 15 to July 31. If the habitat is not impacted, the Project is not likely to impact this species.

A summary of listed species is provided in Table 8-6.

Table 8-6. Listed Species in the Project Area

Common Name (Species Name)[a, b]	Federal Status [a, b]	State Status [a, b]	General Habitat Notes	Recorded Location in Project Vicinity	Potential in Project Area
Indiana bat (*Myotis sodalis*)	Endangered	Endangered	Hibernacula = caves and mines Maternity and foraging habitat = small stream corridors with well-developed riparian woods and upland forests. Roosting habitat = live trees and/or snags ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows, and/or cavities	Presence assumed wherever suitable habitat occurs. No ODNR records within a 1-mile radius.	Yes
Northern long-eared bat *(Myotis septentrionalis*)	Threatened	Threatened	Hibernates in caves and mines; swarms in surrounding wooded areas in autumn. During late spring and summer, roosts and forages in upland forests.	Presence assumed wherever suitable habitat occurs. No ODNR records within a 1-mile radius.	Yes
Little brown bat (*Myotis lucifugus)*		Endangered	Hibernacula = Caves and mines Roosting habitat = live trees and/or snags ≥3 inches dbh that have any exfoliating bark, cracks, crevices, hollows, and/or cavities	Presence assumed wherever suitable habitat occurs. No ODNR records within a 1-mile radius.	Yes
Tricolored bat (*Perimyotis subflavus*)		Endangered	Hibernacula = Caves and mines Roosting habitat = live trees and/or snags ≥3 inches dbh that have any exfoliating bark, cracks, crevices, hollows, and/or cavities	Presence assumed wherever suitable habitat occurs. No ODNR records within a 1-mile radius of the project area.	Yes
Black-crowned night-heron (*Nycticorax nycticorax*)		Threatened	Found in wetlands and other shallow aquatic habitat and nest in small trees, saplings, shrubs, or sometimes on the ground, near bodies of water and wetlands.	No ODNR records within a 1-mile radius of the project area.	Yes
Least bittern (*Ixobrychus exilis*)		Threatened	Found in dense emergent wetlands with thick stands of cattails, sedges, sawgrass, or other semiaquatic vegetation interspersed with woody vegetation and open water.	No ODNR records within a 1-mile radius of the project area.	Yes
Northern harrier (*Circus cyaneus*)		Endangered	Nests in large marshes and grasslands and hunts over grasslands.	No ODNR records within a 1-mile radius of the project area.	Yes

Common Name (Species Name)[a, b]	Federal Status[a, b]	State Status[a, b]	General Habitat Notes	Recorded Location in Project Vicinity	Potential in Project Area
Kirtland's snake (*Clonophis kirtlandii*)		Threatened	Wet meadows and other wetlands	No ODNR records within a 1-mile radius of the project area.	Yes
Western banded killifish (*Fundulus diaphanous menona*)		Endangered	Quiet waters of lakes, ponds, sluggish streams; over sand, gravel, detritus, or submerged plants	No ODNR records within a 1-mile radius of the project area.	Yes
Clubshell (*Pleurobema clava*)	Endangered	Endangered	Found in coarse sand and gravel areas of runs and riffles in streams and small rivers.	No ODNR records within a 1-mile radius of the project area.	Yes
Rayed bean (*Villosa fabalis*)	Endangered	Endangered	Lives in smaller, headwater creeks, but sometimes is found in large rivers and wave-washed areas of glacial lakes; species prefers gravel or sand substrates and is often found in and around roots of aquatic vegetation. Adults spend their entire lives partially or completely buried in substrate.	No ODNR records within a 1-mile radius of the project area.	Yes
Purple lilliput (*Toxolasma lividum*)		Endangered	All substrates; headwaters of small to medium rivers	No ODNR records within a 1-mile radius of the project area.	Yes
Pondhorn (*Uniomerus tetralasmus*)		Threatened	Habitat includes headwater and small inland streams and is known to occur in Lake Erie.	No ODNR records within a 1-mile radius of the project area.	Yes
Black sandshell (*Ligumia recta*)		Threatened	Habitat includes headwater and small inland streams; is known to occur in Lake Erie tributaries and Ohio River tributaries.	No ODNR records within a 1-mile radius of the project area.	Yes

Notes:
a USFWS, 2022b
b ODNR-DOW, 2022a

(a) Commercial Species

Commercially important species consist of those hunted or trapped for fur or other byproducts. The following are commercially important species that may be found in the Project area. This information was obtained from ODNR-DOW Mammals of Ohio field guide (ODNR-DOW, 2016).

Coyote (*Canis latrans*): Coyotes are a very adaptable species that have prospered despite the expanding human impact. Historically, they prefer open territory, but in Ohio, they have adapted to various habitat types. This species could be found near or in the Project area; however, they are diurnal and skittish animals so it is unlikely they will be impacted by construction activities.

Raccoon (*Procyon lotor*): The raccoon is widespread in Ohio, even in many suburban and urban areas. Raccoons prefer wooded areas with water nearby. This species could be found near or in the Project area; however, they are a nocturnal species so it is unlikely they will be impacted by construction activities.

Red fox (*Vulpes vulpes*): The red fox inhabits a wide range of habitats including mixed, cultivated, and wooded areas. This species could be found near or in the Project area; however, they are nocturnal animals so it is unlikely they will be impacted by construction activities.

Striped skunk (*Mephitis mephitis*): The skunk is an adaptable animal that occupies both rural and suburban areas. Their dens may be under buildings, in open fields, on hillsides, or under logs in the woods, which may have been self-created or formerly used by other animals. This species could be found near or in the Project area; however, they are nocturnal animals so it is unlikely they will be impacted by construction activities.

Virginia opossum (*Didelphis virginiana*): This marsupial's preferred habitat is an area interspersed with woods, wetlands, and farmland; however, they are an adaptable animal that can also be found in urban and suburban areas. This species could be found near or in the Project area; however, they are nocturnal animals so it is unlikely they will be impacted by construction activities.

(b) Recreational Species

Recreational terrestrial species consist of those hunted as game. Recreational species that may be found in the project area include the following. This information was obtained from ODNR-DOW Hunting and Trapping Regulations (ODNR-DOW, 2022b).

(i) Fowl

American crow (*Corvus brachyrhynchos*): The American crow is found in all Ohio counties. They prefer habitats with open fields and trees. American crows could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

Geese: Several geese species can be found in Ohio, typically during migration: snow geese (*Chen caerulescens*), greater white-fronted geese (*Anser albifrons*), cackling geese (*Branta hutchinsii*), and brant (*Branta bernicla*). The Canada goose (*Branta canadensis*) is commonly found throughout Ohio,

both as residents and migrants. Geese species could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

Mourning dove (*Zenaida macroura*): Mourning doves are found near rural and suburban residences, nesting in shrubs and trees. They are also frequently found in rural farmlands nesting in fencerows and edge habitats. Mourning doves could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

(ii) Mammals

Eastern cottontail rabbit (*Sylvilagus floridanus*): This species is found in both rural and urban areas. They prefer open areas bordered by thickets or brush areas. Rabbits could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

Gray, red, and fox squirrels (*Sciurus carolinensis, Tamiasurius hudsonicus,* and *Sciurus niger*, respectively): The fox squirrel is primarily an inhabitant of isolated woodlots, 10 to 20 acres in size with a sparse understory. The eastern gray squirrel prefers more extensive woodland areas. The red squirrel prefers coniferous and mixed forests. Squirrels could be found near or in the Project area; however, they are mobile animals so it is unlikely they will be impacted by construction activities.

White-tailed deer (*Odocoileus virginianus*): Deer live in a variety of habitats, including woods, farmlands, brushy areas, dense thickets, and woodland edges. Deer can be found near or in the Project area; however, they are mobile animals which can avoid the project area if disturbed. It is not anticipated that this species would be impacted by construction activities.

(iii) Game Fish

Based on the hydrologic connectivity and the nature of the surface water habitats known to occur in the Project area, diverse game fish species are anticipated to inhabit some of the streams that are crossed by the routes. A list of game fish known to occur in Ohio was obtained from ODNR-DOW's Sport Fish of Ohio Identification Guide (ODNR-DOW, 2012). The list was narrowed to fish most likely to be found in the project area based on professional judgment and experience, and as such, the list of species presented in this section is not an exhaustive list of all species potentially present in the project area. The listed species are known to be regionally common and likely to occur on a case-by-case basis, within the surface water features proposed to be crossed or encroached. Neither aquatic species nor habitat surveys were completed as part of the field surveys.

Bluegill (*Lepomis macrochirus*): Bluegill are found throughout the state, preferring clear ponds and lakes with rooted vegetation. This species is likely to occur in streams and ponds along the routes.

Bullhead Catfish (*Ameiurus* sp.): Bullhead catfish are common throughout the state. Brown bullheads prefer clean, clear water, while black bullheads can tolerate more turbid water. Yellow bullheads prefer areas with heavy vegetation. Bullhead catfish could potentially be found within the project area.

Common Carp (*Cyprinus carpio*): Carp can be found in throughout the state, preferring turbid waters rich in organic matter. It is likely that common carp are present in streams along the routes.

Freshwater Drum (*Aplodinotus grunniens*): This species can be found in shallow large lakes and big rivers, typically in deeper pools. This species is likely to occur in larger streams along the routes.

Green Sunfish (*Lepomis cyanellus*): Green sunfish are present in most lakes and streams throughout the state and are tolerant of turbid water. They are regularly associated with some type of structure such as brush, vegetation, or rocks. This species is likely to occur in streams and ponds along the routes.

Largemouth Bass (*Micropterus salmoides*): Largemouth bass are found in ponds, lakes, and slow sluggish streams throughout the state. This species is likely to be found in the project area.

Longear Sunfish (*Lepomis megalotis*): Longear sunfish are found in streams and lakes throughout the state. They prefer sluggish, clear streams of moderate size with beds of aquatic vegetation. This species is likely to be found in the project area.

Longnose Gar (*Lepisosteus osseus*): Longnose gar are a common Ohio fish. This species is likely to occur in larger streams along the routes.

Rock bass (*Ambloplites rupestris*): Rock bass are widespread throughout the state. They prefer clear streams with coarse gravel and boulders. This species may occur in streams along the routes.

Smallmouth Bass (*Micropterus dolomieu*): Smallmouth bass are often abundant in quarries and thrive in streams with gravel or rock bottoms with a visible current. This species may occur in larger streams along the routes.

Spotted Bass *(Micropterus punctulatus*): Spotted bass occur in low gradient streams in southern Ohio. Spotted bass could potentially be found in streams within or near the project area.

White Crappie (*Pomoxis annularis*): White crappie can be found in larger ponds, lakes, and rivers. White crappie can tolerate a wide variety of habitats and conditions. This species is regularly found near structures such as fallen trees, stumps, docks, rocks, and aquatic vegetation. This species may occur in larger tributaries along the routes.

(2) Construction Impacts on Identified Species

Based on the nature of the proposed Project activities and habitat characteristics of the surrounding vicinity, construction impacts to protected species are not anticipated. Winter tree clearing will occur only between October 1 and March 31 to avoid impacts to bat species, and no in-water work in perennial streams will occur from April 15 through June 30 to reduce impacts to indigenous aquatic species. The Company will coordinate with USFWS and ODNR on specific construction practices, if required by these agencies. The construction impact on other specific identified species (recreational and commercial) is expected to be minor because equivalent

habitat that would be impacted during construction exists immediately adjacent to the construction ROW, and the identified species are mobile.

(3) Operation and Maintenance Impacts on Identified Species

Minimal impacts are anticipated to protected wildlife during operation and maintenance of the transmission line. Clearing of secondary growth vegetation will be required along some portions of the ROW. Operational activities and periodic maintenance of the ROW are not anticipated to impact wildlife significantly because of the minimal permanent ground disturbance and available adjacent habitat available.

(4) Mitigation Procedures

If areas are identified during the informal consultation process with USFWS and ODNR that are of special concern, the Company will coordinate with these agencies to develop appropriate mitigation measures. The mitigation measure will be implemented if the area of special concern is within the route approved by the OPSB.

(D) SITE GEOLOGY

(1) Site Geology

The Study Area is within the Findlay Embayment and Fostoria Lake-Plain Shoals Region of the Maumee Lake Plains Section of the Huron-Erie Lake Plains Province. The Findlay Embayment Region is characterized by very low relief, broadly rolling lacustrine plain, and the embayment of ancestral Lake Erie where coarse lacustrine sediment collected. The Fostoria Lake-Plain Shoals Region includes a portion of the Defiance Moraine lightly eroded by shallow Lake Maumee with north-south trending hillocks and shallow, closed depressions with many sandy areas. The Maumee Lake Plains is a flat, Ice-Age lake basin with beach ridges, dunes, deltas, bars, and clay flats, contained by the former Black Swamp. The greater Maumee Lake Plains area contains Pleistocene-age silts, clay, and wave planed clayey till over Silurian- and Devonian-aged carbonate rocks and shales, while the Findlay Embayment silty to gravely Wisconsinan-age lacustrine deposits and wave-planed clayey till over the Lockport Dolomite (Silurian age) and the Fostoria Lake-Plain Shoals also has the same deposits over deeply covered Silurian-age dolomite (ODNR-DGS, 1998).

Two bedrock units underlay the Study Area (ODNR DGS, 2022):

- Tymochtee Dolomite (Unit Code St) – *a Silurian age dolomite with brownish black to gray shale laminae*. This unit occurs in the eastern region of the Study Area,

- Salina Undifferentiated (Unit Code Ssu) – *a Silurian age, gray to brown dolomite*. This unit occurs in the central and western regions of the Study Area.

Three Surficial Geology Units are of importance in the Study Area (ODNR DGS, 2022):

- Lake-planed moraine, occurring throughout the Study Area

- End moraine, occurring in mainly the eastern Study Area
- Beach sand, occurring in strips within a few areas in the greater Study Area.

(2) Slopes and Foundation Soil Suitability

Slopes within the Study Area vary but are generally mild. One soil map unit, Udorthents, loamy, 2 to 25 percent slopes (UcD) has a representative slope rating of 14 percent – this is the greatest percentage of the whole Study Area and makes up approximately 0.5% of the Study Area. The next greatest representative slope is Glynwood clay loam, 6 to 12 percent slopes, eroded (Gwd5C2), with a rating of 9 percent, making up approximately 0.1% of the Study Area. About 6% of the Study Area has a representative slope rating of 4 percent, about 16% of the Study Area has a representative slope rating of 3 percent, and the remaining approximately 77% of the Study Area has a representative slope rating of 2 percent or less.

Parent material of the soils can be categorized under the following:

- Glaciolacustrine deposits (sometimes over basal till, sometimes over beach sand or sandy/gravelly glaciofluvial deposits)
- Outwash (sometimes over till)
- Basal Till
- Till – clayey, limestone/shale, clayey lodgment
- Loamy alluvium.

There are 36 map soil units within the Study Area, one of which is Water.

The USGS NRCS assigns numerical ratings indicating a negative impact/limitations of a particular soil. When looking at shallow excavations (a category which includes many different common limitations, such as frost action, depth to saturated zones, dust, and others), much of the Study Area is 'very limited' (97.5%). Much of this appears to be triggered by depth to saturated zone. Soils with a high rating (indicating limitations) of 'depth to saturated zone' include most of the Study Area (98%).

The following map soil units have a high rating for 'ponding': Hoytville silty clay loam, 0 to 1 percent slopes (HcA), Hoytville clay loam, 0 to 1 percent slopes (HoA), Mermill clay loam, 0 to 1 percent slopes (MfA), Pewamo silty clay loam, 0 to 1 percent slopes (PmA), Sloan loam, 0 to 1 percent slopes, occasionally flooded (SnA), Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded (SoA), Glynwood silt loam, end moraine, 2 to 6 percent slopes (Gwe1B1), and Mermill loam (Md). One soil map unit had a high rating for flooding: SoA. Three units had a high rating for too clayey: Nappanee loam, 0 to 2 percent slopes (NaA), Nappanee silt loam, 0 to 2 percent slopes (NpB), and Nappanee silt loam, 2 to 6 percent slopes (NpB) (USDA NRCS, 2022).

To obtain further site-specific details on the suitability of the soils for foundation construction, it is recommended that detailed engineering design and geotechnical soil borings be conducted. Engineering design and geotechnical test drilling will be completed as part of final engineering design.

At a minimum, geotechnical soil borings will provide the following information to be used for developing final engineering designs as needed:

(1) Subsurface Soil Properties
(2) Static Water Level
(3) Rock Quality Description
(4) Percent Recovery
(5) Depth and Description of Bedrock Contact

The Company anticipates that foundations will only be required at some angle structures that will be ultimately determined during the engineering design. When required, foundations will be engineered based on the results of geotechnical soil borings to ensure they are in locations considered suitable based on soil and rock properties and surface slope.

(3) Geohazard Considerations

Portions of the Study Area may have karst conditions. This Area is underlain by varying depths of glacial drift and other lacustrine sediments over dolomite, a rock which is at risk of dissolution – which could lead to karst sinkholes or underground fractures. The larger area is outside of what ODNR calls the Bellevue-Castalia Karst Plain, which at its closest point extends into Sandusky and Seneca Counties; however, the same units (Silurian age Dolomite and the Salina Group) are involved in this karst region (ODNR DGS, 2016). There are no karst data points within ten miles of the Study Area according to the ODNR Interactive web map (ODNR DGS, 2022).

(E) ENVIRONMENTAL AND AVIATION REGULATION COMPLIANCE

(1) Licenses, Permits, and Authorizations Required for the Facility

The Company anticipates submitting a Notice of Intent for coverage under the OEPA General NPDES Permit. The Company also anticipates multiple local permits will be required.

(2) Construction Debris

The site will be kept clean of construction debris. Debris associated with construction of the proposed transmission line will likely include conductor scrap, construction material packaging including cartons, crates, conductor reels and wrapping, and used stormwater erosion control materials. Conductor reels and other materials with salvage value will be removed from the construction area for reuse or salvage. Construction debris will be disposed of in accordance with state and federal requirements in an OEPA-approved landfill or other appropriately licensed and operated facility. Where vegetation must be cleared, the resulting brush will be removed or as requested by individual property owners.

(3) Stormwater and Erosion Control

A SWPPP will be prepared, and BMPs implemented to minimize soil erosion, sedimentation and other pollutant discharges. The SWPPP will be made available onsite during Project construction. The SWPPP will include the following General Conditions, at a minimum:

Erosion and Sediment Controls: Implementation of erosion and sediment control practices will be based on the OEPA General Permit OHC000005 (effective April 21, 2018) using standards from the ODNR *Land Development Rainwater and Land Development Manual*, Third Edition 2006 (updated on March 3, 2014, or current edition) for the potential discharge of stormwater from construction sites.

Wetlands, streams, and other environmentally sensitive areas will be clearly marked before the start of clearing or construction. No construction or access will be permitted in these areas unless clearly specified in the SWPPP.

Inlet Protection: Stormwater inlets will be protected using either a filter sock barrier or a geotextile-rock barrier to prevent sediment and debris from entering the stormwater system. The following installation and maintenance guidelines will be followed:

- Inlet protection BMPs will be installed in active construction areas no earlier than 7 days prior to construction to prevent premature debris build-up.

- Inlet protection BMPs will be inspected at least once every 7 days and within 24 hours after any storm event greater than 0.5 inch of rain per 24-hour period to ensure debris and sediment does not clog the inlet and that stormwater is still able to enter the inlet. Any debris is to be removed immediately on discovery.

Soil Stabilization: Disturbed areas that were vegetated prior to construction and that are planned to be unworked for more than 21 days will be stabilized with seed and mulch no later than 14 days after the last construction in that area.

Maintenance and Inspection: Erosion and sediment control practices will be inspected at least once every 7 calendar days and within 24 hours after any storm event greater than 0.5 inch of rain per 24-hour period.

The Company will maintain erosion control measures in good working order. If a repair is necessary, it will be initiated within 24 hours of report. Silt fencing will be inspected for depth of sediment, for tears, to ensure fabric is securely attached to the fence posts, and to ensure that the fence posts are firmly in the ground. Seeded areas will be inspected for evidence of bare spots or washouts. Permanent records of the maintenance and inspection must be maintained throughout the construction period. Records will include, at a minimum, the name of the inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

(4) Disposition of Contaminated Soil and Hazardous Materials

All materials stored onsite will be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Products will be kept in their original containers with the original manufacturer's label. Manufacturer's recommendations for proper use and disposal will be followed. Material Safety Data Sheets (MSDS) or Safety Data Sheets (SDS) will be retained and available onsite at all times.

The Project requires that a Spill Prevention Control and Countermeasure Plan (SPCC) be created and available for review onsite. This Spill Prevention Plan will cover proper handling techniques for all electrical equipment, materials and construction equipment that require a MSDS. The Company also requires its employees and contractors to follow all federal and state-mandated material-handling requirements.

The following General Conditions will also be included in the Stormwater Pollution Prevention Plans (SWPPP) to address disposition of contaminated soil and hazardous materials generated or encountered during construction:

Spill Prevention

The following spill prevention methods and procedures are proposed:

- All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.
- Secondary containment will be provided for all onsite fuel storage tanks required during construction.
- All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.
- All spills will be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup will be followed. Materials and equipment necessary for spill cleanup will be kept in a designated storage area onsite.
- Spills will be reported to the appropriate government agency as required.
- Suspected hazardous materials encountered during construction will be reported to the regional environmental coordinator by the transmission construction representative. In addition, the Project Manager will be notified.

The Company follows an internal Spill Prevention Notification Plan that is closely aligned to the Company's Spill Response and Cleanup – Field Guide. This Spill Response and Cleanup – Field Guide covers the following procedures:

- Oil/Polychlorinated Biphenyl (PCB) Spill Response and Cleanup Procedure
- When to Report an Oil/Polychlorinated Biphenyl (PCB) Spill to the Region Environmental Coordinator
- Hazardous Substance Spill Response Procedure
- Region Environmental Coordinator Contact List

This field guide outlines spill response and cleanup procedures as well as the reporting that is required. The Spill Response and Cleanup – Field Guide will be available upon request.

(5) Maximum Height of Above Ground Structures

The height of the tallest anticipated aboveground structure and construction equipment is designed to be approximately 95 feet. The nearest airport is the Findlay Airport located 3.5 miles southeast of the Preferred and Alternate Routes at the point near the entry into the New Liberty Substation. The Putnam County Airport is located 5.1 miles south of the East Leipsic end of the Project area. The Ruhe's Airport is located 4.4 miles west of the East Leipsic end of the Project area. The nearest heliport is located in Findlay at the Blanchard Valley Hospital in Findlay, Ohio, 4.4 miles southeast.

The Federal Aviation Administration (FAA) Form 7460-1, "Notice of Proposed Construction or Alteration," is used for FAA notification. This can be filed electronically or by standard U.S. mail. A 7.5 minute quadrangle topographic map showing the proposed construction must be attached to the completed Form 7460-1. The Form 7460-1 must be submitted 45 days prior to the proposed start of construction.

Additionally, a permit from the ODOT, Office of Aviation, must be obtained prior to the start of any construction on or near airports in Ohio that are open to the public. A duplicate of the federal filing fulfills the state permit application requirements as set forth in O.A.C. 5501:1-10-06.

(6) Dusty or Muddy Conditions Plan

Dust Control

The site and surrounding areas will be kept free from dust nuisance associated with site activities. During excessively dry periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

Excessive Muddy Soil Conditions

Construction entrances will be established and maintained in a condition that will prevent tracking or flowing of sediment onto a public ROW. Accumulated sediment spilled, dropped, washed, or tracked onto public ROWs will be removed as soon as practical.

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