4906-5-05 Project Description

4906-5-05 PROJECT DESCRIPTION

(A) DESCRIPTION OF PROJECT AREA

The map included in this section provides a description of the project area's geography, topography, population centers, major industries, and landmarks. This section of the Application provides data on the proposed transmission line, including data on location, major features, and the topographic, geologic, and hydrologic suitability of the route alternatives for the Project.

(1) Geography and Topography

A map at 1:24,000-scale showing the proposed Preferred and Alternate Routes for the Project is presented as **Figure 05-1**. This map includes the area 1,000 feet on each side of the proposed routes. The map was developed from the following United States Geological Survey (USGS) 7.5 minute topographic maps:

- St. Clairsville, Ohio (1982)
- Lansing, Ohio (1982)

The information on the maps was updated through review of aerial photography, property parcel data from the Harrison and Tuscarawas County auditors, and field reconnaissance conducted in September, October, and November 2016.

(a) Proposed Transmission Line Alignments: The proposed alignments for the Preferred and Alternate Routes of the West Bellaire-Glencoe 138kV transmission line, including the proposed turning points, are shown on **Figure 05-1**. Detailed descriptions of the routes are provided in Section 4906-5-02(A)(3).

(b) Proposed Substation Locations: There is two existing station and one station under construction as a part of this Project. The stations are shown on **Figure 05-1**.

(c) Major Highway and Railroad Routes: The Preferred and Alternate Routes generally parallel State Route 149 before crossing it just east of Glencoe Station.

No active railroads were identified as crossed or within 1,000 feet of the Preferred and Alternate Routes.

(d) Publicly identified and owned institutions, parks, and recreational areas: The Preferred and Alternate Routes do not appear to cross any publicly identified and owned major institutions, parks, or recreational areas.

(e) Utility Corridors: There are several utility corridors within 1,000 feet of the Preferred and Alternate Routes. The Preferred and Alternate Routes parallel the existing West Bellaire-Glencoe 69 kV line for the majority of their lengths. The Preferred and Alternate Routes are offset from the West Bellaire-Tiltonsville 138 kV line for approximately 0.5 to 0.7 mile heading north from West Bellaire Station. Other lines crossed include AEP's Muskingum River-Tidd 345 kV and South

Canton-Kammer 765 kV lines, and four FirstEnergy 138 kV lines. The alignments of existing utility corridors are shown on **Figure 05-1**.

(f) Lakes, Ponds, Reservoirs, Streams, Canals, Rivers, and Swamps: A full description of the lakes, ponds, reservoirs, streams, canals, rivers, and swamps (i.e. wetlands) located within 1,000 feet of the proposed Preferred and Alternate Routes is provided in Section 4906-05-08(A)(3) of this Application. A map at 1:24,000-scale showing water bodies in the study area is included as **Figure 05-1**. Streams, ponds, and wetlands delineated within 100 feet of the Preferred and Alternate Route ROWs are shown on smaller-scale maps as **Figures 3A through 3E of Appendix 08-1**.

(g) Population Centers and Legal Boundaries: Population centers and legal boundaries within the vicinity of the proposed transmission line locations are shown on **Figure 05-1**. Legal boundaries within 1,000 feet of the Preferred and Alternate Routes include Belmont County; Pultney, Richland, and Smith Townships; the town of Neffs; and the town of Glencoe.

(2) Transmission Acreage, Length, and Properties Crossed

The Preferred Route, including the Rebuild Sections, is approximately 5.8 miles in length and crosses approximately 45 parcels. Approximately 18 acres of new ROW would need to be acquired for the Preferred Route. The Alternate Route, including the Rebuild Sections, is approximately 6.0 miles in length and crosses approximately 49 parcels. Approximately 20 acres of new ROW would need to be acquired for the Alternate Route.

(B) LAYOUT AND CONSTRUCTION

(1) Proposed Clearing, Construction Methods, and Reclamation Operations

The following paragraphs describe the proposed site clearing, construction methods, and reclamation operations of the Project.

(a) Surveying and Soil Testing: The transmission line route will be surveyed to establish the centerline, ROW, and pole locations. The surveying will be completed using conventional and/or aerial methods. Topographic features and man-made structures in the vicinity of the proposed route that may affect the design will be located during the survey. Some 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 will also be obtained by conventional or aerial methods. The centerline and ROW will be staked prior to construction.

Soil tests may be performed along portions of the Preferred Route, if foundations for poles are necessary. Auger borings shall be made by a machine driven auger at least four inches in diameter. Soil samples shall be obtained at approximately 2.5-foot intervals for the first ten feet and five-foot intervals below ten feet, and at any change in strata. Sampling shall 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 used to drill five to ten feet into the rock.

(b) Grading and Excavation: The existing terrain within the planned ROW for the Preferred and Alternate Routes, although fairly hilly, will only require minimal grading to facilitate access, and to temporarily level areas for machinery set up. Each self-supporting steel pole location will require a concrete foundation to be installed. The excavation for each foundation will be approximately six to eight feet in diameter and 25 to 40 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 off-site.

(c) Access Roads and Trenches: Temporary construction access will be required for each of the proposed pole locations. If field conditions necessitate the modification of these plans during construction, the OPSB staff will be notified prior to the use of an unplanned access route. Any proposed access roads will require the landowners' input and approval. This cannot be done until after a final route is selected, landowners are contacted and easements for the transmission line are obtained. Specific access routes will be developed following a decision on pole locations. Access routes and poles will not be placed in areas where threatened or endangered species, if any, are observed. One pole (Structure 87B) is proposed within a PEM, Category 1 wetland (Wetland 03) just north of Neffs Station. Construction access across wetlands and streams is expected to be minimal, with timber matting utilized where necessary to avoid impacts to these features.

(d) Stringing of Cable: During wire stringing operations, areas along the transmission line will be used as setup locations for the wire puller, 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 of the sections of lines that require stringing. 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 crew members or the general 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 crew members at all times. The observers will be in radio and/or visual contact with the operator of the stringing equipment.

(e) Pole and Structure Installation: Topsoil at pole excavations will be stockpiled and protected from erosion. Topsoil will be redistributed over disturbed areas to foster re-vegetation following construction. 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, pole locations, material storage sites, and temporary access roads will be seeded with a suitable grass seed mixture as specified in the erosion and sediment control plan. Re-vegetation techniques will enhance the ROW for appropriate wildlife food and habitat. Where stream banks are disturbed, they will be restored (by

planting of low-growing species, where necessary) in order 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 affected property owners. After restoration is complete, AEP Ohio Transco will periodically inspect the ROW for areas of erosion, sedimentation and inadequate re-vegetation conditions. Upon discovery of such conditions, if any, prompt efforts will be taken to correct them.

(f) Post Construction Reclamation: Topsoil at pole excavations will be stockpiled and protected from erosion. Topsoil will be redistributed over disturbed areas to foster re-vegetation following construction. 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, pole locations, material storage sites, and temporary access roads will be seeded with a suitable grass seed mixture as specified in the erosion and sediment control plan. Re-vegetation techniques will enhance the ROW for appropriate wildlife food and habitat. Where stream banks are disturbed, they will be restored (by planting of low-growing species, where necessary) in order 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 affected property owners. After restoration is complete, AEP Ohio Transco will periodically inspect the ROW for areas of erosion, sedimentation and inadequate re-vegetation conditions. Upon discovery of such conditions, if any, prompt efforts will be taken to correct them.

(2) Layout for Associated Facilities

(a) Map of Associated Facilities: The new line connects the existing West Bellaire Station with the Glencoe Station. **Figure 05-1** shows the locations of these facilities.

(b) Reasons for Proposed Layout and Unusual Features: There are no unusual features associated with construction of this project.

The layout is specifically engineered with due consideration to equipment types, manufacturer's specifications, adequate working clearances around equipment and structures, and safe engineering practices.

(c) Future Modification Plans: AEP Ohio Transco's planning engineers generally forecast future transmission projects in a five-year planning window. AEP Ohio Transco currently has no plans for future modifications of the proposed West Bellaire-Glencoe 138 kV line.

(C) TRANSMISSION EQUIPMENT

(1) Electric Transmission Line Data

(a) Design Voltage: The West Bellaire-Glencoe transmission line will be designed to 138 kV standards. It will consist of two circuits. The circuit on the south and west side of the structures will be operated at 69 kV while the circuit on the north and east side of the structures will be operated at 138 kV.

(b) Pole, Conductor, and Insulator Design: Several types of transmission line structures are proposed for use on the transmission line. A typical double circuit, braced post, tangent steel pole is shown in **Figure 05-2A**. A typical double circuit, davit arm, tangent steel pole is shown in **Figure 05-2B**. **Figure 05-2C** shows a typical double circuit, two pole, running angle structure. **Figure 05-2D** double circuit, davit arm, dead-end steel pole. A typical single circuit, davit arm, tangent steel pole is shown in **Figure 05-2E. Figure 05-2F** shows a typical single circuit, single pole, dead-end steel pole. **Figure 05-2G** shows a typical single circuit, three pole, dead-end steel pole.

The conductor used for the new transmission line will be one 1,033 kcmil 54/7 ACSR per phase. The new line will utilize one 7#8 Alumoweld shield wire throughout the entire line. Both the phase conductors and the AW shield wire will be installed in accordance to the latest version of the National Electric Safety Code (NESC).

(c) Base and Foundation Design: Each direct embed steel pole will require an excavated hole at the pole location for which the pole will be set and properly backfilled to meet foundation strength requirements. Each self-supporting steel pole location will require an excavated concrete foundation to be installed. The excavation for each concrete foundation will be six to nine feet in diameter and 20 to 45 feet deep.

(d) Underground Cable: There are no underground cables associated with this project; therefore this section is not applicable.

(e) Other Major Equipment or Special Structures: There is no other major equipment or special structures associated with this project; therefore this section is not applicable.

(2) Electric Transmission Substation Data

Not applicable.

(3) Gas Pipeline Data

Not applicable.

J:\Project\ENV\60518004 AEP WBelGl\900-CAD-GIS\920-GIS or Graphics\Glencoe WestBellaire OPSB Fig 05-1 PreferredandAlternateRoutes.mxd

St Clairsville Quadrangle

Lansing Quadrangle

Businessburg Quadrangle

Armstrongs Mills Quadrangle

Glencoe Station

Neffs Station

West Bellaire Station

LEGEND:

- Existing Station
- Preferred Route
- Alternate Route
- Rebuild Section
- 1,000-foot Buffer of Routes
- Existing Electric Line
- Existing Natural Gas Pipeline

0 2,000 4,000

Feet

Base Map Source:
ArcGIS Online, USA Topo Map

N

Belmont County

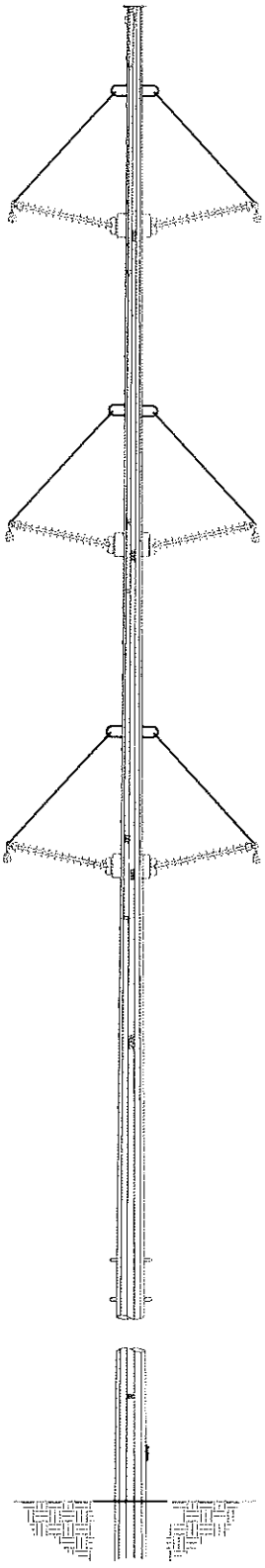
AEP OHIO TRANSMISSION COMPANY

West Bellaire-Glencoe
138 kV Line Rebuild Project

FIGURE 05-1
PREFERRED AND ALTERNATE
ROUTES PROJECT AREA

JOB NO. 60518004

AECOM



APP'D BY :	DR. BY : AJB	CH. BY :	DATE :

AEP AMERICAN ELECTRIC POWER

Commonwealth associates, inc.

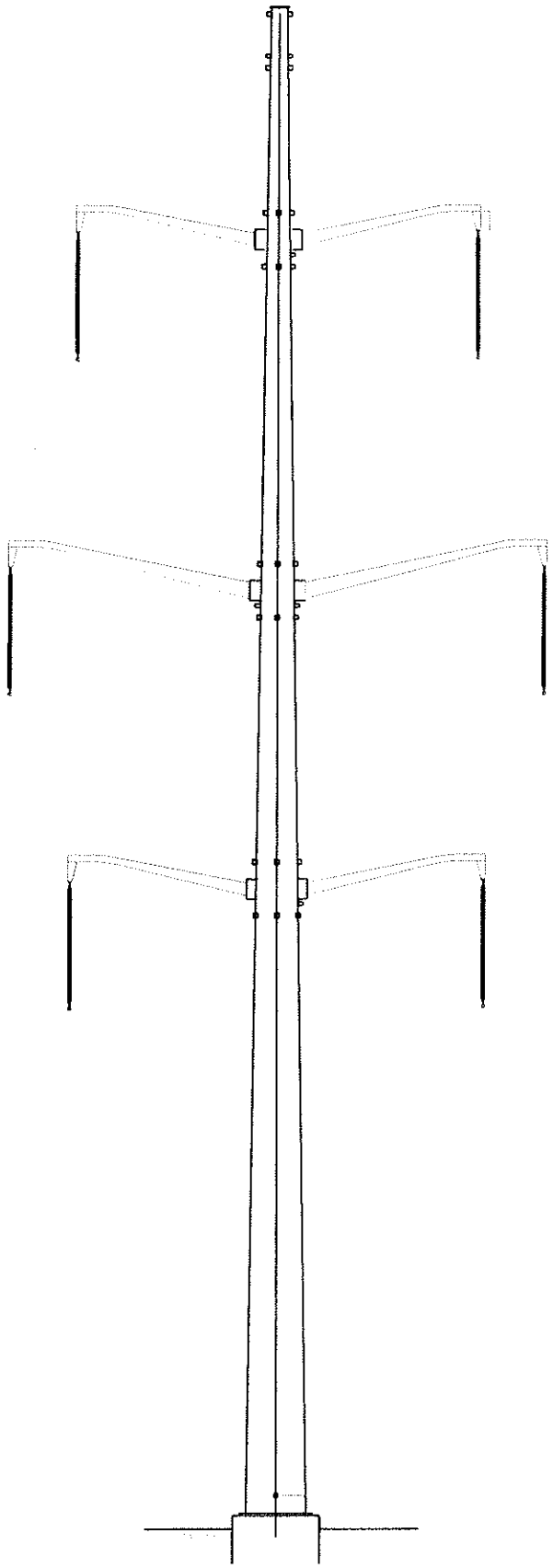
Braced Post DC

Suspension

DWG. No. **05-2A**

PROJECTWISE 8.5" x 11" A BORDER AEPSA CELL

CADFILEPATH



APP'D BY :	DR BY : AJB	CH. BY :	DATE :

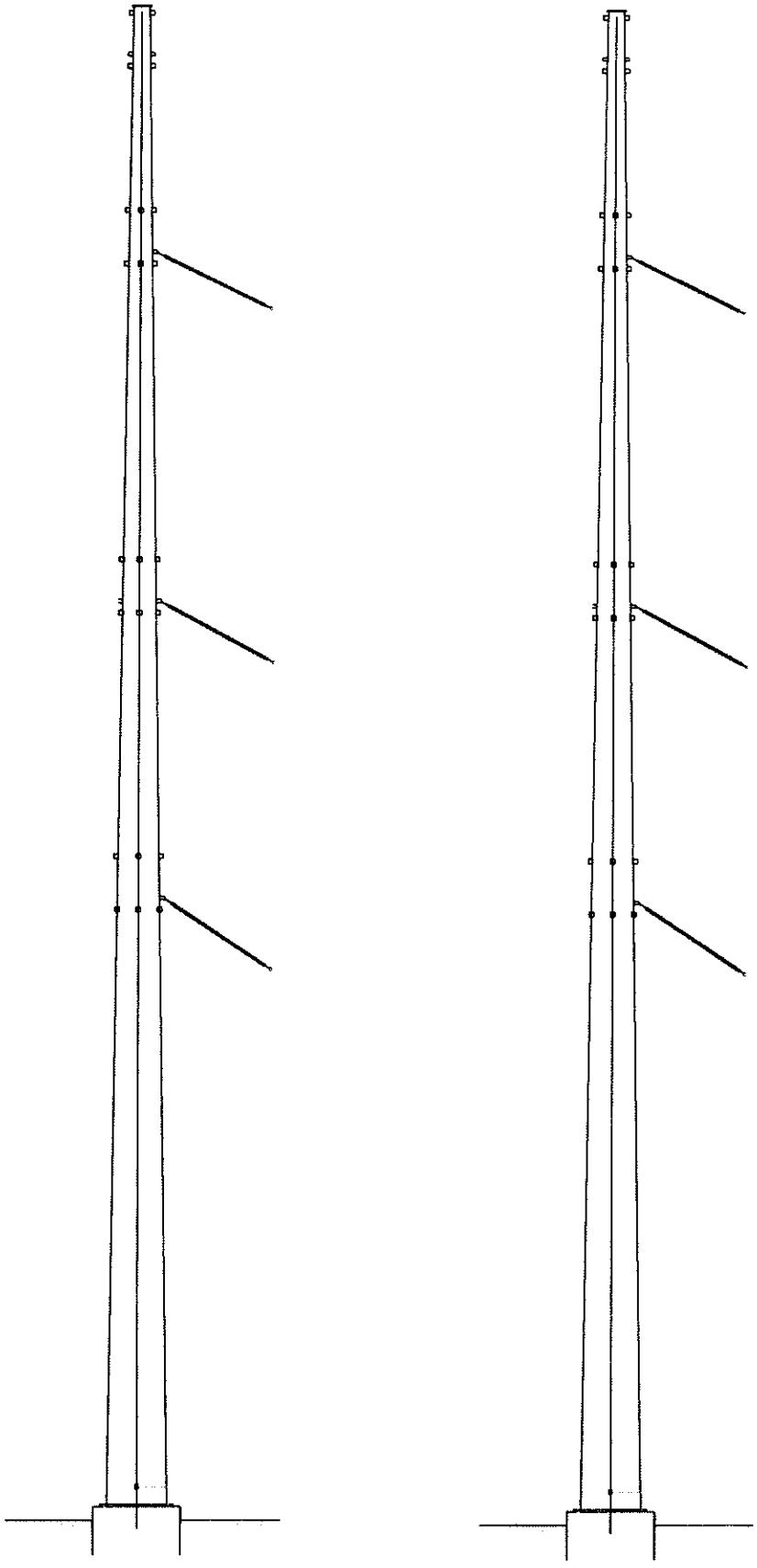
AEP AMERICAN ELECTRIC POWER

Commonwealth associates, inc.

Single Pole Davit Arm DC

Suspension

DWG. No. **05-2B**



APP'D BY :	DR. BY : AJB	CH. BY :	DATE :

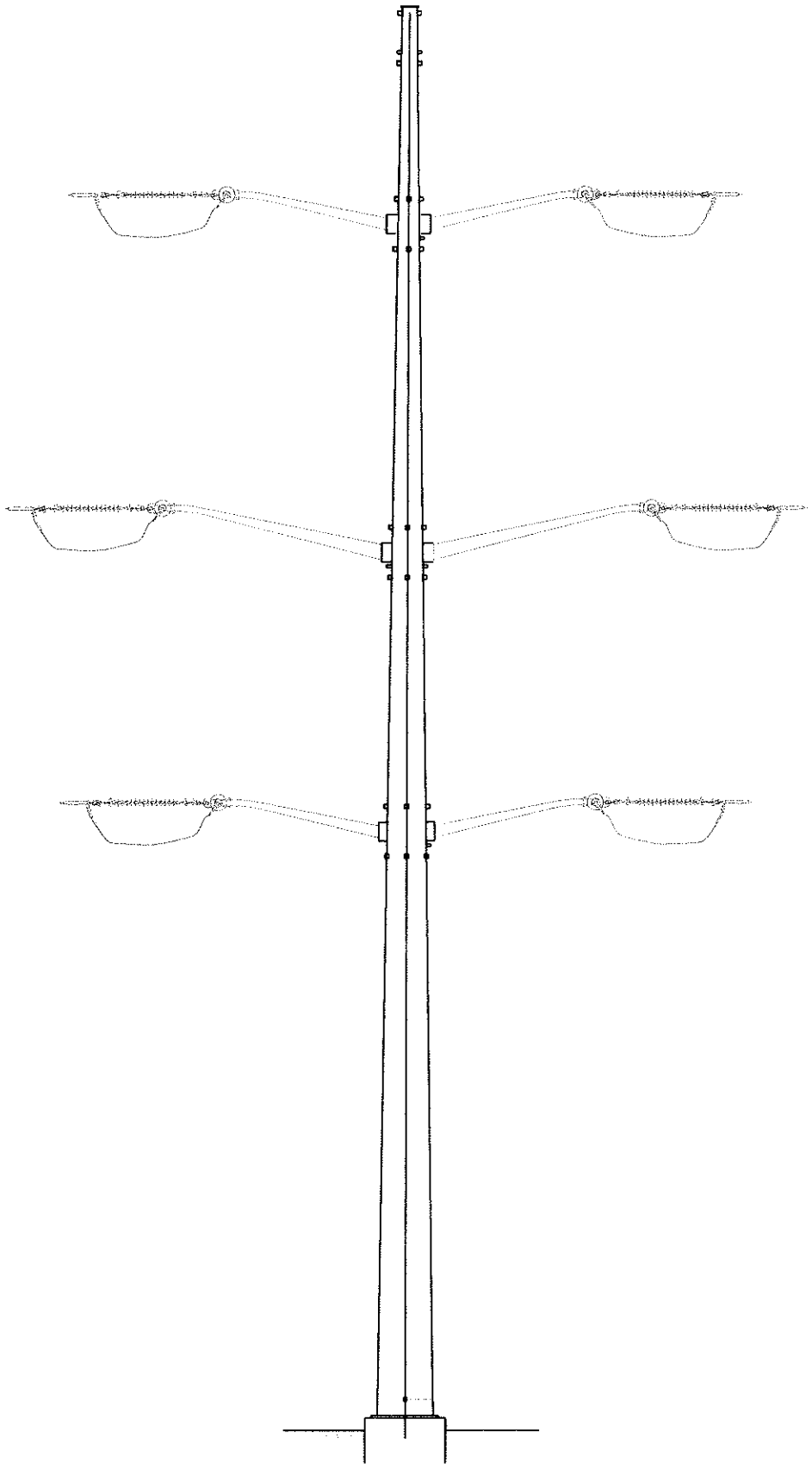
AEP AMERICAN ELECTRIC POWER

Commonwealth associates, inc.

Two Pole Davit Arm DC

Suspension

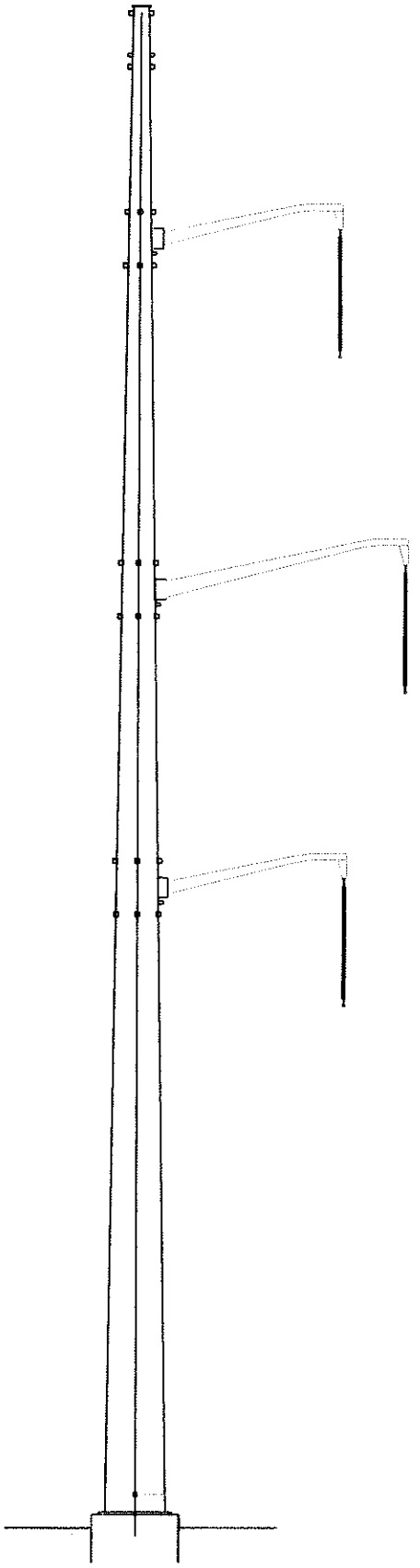
DWG. No. **05-2C**



APP'D BY :	DR. BY : AJB	CH. BY :	DATE :	Single Pole Davit Arm DC **Dead End**
AEP AMERICAN ELECTRIC POWER	Commonwealth associates, inc.			DWG. No. **05-2D**

PROJECTWISE 8.5" x 11" A BORDER AEPSA CELL

CADFILEPATH



APP'D BY :	DR BY : AJB	CH BY :	DATE :

AMERICAN ELECTRIC POWER

Commonwealth associates, inc.

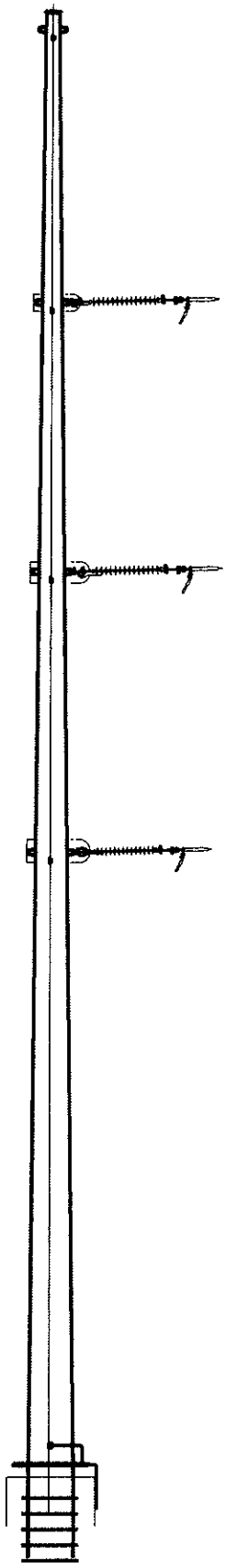
Single Pole Davit Arm SC

Suspension

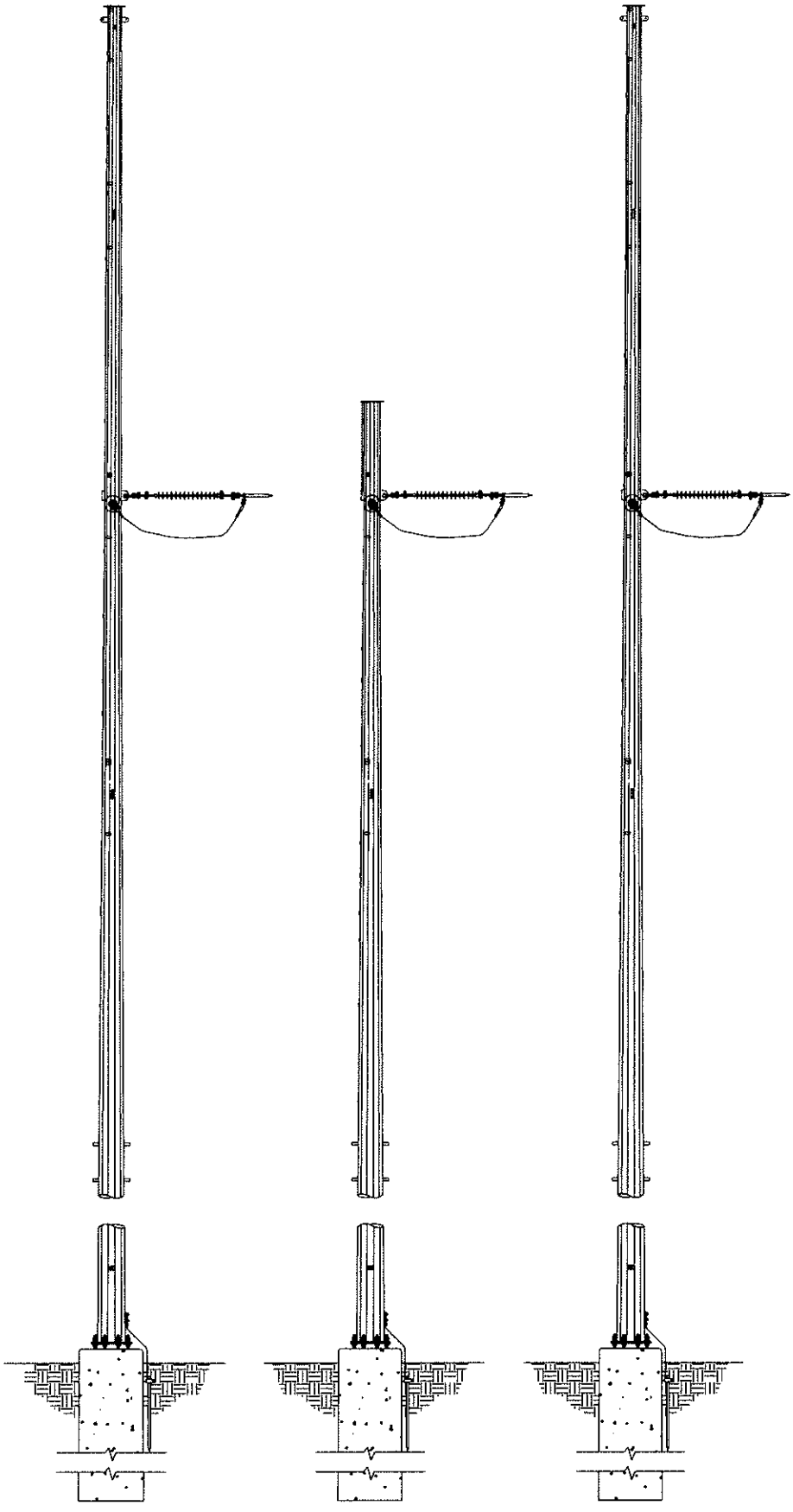
DWG. No. **05-2E**

PROJECTWISE 8.5" x 11" A BORDER AEPSA CELL

CADFILEPATH



				SINGLE POLE STEEL SC DEAD END
APP'D BY :	DR. BY :	CH. BY :	DATE :	
AEP AMERICAN ELECTRIC POWER	Commonwealth associates, inc.			DWG. NO. 05-2F



APP'D BY :	DR. BY : AJB	CH. BY :	DATE :

AEP AMERICAN ELECTRIC POWER

Commonwealth associates, inc.

THREE POLE STEEL SC
DEAD END

DWG. NO. 05-2G

PROJECTWISE 8.5" x 11" A BORDER AEPSA CELL

CADFILEPATH

4906-5-06 Economic Impact and Public Interaction

4906-5-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP

AEP Ohio Transco will construct, own, operate, and maintain the proposed West Bellaire-Glencoe 138 kV transmission line.

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

Estimates of applicable intangible and capital costs for both the Preferred and Alternate Routes of the West Bellaire-Glencoe Transmission Line are identified in **Table 06-1**.

TABLE 06-1
ESTIMATES OF APPLICABLE INTANGIBLE AND CAPITAL COSTS FOR BOTH THE PREFERRED AND ALTERNATE ROUTES

FERC Account Number	Description	Preferred Route	Alternate Route
350	(1) Land and Land Rights	$1,500,000	$1,750,000
352	(2) Structures and Improvements	NA	NA
353	(3) Substation Equipment	NA	NA
354	(4) Towers and Fixtures	NA	NA
355	(5) Poles & Fixtures	$12,100,000	$13,200,000
356	(6) Overhead Conductors & Devices	$2,240,000	$2,570,000
357	(7) Underground Conductors and Insulation	NA	NA
358	(8) Underground-to-Overhead Conversion Equipment	NA	NA
359	(9) ROW Clearing and Roads, Trails or Other Access	$4,700,000	$5,200,000
	TOTAL	**$20,540,000**	**$22,720,000**

(C) GAS CAPITAL COST

Not Applicable.

(D) PUBLIC INTERACTION INFORMATION

(1) Counties, Townships, Cities and Villages within 1,000 feet of the Site Alternatives

Legal boundaries within 1,000 feet of the Preferred and Alternate Routes include Belmont County, Pultney, Richland, and Smith Townships, the town of Neffs, and the town of Glencoe.

(2) Public Officials Contacted

AEP Ohio Transco contacted several local officials to discuss the Project. **Appendix 06-1** provides a list of the local public officials, including their office addresses and office telephone numbers, who have been contacted to date.

(3) Public Information Programs

AEP Ohio Transco's planned public interaction included mailing letters to residents, tenants, and elected officials, issued a public notice and a news release to the local media, created a Project website and hosted a public informational open house. During the construction of the Project, AEP Ohio Transco will maintain Project 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 house are included in **Appendix 6-2**.

During any phase of this project, the public may contact Brett Schmied, Project Outreach Specialist, at (614) 552-1929 or toll free 877-215-9261, or e-mail beschmied@aep.com to ask questions or provide comments. To access the Project's website, please visit http://www.aeptransmission.com/ohio/ and click the project website link.

For copies of this Application, the public can do any of the following:

- Go to the local Library
- Go to http://opsb.ohio.gov/ and search for this project's case number
- Access the project's website on http://www.aeptransmission.com/ohio/ and follow the directions to obtain a copy

On AEP Ohio Transco's website, there is information on how to contact AEP Ohio Transco to express comments or questions regarding the Project. The exact language is:

> To ask questions or submit comments about this project please contact:
>
> Brett Schmied, Project Outreach Specialist, at 614-552-1929 or email beschmied@aep.com

AEP Ohio Transco is logging comments and information provided through its public interaction program. This information will be shared with the OPSB Staff.

At least 7 days prior to any construction activities, an AEP Ohio Transco ROW agent will notify the landowner or the tenant by mail, telephone, or in person, depending on landowner preference.

(4) Liability Compensation

- AEP Ohio Transco maintains bodily injury and property damage liability insurance with limits of at least $1,000,000 for each occurrence.

- AEP Ohio Transco is a qualified self-insuring employer under the State of Ohio Worker's Compensation law. AEP maintains insurance as required by the Industrial Commission of Ohio statutes.

(5) Tax Revenues

The Preferred and Alternate Routes, and Rebuild Sections are located within Belmont County, Pultney, Richland, and Smith Townships. The local school districts, mental health organization, and public libraries will also receive tax revenue from the Project. AEP Ohio Transco 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 $390,000.

Based on the 2016 tax rates, the following is an estimated distribution of taxes by township, county, and other tax districts:

Preferred and Alternate Routes (includes Rebuild Sections)		
Belmont County		$100,500
Smith Township		$1,800
Richland Township		$8,500
Pultney Township		$24,700
St. Clairsville-Richland Consolidated School District		$51,400
Bellaire Local School District		$171,900
Belmont-Harrison Area Joint Vocation School District		$9,400
Cumberland Trail Fire District #4		$19,000
Memorial Park District		$2,800
	Total	$390,000

APPENDIX 06-1

PUBLIC OFFICIALS CONTACTED

APPENDIX 6-1

West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project
Public Officials Contacted and Officials to be Served
A Copy of Certified Application

Belmont County Board of Commissioners
Mr. Mark A. Thomas
Ms. J. P Dutton
Mr. Josh Meyer
101 East Main Street
St. Clairsville, Ohio 43950
(740) 699-2155

Belmont County Engineer
Mr. Terry D. Lively
101 East Main Street
St. Clairsville, Ohio 43950
(740) 699-2160

Belmont County Soil & Water Conservation District
Ms. Kathy Baugh
101 North Market Street
St. Clairsville, Ohio 43950
(740) 526-0027

Smith Township Trustee
Mr. Stephen R. Baker
62683 OK Road
Belmont, Ohio 43718

Smith Township Trustee
Mr. Michael B. Delaney
62830 Centerville Warnock Road
Belmont, Ohio 43718
(740) 686-9805

Smith Township Trustee
Mr. Ronald W. Duvall
48465 Centerville Jacobsburg Road
Jacobsburg, Ohio 43933

Smith Township Fiscal Officer
Ms. Janette D. Carson
45636 Hart Road
Belmont, Ohio 43718
(740) 686-2509

Richland Township Trustee
Mr. George G. Reline
110 Franklin Street
St. Clairsville, Ohio 43950
(740) 695-0897

Richland Township Trustee
Mr. Gregory R. Bizzarri
67775 Mills Road
St. Clairsville, Ohio 43950
(740) 695-3057

Richland Township Trustee
Mr. Richard W. Ferrell
66609 Anna Drive
St. Clairsville, Ohio 43950
(740) 312-5895

Richland Township Fiscal Officer
Ms. Cindi L. Henry
118 Overbaugh Avenue
St. Clairsville, Ohio 43950

Pultney Township Trustee
Mr. Mark A. Cervelli
56339 Hospital Road
Bellaire, Ohio 43906
(740) 676-8079

Pultney Township Trustee
Mr. Scott L. Porter
65214 School Street
Neffs, Ohio 43940
(740) 671-2691

Pultney Township Trustee
Mr. Franklin C. Shaffer, Jr.
65140 Breezy Point Lane
Bellaire, Ohio 43906
(740) 676-9751

Pultney Township Fiscal Officer
Ms. Marla L. Krupnik
1410 High Street
Bellaire, Ohio 43906
(740) 676-6538

Mayor Vincent DiFabrizio
Village of Bellaire
3197 Belmont Street
Bellaire, Ohio 43906
(740) 676-6539

APPENDIX 06-2

PUBLIC MEETING INFORMATION

West Bellaire-Glencoe
138kV Transmission Line Rebuild Project

AEP OHIO
A unit of American Electric Power

There is a need to increase the reliability of the electric transmission grid in eastern Ohio. AEP Ohio Transmission Company Inc., an affiliate of AEP Ohio, proposes to rebuild an electric transmission line in Belmont County. The company anticipates filing its application to rebuild this transmission line, the West Bellaire-Glencoe 138-kilovolt Transmission Line Rebuild Project, with the Ohio Power Siting Board in early 2017.

WHAT

Project Components Include:
- Upgrading about 6 miles of existing 69-kV transmission line to 69/138 kV
- Improving West Bellaire, Neffs and Glencoe substations

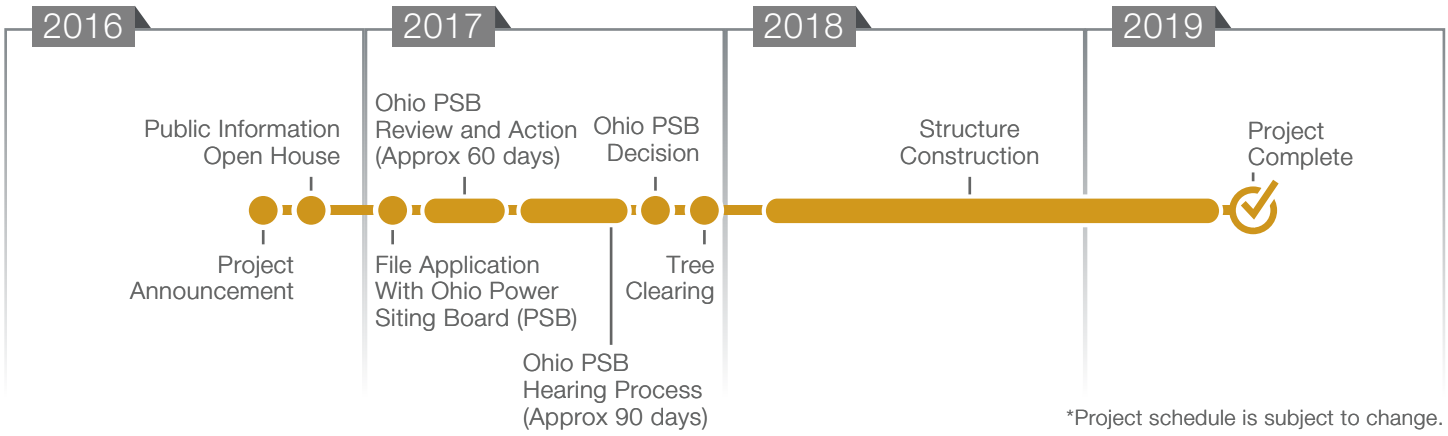
WHY

The electrical infrastructure in the area has reached an age where it needs to be replaced to better serve area customers. Upgrading the line provides additional capacity and provides reliability. These improvements are mandated by PJM Interconnection, the region's transmission operator, and will allow AEP Ohio to comply with federal requirements.

WHERE

The West Bellaire-Glencoe line will be about 6 miles long, depending on the route selected. The new transmission line will traverse Pultney, Richland and Smith townships in Belmont County.

Project Schedule*



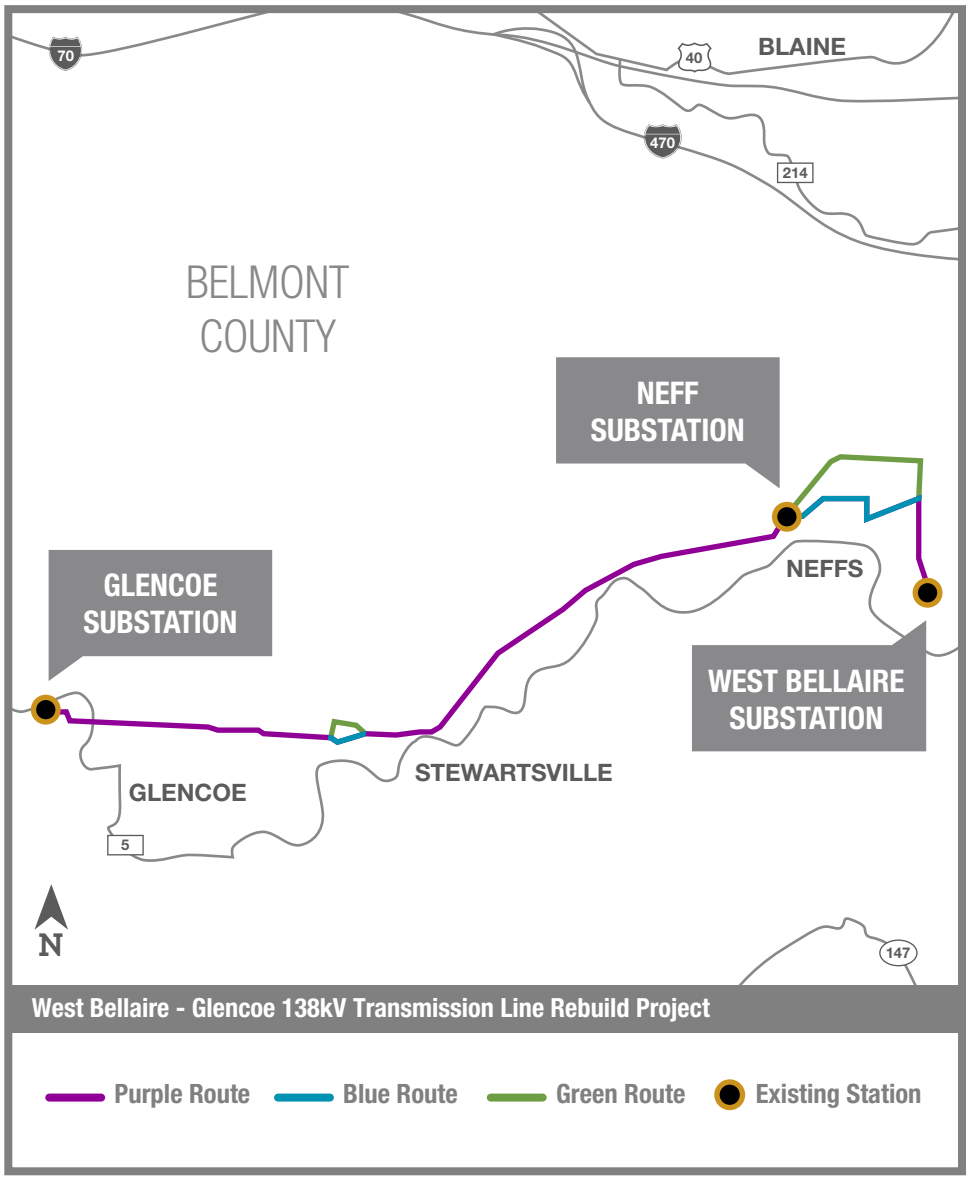
*Project schedule is subject to change.

Typical Structures *

AEP Ohio will build new steel, single pole structures that will be about 95-feet tall. The structures will be placed in the center of an approximate 100-foot wide right-of-way corridor.

Exact structure, height and right-of-way may vary

Project Map



Contact:

AEP Ohio
c/o Brett Schmied
700 Morrison Road
Gahanna, OH 43230

beschmied@aep.com

(614) 552-1929

AEPOhio.com/Ohio/WestBellaire-Glencoe/

AEP OHIO®
A unit of American Electric Power

Please Sign In

AEP OHIO
A unit of American Electric Power

AEP Ohio West Bellaire-Glencoe 138kV Transmission Line Rebuild Project
Public Information Open House November 1, 2016

	NAME	ADDRESS	TELEPHONE	EMAIL
1	EARL BISHOP	50169 3RD ST STCLAIR OH 43950	740.676-7031	
2	STANLEY DOROUCH	St Clairsville 43950	740676-9264	
3	GREGORY R BIZZARRI	67775 Mills Rd St.C 43950	740-391-7571	
4		Rt 430 Neffs	740-312-2400	
5	Don Barnes	45210 Dixon Hill Rd Neffs Ohio	740-676-0306	
6				
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West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

This questionnaire is designed to help you identify issues related to the West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project. Your answers will help the project team understand public interests and concerns and will allow the team to incorporate this information in the route selection process. Thank you for your feedback!

Contact Information

Name: EARL M BISHOP

Address: 50169 3RD ST ST CLAIR 43950

Email: BISHOP SOH@WINDSTREAM.NET Phone Number: 740.676-7031

Project Need

Do you believe the purpose/need for this transmission line has been explained adequately?

C

_____ Yes _____ No _____ Uncertain

If "no" or "uncertain", what additional information would be helpful to you? _____

Line Routing Considerations

The routing of a transmission line involves many considerations. From the list of routing factors below, please circle the number corresponding to the level of importance of that factor to you.

Factor	Rating: Not Important	***	Somewhat Important	***	Most Important
Maximize distance from homes	1	2	3	4	5
Maximize distance from commercial/industrial facilities/business	1	2	3	4	5
Maximize distance from public facilities (i.e. schools, parks, churches, cemeteries, etc.)	1	2	3	4	5
Minimize crossing wetlands, floodplains and streams/rivers	1	2	3	4	5
Minimize crossing cropland	1	2	3	4	5
Minimize crossing forested land	1	2	3	4	5
Minimize crossing pasture/open land	1	2	3	4	5
Minimize federal and state lands/easements	1	2	3	4	5
Maximize length along roads	1	2	3	4	5
Minimize number of private property/parcels crossed	1	2	3	4	5
Maximize distance from irrigation facilities	1	2	3	4	5
Maximize rebuilding in existing centerline/utilizing existing easements	1	2	3	4	5

Additional Information

Did you find this open house format to be informative? _____ Yes _____ No

If no, please explain:

Additional Comments

Please include any additional comments below:

If you wish to take this comment sheet with you, please return it to the address below prior to November 15, 2016.

AEP Ohio – Attn: Brett Schmied – 700 Morrison Road – Gahanna, Ohio 43230

You may also visit www.AEPOhio.com/WestBellaire-Glencoe to submit your comments on the project website or by calling 614-552-1929.

AEP OHIO

A unit of American Electric Power

West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

This questionnaire is designed to help you identify issues related to the West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project. Your answers will help the project team understand public interests and concerns and will allow the team to incorporate this information in the route selection process. Thank you for your feedback!

Contact Information

Name: ROGER BAUHACK

Address: BOX 403 NEFFS, OHIO 43940

Email: GUNITE@BELLAIRE-TV Phone Number: 740-312-2400

Project Need

Do you believe the purpose/need for this transmission line has been explained adequately?

_____ Yes _____ No _____ Uncertain

If "no" or "uncertain", what additional information would be helpful to you? _____

_____

Line Routing Considerations

The routing of a transmission line involves many considerations. From the list of routing factors below, please circle the number corresponding to the level of importance of that factor to you.

Factor	Rating				
	Not Important	***	Somewhat Important	***	Most Important
Maximize distance from homes	1	2	3	4	5
Maximize distance from commercial/industrial facilities/business	1	2	3	4	5
Maximize distance from public facilities (i.e. schools, parks, churches, cemeteries, etc.)	1	2	3	4	5
Minimize crossing wetlands, floodplains and streams/rivers	1	2	3	4	5
Minimize crossing cropland	1	2	3	4	5
Minimize crossing forested land	1	2	3	4	5
Minimize crossing pasture/open land	1	2	3	4	5
Minimize federal and state lands/easements	1	2	3	4	5
Maximize length along roads	1	2	3	4	5
Minimize number of private property/parcels crossed	1	2	3	4	5
Maximize distance from irrigation facilities	1	2	3	4	5
Maximize rebuilding in existing centerline/utilizing existing easements	1	2	3	4	5

Additional Information

Did you find this open house format to be informative? _____ Yes _____ No

If no, please explain:

Additional Comments

Please include any additional comments below:

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AEP OHIO

A unit of American Electric Power

West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

This questionnaire is designed to help you identify issues related to the West Bellaire-Glencoe 138-kV Transmission Line Rebuild Project. Your answers will help the project team understand public interests and concerns and will allow the team to incorporate this information in the route selection process. Thank you for your feedback!

Contact Information

Name: Don Barnes

Address: 65760 Dixon Hill Rd P.O. Box 28 Neffs, Ohio 43940

Email: _____ Phone Number: 740-676-0306

Project Need

Do you believe the purpose/need for this transmission line has been explained adequately?

_____ Yes _____ No _____ Uncertain

If "no" or "uncertain", what additional information would be helpful to you? _____

Line Routing Considerations

The routing of a transmission line involves many considerations. From the list of routing factors below, please circle the number corresponding to the level of importance of that factor to you.

Factor	Rating: Not Important	***	Somewhat Important	***	Most Important
Maximize distance from homes	1	2	3	4	5
Maximize distance from commercial/industrial facilities/business	1	2	3	4	5
Maximize distance from public facilities (i.e. schools, parks, churches, cemeteries, etc.)	1	2	3	4	5
Minimize crossing wetlands, floodplains and streams/rivers	1	2	3	4	5
Minimize crossing cropland	1	2	3	4	5
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Minimize federal and state lands/easements	1	2	3	4	5
Maximize length along roads	1	2	3	4	5
Minimize number of private property/parcels crossed	1	2	3	4	5
Maximize distance from irrigation facilities	1	2	3	4	5
Maximize rebuilding in existing centerline/utilizing existing easements	1	2	3	4	5

Additional Information

Did you find this open house format to be informative? _____ Yes _____ No

If no, please explain:

Additional Comments

Please include any additional comments below:

If you wish to take this comment sheet with you, please return it to the address below prior to November 15, 2016.

AEP Ohio – Attn: Brett Schmied – 700 Morrison Road – Gahanna, Ohio 43230

You may also visit www.AEPOhio.com/WestBellaire-Glencoe to submit your comments on the project website or by calling 614-552-1929.

AEP OHIO

A unit of American Electric Power

From: david@hodorowski.com
To: Brett E Schmied
Subject: [EXTERNAL] Comment: West Bellaire-Glencoe 138kV Transmission Line Rebuild Project
Date: Monday, November 21, 2016 6:44:52 PM

****
Names: David Hodorowski
Email: david@hodorowski.com
JoinStakeholderList: Join Stakeholder List
Address: 65545 McCurdy Road
City: Bellaire
State: Ohio
Zip: 43906
Comments: My name is David Hodorowski. I would like to voice my opinion regarding the West Bellaire-Glenco 138kV Transmission Line Rebuild Project. My property located at 65545 McCurdy Road would be greatly affected by this project should you choose to take the alternate "green route". Not only are there already two existing high voltage transmissions lines located on my property behind my house, you are proposing an additional line to run parallel with two existing high voltage lines across my property, and then make a 90 Degree turn also causing there to be a high voltage transmission line alongside my home. I am greatly concerned about any future resale values of my property, health problems for myself and my family caused by increased EMF from the power lines, as well as an obstructed view for a newly installed Pool area which my wife and I spent tens of thousands of dollars to build, which the 90 degree turn will greatly effect. Exactly who do I have to contact regarding my family not wanting this project to take the proposed alternate "green route?"
Verification: 3
Contact-Form: SUBMIT

4906-5-07 Health and Safety, Land Use, and Regional Development

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 NERC mandatory Reliability Standards, the National Electrical Safety Code, the Public Utilities Commission of Ohio, and will meet all applicable safety standards established by the Occupational Health and Safety Administration (OSHA).

Safety is the highest priority for AEP and AEP Ohio Transco. The prioritization of employee and public safety is exemplified by Company policy as stated in the Company Safety Manual:

> ***The American Electric Power 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 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.***

AEP Ohio Transco also administers a contractor safety program. Contractors working for AEP Ohio Transco are required to maintain internal safety programs and to provide safety training.

(2) Electric and Magnetic Fields

The following analysis provides an approximation of the magnetic and electric fields strengths of the new transmission line for the proposed West Bellaire-Glencoe 138 kV Transmission Line Project.

(a) Calculated Electric and Magnetic Field Levels: EMF calculations for winter normal conductor rating, emergency line loading and normal maximum loading are provided for the proposed line configuration representative of the most common structure design planned for the Project. 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 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 modeled: normal maximum loading, emergency line loading, and winter normal conductor rating. Normal maximum loading represents the peak load expected when all system facilities are in service; typical daily/hourly loads fluctuate below this loading level. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods. Winter normal conductor rating represents the maximum current flow that a line, including its terminal equipment, can withstand continuously during winter conditions. It is not anticipated that this line would operate at its winter normal rating in the near future.

Loading levels used in the EMF calculations, along with key line design data, are presented in **Table 07-1**. These levels are based on the 2021 projected system conditions.

TABLE 07-1
GROUND CLEARANCES, ROW, AND PROJECTED LOADING LEVELS

Line	Phase Conductor (kCM ASCR)	Ground Clearance*		ROW		Line Loading		
		A (Feet)	B (Feet)	Width (Feet)	Edge** (Feet)	Normal (A)	Emerg. (A)	Rating (A)
Preferred and Alternate Routes	1033	16	16	100	50	243.5	343.5	1,568

*Minimum ground clearance: A – normal maximum load and winter normal rating; B – emergency loading.
**Distance from centerline to ROW edge.

The calculated electric and magnetic fields are summarized in **Table 07-2**. Typical cross section profiles of the calculated EMF levels at normal maximum loading conditions are shown in **Figures 05-2A** and **05-2G**.

TABLE 07-2
EMF CALCULATIONS

		Magnetic Field (mG)*		
Line	**Electric Field (kV/m)***	**Normal Maximum Load**	**Emergency Load***	**Winter Normal Rating**
Preferred and Alternate Routes	0.04/0.16/0.06	5.2/24.3/7.4	5.0/23.8/8.1	6.9/13.0/5.2

* EMF levels (left ROW edge/maximum/right ROW edge) calculated one meter above ground assuming balanced currents and nominal voltages. Electric fields reflect normal and emergency operation.

(b) EMF Field Strength Values: In accordance with OAC 4905-5-07(2)(a), EMF strength values are provided for the most utilized pole configuration for the Project.

(c) 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, a large number of 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
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

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
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: EPRI, 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 everyday, chronic, low-intensity (above 0.3-0.4 □T) [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” (WHO, 2013).

AEP Ohio Transco 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, AEP Ohio Transco is a member of EPRI, 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 Table 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:

http://www.niehs.nih.gov/health/assets/docs_p_z/results_of_emf_research_emf_questions_answers_booklet.pdf

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

AEP Ohio Transco 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 and Television Interference

Radio interference can be experienced in the AM broadcast band (535-1605 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 TV, 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 discharges if received from air broadcasts (by "rabbit ears"). These problems have largely been addressed with the use of cable television.

(4) Noise from Construction, Operation, and Maintenance

(a) Blasting activities: No blasting activities are associated with this Project.

(b) Operation of earth moving or excavating equipment: During the construction phase of the transmission line installation, a temporary increase in noise will result from the equipment used to excavate, install equipment and, where necessary, clear the area of any woody brush. Standard construction techniques will be used. Typical noise levels of construction equipment are provided in **Table 07-5**. As a result, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed project is estimated at approximately 12 months.

TABLE 07-5
TYPICAL NOISE LEVELS OF CONSTRUCTION EQUIPMENT

Equipment	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1979	Average Noise Level (dBA) 50 ft., CA/T Project study 1994	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1995	Lmax Noise (dBA) 50 ft., CA/T Project Spec. 721.560
Air Compressor		85	81	80
Backhoe	84	83	80	80
Chain Saw				85
Compactor	82		82	80
Compressor	90	85		80
Concrete Truck		81		85
Concrete Mixer			85	85

TABLE 07-5
TYPICAL NOISE LEVELS OF CONSTRUCTION EQUIPMENT

Equipment	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1979	Average Noise Level (dBA) 50 ft., CA/T Project study 1994	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1995	Lmax Noise (dBA) 50 ft., CA/T Project Spec. 721.560
Concrete Pump			82	82
Concrete Vibrator			76	80
Crane, Derrick	86	87	88	85
Crane, Mobile		87	83	85
Dozer	88	84	85	85
Drill Rig		88		85
Dump Truck		84		84
Excavator				85
Generator	84	78	81	82
Gradall		86		85
Grader	83		85	85
Impact Wrench			85	85
Loader	87	86	85	80
Pump	80		85	77
Roller			74	80
Scraper	89		89	85
Truck	89	85	88	84
Vacuum Excavator				85

Source: Schexnayder, Cliff. 2008. Effective Noise Control during Nighttime Construction http://www.ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm

(c) Driving of piles: None anticipated.

(d) Erection of structures: Structures will be erected by vehicle-mounted cranes.

(e) Truck traffic: Beyond construction equipment access and pole and hardware equipment delivery, no other additional truck traffic is anticipated for the Project.

(f) Installation of equipment: The equipment will be installed using standard practices and equipment.

As the anticipated operational noise from the proposed transmission line is comparatively low, no significant noise impacts are anticipated from the operation of the proposed transmission line. Periodic maintenance of the transmission line will include visual helicopter inspections of the line, currently anticipated to occur twice per year, and labor and equipment access to the transmission line for periodic clearing of the ROW, expected to occur on a five-year cycle, and maintenance work on the structures, conductor and hardware of the transmission line, expected to occur rarely but as needed. These activities will be of temporary and infrequent nature and are not anticipated to be a significant source of noise impact.

Mitigation procedures will include use of properly maintained construction equipment with mufflers, and typically limiting construction activities to daylight hours. No additional noise mitigation is expected, as noise sources are primarily associated with operation of construction equipment and will be temporary in nature.

(B) LAND USE

(1) Proposed Routing Alignments and Existing Land Uses

Maps at 1:12,000-scale, including the area 1,000 feet on either side of the Preferred and Alternate Routes are presented as **Figures 04-1A** and **04-1B**. These maps include proposed and existing substations, land uses, road names, structures, and incorporated areas and population centers. Identified land use features are described below. **Table 07-6** provides the existing land uses identified within 100 and 1,000 feet of the Preferred and Alternate Routes.

Residential: Residences were estimated based on review of aerial photography and county parcel data.

Preferred Route: There are 36 residences identified within 1,000 feet of the Preferred Route, 18 of which are also within 1,000 feet of the Rebuild Sections. Sixty-nine residences were identified within 1,000 feet of the combined Preferred Route and Rebuild Sections. No residences were identified within 100 feet of the Preferred Route.

Alternate Route: There are 27 residences identified within 1,000 feet of the Alternate Route, 18 of which are also within 1,000 feet of the Rebuild Sections. Sixty residences were identified within 1,000 feet of the combined Alternate Route and Rebuild Sections. Two residences were identified within 100 feet of the Alternate Route, both of which are approximately 90 feet away from the potential centerline.

Rebuild Sections: There are 51 residences identified within 1,000 feet of the Rebuild Sections, none of which are within 100 feet.

Commercial: Approximately seven commercial structures were identified within 1,000 feet of the Rebuild Section to the west of the Village of Neffs, as shown on **Figures 04-1A** and **04-1B**. One of these structures is located within100 feet of the Rebuild Section just west of Neffs Station, but it is does not appear to be within the ROW. This structure is also within 1,000 feet of the Preferred and Alternate Routes.

Industrial: No industrial facilities were identified within 1,000 feet of the Preferred or Alternative Routes, or the Rebuild Sections.

Cultural: Data for known cultural resource landmarks were obtained from Ohio Historic Preservation Office's (OHPO) Online Mapping System.

Preferred Route: No previously recorded archaeological sites were identified within 1,000 feet and 100 feet of the Preferred Route. No Ohio Historic Inventory (OHI) structures were identified within 1,000 feet of the Preferred Route. One previously recorded Phase I cultural resources survey was identified within 1,000 feet of the Preferred Route. The Phase I survey area is not within 100 feet of the Preferred Route. No cemeteries were identified within 1,000 feet and 100 feet of the Preferred Route. No National Register Boundaries were identified within 1,000 feet of the Preferred Route.

Alternate Route: No previously recorded archaeological sites were identified within 1,000 feet and 100 feet of the Alternate Route. No Ohio Historic Inventory (OHI) structures were identified within 1,000 feet of the Alternate Route. One previously recorded Phase I cultural resources survey was identified within 1,000 feet of the Alternate Route. The Phase I survey area is within 100 feet of the Alternate Route. No cemeteries were identified within 1,000 feet of the Alternate Route. No National Register Boundary listings were identified within 1,000 feet of the Alternate Route.

Rebuild Sections: Two previously recorded archaeological sites were identified within 1,000 feet of the Rebuild Sections. These archaeological sites are not within 100 feet of the Rebuild Sections. No Ohio Historic Inventory (OHI) structures were identified within 1,000 feet of the Rebuild Sections. Three previously recorded Phase I cultural resources surveys were identified within 1000 feet of the Rebuild Sections. One of the Phase I survey areas is within 100 feet of the Rebuild Sections. No cemeteries were identified within 1,000 feet and 100 feet of the Rebuild Sections. No National Register Boundaries were identified within 1,000 feet of the Preferred Route.

In addition to the OHPO data sources above, AEP Ohio Transco's consultant will conduct a Phase I cultural resources survey for the Preferred and Alternate Routes, as well as the Rebuild Sections. The full Phase I report will be provided to OPSB and OHPO under separate cover.

Agricultural: Approximately 16% of the Preferred and Alternate Routes, as well as the Rebuild Sections, cross agricultural fields. A discussion of Agricultural District Land is provided in Section (B)(7).

Recreational: No parks were identified within 1,000 feet of the Preferred or Alternate Routes, or the Rebuild Sections.

Institutional: One school (Sacred Heart School) and one church (Sacred Heart Roman Catholic Church) were identified within 1,000 feet of the Preferred Route, approximately 800 feet away, in the Village of Neffs. No medical uses were identified within 1,000 feet of the Preferred or Alternate Routes, or the Rebuild Sections.

TABLE 07-6
SUMMARY OF LAND USE FACTORS OF THE
PREFERRED AND ALTERNATE ROUTES

Route Alternatives			
	Rebuild Sections	Preferred	Alternate
Length (miles)	4.3	1.5	1.7
% of Length in or Adjacent to Existing Roads Rights-of-way	0%	0%	0%
% of Length in or Adjacent to Existing Transmission Line Rights-of-way	99%	34%	33%
	Features within 100 feet of Route Alternatives		
Threatened and Endangered Species	0	0	0
Previously Recorded Historic Structures (OHI)	0	0	0
Previously Recorded Archaeological Sites	2	0	0
National Register of Historic Places (NRHP) Sites	0	0	0
Residences	0	0	2
Other sensitive land uses*	0	0	0
	Features within 1,000 feet of Route Alternatives		
Threatened and Endangered Species	0	0	0
Historic Structures (OHI)	0	0	0
Archaeological Sites	2	0	0
NRHP Sites	0	0	0
Residences*	51	36	27
Other sensitive land uses*	0	2	0

* Some residences are within 1,000 feet of both the Preferred and Alternate Routes, and the Rebuild Sections. Addition of Rebuild Sections and Preferred/Alternate Routes is not an accurate total of residences within 1,000 feet.
** Other sensitive land uses include airports, parks, State forests, golf courses, schools, hospitals or clinics, churches, and cemeteries.

(2) Impact of Construction

The Project is primarily located in a rural setting characterized by mixed agricultural and residential land uses, with large wooded areas. The eastern 0.8 mile of the Preferred Route runs

just north of the Village of Neffs. The eastern 1.1 miles of the Alternate Route runs around the Village of Neffs further north than the Preferred Route.

Residential: The closest residence to the Rebuild Sections is on Parcel Number 30-00159.000 in Belmont County owned by Okie and Margaret Barton. The residence is approximately 105 feet from the Rebuild Section centerline. The closest residence to the Preferred Route is Parcel number 26-00143.000 in Belmont County owned by Cindy Lee Moore. The residence is approximately 110 feet from the Preferred Route centerline. The closest residence to the Alternate Route is Parcel number 26-00581.000 owned by David and Wendy Hodorowski in Belmont County. The residence is approximately 90 feet from the Alternate Route centerline. No residences are expected to be removed due to construction of the Preferred or Alternate Routes, or the Rebuild Sections, and no individuals are expected to be required to relocate.

It is expected that some incremental increase in noise will be audible during some portions of construction of the new transmission line. However, the current ambient noise levels associated with local roads and the distance to the residences are expected to mitigate overall noise impacts during construction. Duration of construction at any one location along the routes is also expected to be short.

Commercial: No adverse impacts to commercial land uses are anticipated as a result of the Project.

Industrial: No adverse impacts to industrial land uses are anticipated as a result of the Project.

Cultural: A Phase I cultural resources investigation will be conducted on behalf of AEP Ohio Transco by its consultant. Impacts to cultural land use areas associated with construction of the Preferred and Alternate Routes are not anticipated. The full Phase I report will be provided to OPSB and OHPO under separate cover.

Agricultural: The likely impacts of the proposed Project on agricultural land use associated with construction activities primarily occur in the ROW of the transmission line and include potential damage to current crops, disturbance of underground field drainage systems, compaction of soils and resulting reduction of productivity, and to a lesser extent, disruption of plow patterns, and creation of areas for weeds and other non-crops to grow.

Recreational: No adverse impacts to recreational land uses are anticipated as a result of the Project.

Institutional: No adverse impacts to institutional land uses are anticipated as a result of the Project.

(3) Structures

The Project is primarily located in a rural setting characterized by mixed agricultural and residential land uses, with large wooded areas. The eastern 0.8 miles of the Preferred Route

runs just north of the Village of Neffs. The eastern 1.1 miles of the Alternate Route runs around the Village of Neffs further north than the Preferred Route. Due to the location of the Routes in relation to each other, the impacts to residential and commercial land uses will be less with the Alternate Route than the Preferred Route.

(a) Structures within 200 feet of Proposed ROW:

Preferred Route: Six structures were identified within 200 feet of the proposed ROW of the Preferred Route between 60 and 130 feet away. These structures include five single-family residences and one outbuilding. The commercial building would be located within the ROW.

Alternate Route: Nine structures were identified within 200 feet of the proposed ROW of the Alternate Route between 40 and 190 feet away. These structures include four single-family residences and three outbuildings. None of these structures would be within a 100-foot ROW of the Alternate Route.

Rebuild Sections: Nineteen structures were identified within 200 feet of the proposed ROW of the Rebuild Sections between 45 and 200 feet away. These structures include 13 single family homes, four outbuildings, and two commercial buildings. One of the single family homes is also within 200 feet of the ROW of the Preferred and Alternate Routes. None of the buildings will be located within the ROW.

(b) Structures to be destroyed, acquired, or removed and owner compensation: No buildings are expected to be destroyed, acquired or removed along the Preferred or Alternate Routes, or the Rebuild Sections.

(c) Mitigation Procedures to minimize impact to structures near the facility:

AEP Ohio Transco's primary method of minimizing impacts to structures was done through utilization of the existing ROW and deviating where necessary to avoid demolition of buildings.

(C) AGRICULTURAL LAND USE AND DISTRICTS

(1) Agricultural Land and Districts Map

(a) Agricultural Land Use: Agricultural land use along the Preferred and Alternate Routes, as well as the Rebuild Sections, consists of pasture and hay fields and row crops. Agricultural land is shown on **Figures 07-1A** and **07-1B**.

(b) Agricultural District Land: AECOM contacted the Belmont County auditor via phone on November 2016 to obtain information on Agricultural District land. A representative of the Belmont County Auditor informed AECOM that there are three agricultural district land parcels within 1,000 feet of the Project, two of which are crossed, as shown on **Figures 07-1A** and **07-1B**.

(2) Acreage and Impacts

(a) Acreage: The Rebuild Sections ROW and preliminary access roads include approximately 58 acres of agricultural land comprised of hay fields and pasture as well as some row crops. The Preferred Route ROW and preliminary access roads include approximately 24 acres of agricultural land comprised of hay fields and pasture as well as some row crops. The Alternate Route ROW and preliminary access roads include approximately 26 acres of agricultural land comprised of hay fields and pasture as well as some row crops. It is not expected that all of this land would be impacted during construction as access roads and work pads will not require the entire ROW width. Once the transmission line is operational, only very small areas encompassed by the pole locations will be taken out of agricultural use. This area of impact is expected to be nearly identical to the area currently occupied by poles along the existing line.

(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 on the land and the following agricultural facilities and practices within the Project area, where present.

(i) 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 AEP Ohio Transco's construction activities. Additionally, no significant impacts to livestock operations or grazing areas are anticipated. Property owners may continue to utilize 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.

(ii) Irrigation: There are no known irrigation systems within the proposed ROW for the either route. AEP Ohio Transco 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.

(iii) Field Drainage Systems: Damage to field tile systems is unlikely given the installation of mostly wood pole equivalent structures and relatively short construction duration, but AEP Ohio Transco will restore damaged systems to their pre-construction condition. AEP Ohio Transco 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.

(iv) Structures Used for Agricultural Operations: There are no structures within 200 feet of the ROW that will be adversely affected by the construction and operation of the transmission line.

(v) Agricultural Land Viability for Agricultural Districts: The Preferred and Alternate Routes cross two Agricultural District parcels. The parcels currently are crossed by the existing 69 kV transmission line. No impacts on the viability of agricultural land for Agricultural Districts are anticipated.

(c) 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 AEP Ohio Transco's acquisition of the ROW for the Project, as part of the negotiated settlement between AEP Ohio Transco and the property owner, or as determined in appropriation proceedings. Additionally, AEP Ohio Transco and the contractors hired to work on the Project have extensive experience in transmission line construction. Both AEP Ohio Transco and the selected contractors will work to minimize agricultural impacts during construction of the Project.

(i) Avoidance or Minimization of Damage: In order to minimize damage to agricultural land, AEP Ohio Transco will place poles beyond or at the edges of agricultural fields (to the extent practical) 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, AEP Ohio Transco 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) REGIONAL LAND USE PLANS

(1) Impact on Regional Development and Regional Land Use Plans

No current formally adopted regional land use plans were identified. It is anticipated that this project will likely have a positive impact on regional development by providing and increased reliability and availability of electric power to residential, commercial, institutional and industrial users throughout the region. This project should also have a positive impact on the neighboring electric utility systems. No negative impacts on regional development are foreseen for this

project. Based on discussions with local officials, the project is supported at the local and regional levels.

(2) Compatibility with Regional Development and Land Use Plans

The project is compatible with regional development. It will increase reliability and capacity of the electrical grid. AEP Ohio Transco will also pay taxes on the new infrastructure to the jurisdictions crossed.

(E) CULTURAL IMPACTS OF THE PROPOSED PROJECT

(1) Previously Recorded Cultural and Archaeological Resources

Data for known cultural resource landmarks shown on **Figures 04-1A** and **04-1B** was obtained from OHPO's Online Mapping System as provided in section (B)(1) above.

(2) Determination of the Location of Cultural Resources

AEP Ohio Transco's consultant will conduct a Phase I cultural resources survey for the Preferred and Alternate Routes, including the Rebuild Sections. The full Phase I report will be provided to OPSB and OHPO under separate cover.

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

It is anticipated that identified cultural resources, if any, can be avoided by earth disturbance activities during construction of the proposed Project. Maintenance, and operations will be generally limited to infrequent inspections. Therefore, no significant impacts on cultural resources are anticipated during operation and maintenance.

(4) Mitigation Procedures

No mitigation procedures beyond the avoidance measures already taken and strategic pole placement to avoid disturbing other limited cultural resources appears necessary along the Preferred Route at this time. The full scope of the mitigation, if necessary due to selection of the Alternate Route, would be coordinated with the OSPB and OHPO.

(5) Aesthetic Impact

(a) Visibility of the Proposed Facility: The view sheds along both the Preferred and Alternate Routes, including the Rebuild Sections, from residences and potentially sensitive vantage points may be altered by the presence of the transmission line. Many roads in the area are paralleled by wood poles supporting distribution lines. On balance, the addition of the proposed Project will not have a significant negative impact on the overall visual landscape. At select locations, there may be an incremental change in the view shed, including for some residences and where tree clearing is required.

(b) Facility Effect on Site and Surrounding Area: The construction of the proposed transmission line would affect the existing visual aesthetics of the area through which the transmission line passes primarily from the removal of trees from the ROW of the transmission line and the introduction of a new man-made element in the landscape. The degree of visual impact of a new man-made element will vary with the viewer and the setting; the impact can be evaluated by comparing the amount of contrast resulting from the construction of the new element and the existing landscape. For example, if the transmission line were screened from view, then the aesthetic impact would be minimal, and if the transmission line were placed in an existing open area, it would have a comparatively higher aesthetic impact. In areas where the transmission line follows or replaces similar facilities, the aesthetic impact would be reduced, because it would create only an incremental visual change in the existing visual setting. Vegetation clearing will be required along both routes and will be noticeable when the routes cross wooded areas. Portions of the routes along the existing 69 kV line will be a replacement of existing wooden structures with new single steel poles. Where the selected route crosses wooded areas, non-compatible species of vegetation would be cleared across the entire width of the ROW. Large danger trees outside of the ROW would also be trimmed or removed if they pose a danger to the reliable operation of the transmission line.

(c) Visual Impact Minimization: The ability to minimize the visual impacts of the proposed transmission line is constrained by engineering requirements, existing land use, and the project length. AEP Ohio Transco has limited the potential aesthetic impacts of the transmission line to the extent possible through the route selection process and utilizing an existing 69 kV ROW. Visual impacts cannot be limited further because of terrain, land use constraints, ecological features, and residential structures in the vicinity without increasing impacts to ecological, cultural, and land use resources.

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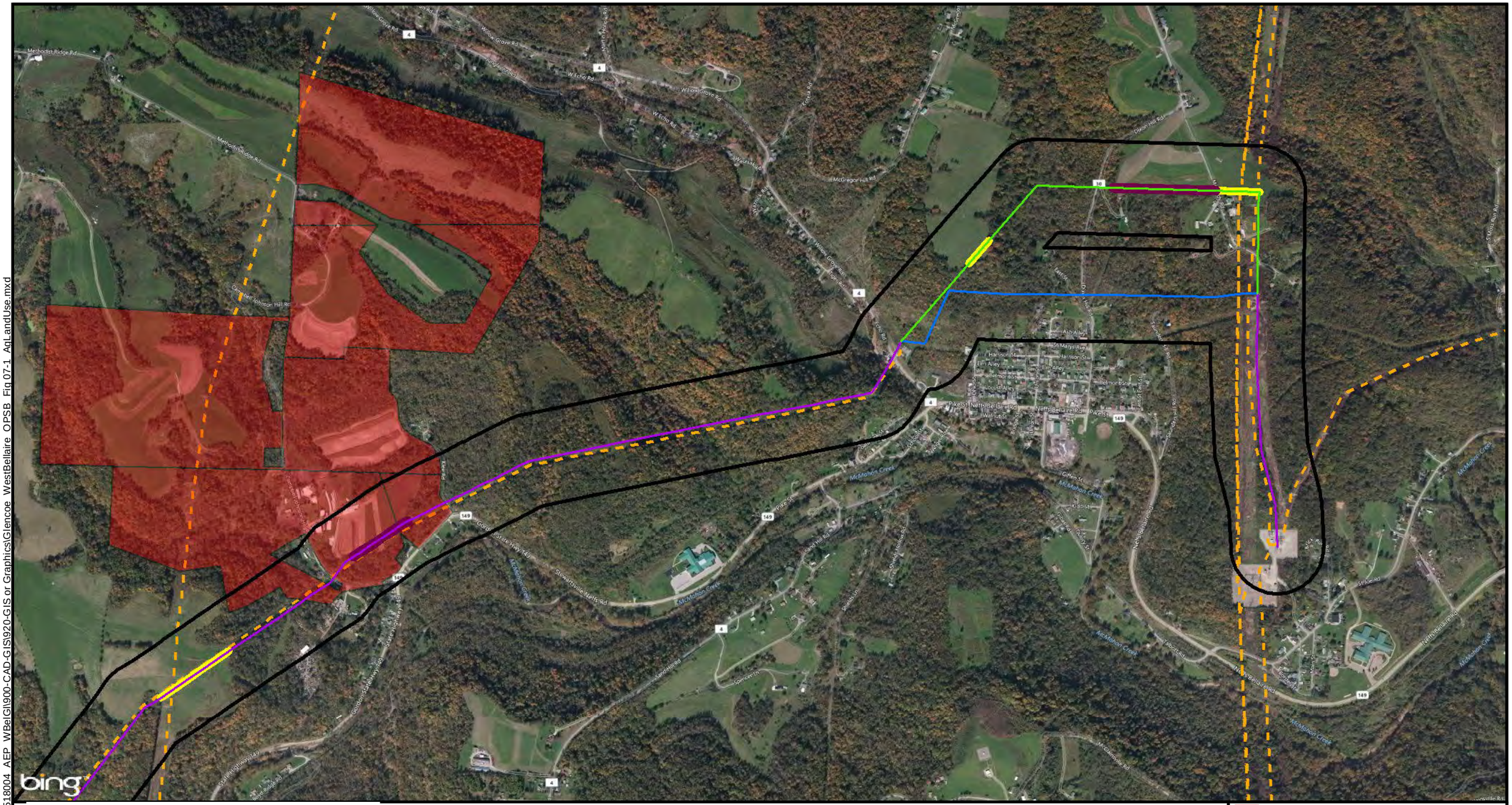

LEGEND:

- Preferred Route
- Alternate Route
- Rebuild Section
- Existing Electric Line
- 1,000-foot Buffer of Routes
- Pasture/Hayfield
- Row Crop
- Agricultural District Land

0 1,000 2,000
Feet

Base Map Source:
ArcGIS Online, Bing Map Hybrid

N

AEP OHIO TRANSMISSION COMPANY

West Bellaire-Glencoe
138 kV Line Rebuild Project

FIGURE 07-1A
AGRICULTURAL LAND USE
IN PROJECT AREA

JOB NO. 60518004

AECOM

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LEGEND:

- Preferred Route
- Alternate Route
- Rebuild Section
- Existing Electric Line
- 1,000-foot Buffer of Routes
- Pasture/Hayfield
- Row Crop
- Agricultural District Land

0 1,000 2,000
Feet

Base Map Source:
ArcGIS Online, Bing Map Hybrid

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AEP OHIO TRANSMISSION COMPANY

West Bellaire-Glencoe
138 kV Line Rebuild Project

FIGURE 07-1B
AGRICULTURAL LAND USE
IN PROJECT AREA

JOB NO. 60518004

AECOM

4906-5-08 Ecological Information and Compliance with Permitting Requirements

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

In September and December of 2016, AEP Ohio Transco 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 area on either side of the centerline of the Preferred and Alternate Routes, including the Rebuild Sections. A field survey of ecological habitat and features was performed within 100 feet of the potential disturbance area for the Preferred and Alternate Routes, and Rebuild Sections ("Field Survey Area"). Information in the following paragraphs addresses AEP Ohio Transco's ecological study conducted for the Preferred and Alternate Routes, and Rebuild Sections. Further details are provided in the Wetland Delineation and Stream Assessment Report included as **Appendix 08-1**.

(A) ECOLOGICAL MAP

A map at a scale of 1:24,000 illustrating areas within 1,000 feet of the Preferred and Alternate Routes, and Rebuild Sections is presented as **Figure 05-1**. The proposed route alignments, including proposed turning points, are also presented in **Figure 05-1**.

More detailed maps at 1:6,000-scale depicting delineated features, survey corridor, lakes, ponds, reservoirs, highly erodible soils, slopes of 12 percent or greater, wildlife areas, nature preserves, conservations areas, and proposed ROW, as applicable, are provided as **Figures 2A through 2E or 3A through 3E of Appendix 08-1** for the Preferred and Alternate Routes, including the Rebuild Sections.

(B) FIELD SURVEY REPORT FOR VEGETATION AND SURFACE WATERS

The ecological survey of the Preferred and Alternate Routes, and Rebuild Sections, including the 300-foot Field Survey Area, was conducted in September and December of 2016 by AEP Ohio Transco's consultant. A copy of the report of the findings is included in **Appendix 08-1**.

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

(a) Woody and Herbaceous Vegetation Land: Woody and herbaceous vegetation were identified along the proposed routes during the field reconnaissance. The Preferred, and Alternate Routes, and Rebuild Sections are bordered for portions of their lengths by old field, pasture, scrub-shrub, young to mature woodland forests, residential landscaped areas, stream/wetland areas, and urban areas. A variety of woody and herbaceous lands are present within the proposed ROW of the Preferred and Alternate Routes. Habitat descriptions, applicable to the Preferred and Alternate Routes, and Rebuild Sections are in **Section 3.4 of Appendix 08-1**. Details on the expected impacts of construction are provided below. Maps showing the vegetated land cover are provided on **Figures 4A through 4E of Appendix 08-1**.

(b) Wetlands: Wetlands are 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 vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

To identify whether wetlands exist along the Preferred and Alternate Routes, including the Rebuild Sections, wetland criteria, as established by United States Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (1987 Manual) and the ***Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*** (***Regional Supplement***) were evaluated. The Ohio Rapid Assessment Method (ORAM) was developed to determine the relative ecological quality and level of disturbance of a particular wetland. Wetlands are scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v5.0, resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between “Categories 1 and 2” from 30 to 34.9 and between “Categories 2 and 3” from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower category (Mack 2001).

One wetland was identified within the 300-foot survey corridor along the Preferred Route, with a total of 0.19 acre within the survey corridor, 0.15 acre within the proposed ROW, and 57 linear feet spanned by the centerline. Three wetlands were identified within the 300-foot survey corridor along the Alternate Route, with a total of 0.04 acre within the survey corridor and 0.03 acre within the proposed ROW. One of these wetlands is spanned by the Alternate Route centerline for a total length of 21 linear feet. Eight wetlands were identified within the 300-foot survey corridor along the Rebuild Sections, with a total of 0.65 acre within the survey corridor and 0.27 acre within the proposed ROW. Four of these wetlands are spanned by the Rebuild Sections centerline for a total length of 168 linear feet. Any wetlands crossed by an access road will be done through the use of construction matting or other Best Management Practices (BMPs), which is further discussed in Section 4906-5-08(B)(3)(c). Details of the delineated wetlands, including USACE and ORAM forms, representative photographs, maps, and tables, are provided in **Appendix 08-1**.

(c) Streams and Drainage Channels: Stream evaluations were conducted for the survey corridor of the Preferred and Alternate Routes, and Rebuild Sections. Streams that drain areas greater than one square mile were assessed using the Ohio EPA’s Qualitative Habitat Evaluation Index (QHEI) method. QHEI evaluations were conducted on three streams in the survey corridor, all of which are along the Rebuild Sections. The evaluations were conducted at or near the proposed transmission line crossing of each stream. These streams were identified using USGS topographic maps, aerial photography, and field reconnaissance.

Streams with a drainage basin less than one square mile were evaluated using the Ohio EPA's Headwater Habitat Evaluation Index (HHEI) method. The HHEI is a rapid field assessment method for physical habitat that can be used to appraise the biological potential of most Primary Headwater Habitat (PHWH) streams. HHEI evaluations were conducted on a total of 31 streams in the survey corridors, with 20 along the Rebuild Sections, eight along the Preferred Route corridor, and three along the Alternate Route corridor. The evaluations were conducted at or near the proposed transmission line crossing of each stream.

Nine streams were identified within the 300-foot survey corridor along the Preferred Route, with a total of 3,701 linear feet within the survey corridor and 1,753 linear feet within the proposed maintained ROW. Seven of these streams are spanned by the Preferred Route centerline.

Eight streams were identified within the 300-foot survey corridor of the Alternate Route with a total of 1,998 linear feet within the survey corridor and 762 linear feet within the proposed maintained ROW. One of these streams is spanned by the Alternate Route centerline.

Twenty-five streams were identified within the 300-foot survey corridor of the Rebuild Sections with a total of 10,062 linear feet within the survey corridor and 2,754 linear feet within the proposed maintained ROW. Seventeen of these streams are spanned by the Rebuild Sections centerline.

Construction matting or other BMPs, which is further discussed in Section 4906-5-08(B)(3)(b), will be utilized for any streams crossed by access roads. Details of the assessed streams, including QHEI and HHEI forms, representative photographs, maps, and tables, are provided in **Appendix 08-1**.

(d) Lakes, Ponds, and Reservoirs: No major lakes were observed along the survey corridor of the Preferred or Alternate Routes, or Rebuild Sections. Four ponds (Ponds 1, 2, 3 and 4) were confirmed within the 300-foot survey corridor of the Rebuild Sections during the field reconnaissance. Two of these ponds are within the Rebuild Sections ROW, with one crossed by the centerline. Based on review of aerial photography, no other ponds were identified within 1,000 feet of the routes. Delineated ponds within 100 feet are identified on **Figures 3A through 3E of Appendix 08-1**.

Impacts to ponds and lakes are not anticipated by the construction, operation or maintenance of the proposed transmission line. Best Management Practices, including utilization of silt fencing, will be used as appropriate during construction to minimize runoff siltation.

(2) Delineation Result Mapping

Field delineated streams and wetlands within the survey corridor and proposed ROW are mapped on **Figures 3A through 3E of Appendix 08-1**, as discussed in Section 4906-5-08(B)(1).

(3) Probable Impact of Construction on Vegetation, Surface Waters, and Wetlands

(a) Vegetation: The potential impacts on woody and herbaceous vegetation along the Preferred and Alternate Routes, and Rebuild Sections will be limited to clearing within the proposed transmission line ROW and potentially along access roads. However where required, 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 operation of the transmission line. Construction impacts to agricultural land within the existing transmission ROW is expected to be temporary in nature and limited to vehicle access and temporary lay down activities.

Approximately 50 feet of clearing on either side of the centerline will be required to be maintained along the Preferred or Alternate Route, including the Rebuild Sections. Open areas were crossed when possible in the design of the facility. However, some forested areas will also need to be cleared. The Preferred Route will require approximately 11.1 acres of forest clearing, and the Alternate Route will require approximately 8.1 acres of forest clearing. Incremental widening of the Rebuild Sections ROW will require approximately 21.2 acres of forest clearing.

Clearing of potential Indiana bat roost trees, if any, will be restricted to occur only within the period from October 1st through March 31st to avoid any potential impact to summer tree-roosting bats. All vegetative waste (such as tree limbs and trunks) which is generated during the construction phase will be wind-rowed or chipped and disposed of appropriately.

(b) Streams: None of the streams that occur along the Preferred and Alternate Routes, including the Rebuild Sections, are expected to be impacted by the Project. Poles have been located such that all waterbodies are spanned. Access roads avoiding waterbodies were also selected in most cases. Existing culverts may be utilized, where available.

The Applicants will not conduct mechanized clearing within 25 feet of any stream, and will only clear (via hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe construction and operation of the line. No streams will be filled or permanently impacted. Streams will be avoided to the maximum extent practical for construction access; however, streams that need to be crossed for construction access will likely be done so using steel plates, timber mats or similar acceptable methods.

Crossing methods for each stream will be addressed in detail in the Storm Water Pollution Prevention Plan (SWPPP) for the project. The SWPPP will be provided to the OPSB under separate cover. Some of the access routes may be left in place for maintenance activity or at the request of the landowner.

(c) Wetlands: New transmission line structure locations were selected to avoid wetland areas to the extent practical. Disturbance of soils in wetland areas during construction will be minimized. No fill material is planned to be placed in any wetland area along the Preferred or Alternate Routes, or Rebuild Sections. Based on current design, it is anticipated that one

structure will be placed in Wetland 3, a Category 1 PEM wetland, along the Preferred Route. Engineering constraints in the area eliminate the ability to avoid placing the pole in the wetland. The pole location will be accessed using construction matting. No excavation other than the boring of a hole will be performed within the wetland. No fill will be placed in the wetlands. Wetland areas will be clearly staked prior to the commencement of any clearing in order to minimize incidental vehicle impacts. Other than the pole location discussed, operation of heavy mechanized equipment is not planned within any identified wetland areas, although some construction equipment will need to cross wetland areas. Woody vegetation in wetlands will be hand-cut by chain saws, hydro-axes, or other non-mechanized techniques. When necessary rubber-wheeled vehicles, or vehicles equipped with go tracks, will be used to remove vegetation debris.

Construction access for clearing activities and installing the transmission line poles has been planned to minimize wetland crossings to the extent practical. Construction matting and other best management practices will be deployed to minimize these temporary disturbances, where found to be necessary. Where available, existing and regularly maintained access paths will be utilized during construction to minimize impacts to wetlands.

Care will be taken where wetlands are located to avoid or minimize filling and sedimentation, which could occur as a result of construction activities. Selective clearing will be required to remove woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line.

Best Management Practices such as utilization of silt fences and construction matting will be implemented as required during construction to control sedimentation. Sedimentation potential at wetlands should be minimal due to the structure placement and the fact that construction equipment will only cross wetlands if necessary, and do so using construction matting.

(4) Probable Impact of Operation and Maintenance on Vegetation, Surface Waters, and Wetlands

(a) Vegetation: During operation of the transmission line along either of the proposed routes, the impacts on vegetated land should be minor. The undeveloped land not disturbed by construction should retain its current vegetation composition and continue successional development at a normal rate. Any periodic cutting along the proposed transmission line ROW is not expected to result in a significant environmental impact to the vegetation.

(b) Streams: Once the transmission line is in operation, no significant impact to streams or drainage channels is anticipated. Only periodic selective removal of vegetation that interferes with the operation of the transmission line will be required. No major lakes, ponds, or reservoirs should be affected by the operation or maintenance of the Preferred or Alternate Routes, including the Rebuild Sections.

(c) ***Wetlands:*** Wetland areas should not be significantly affected by the operation or maintenance of the Preferred and Alternate Routes, including the Rebuild Sections. Vegetation that occurs within wetland areas may require periodic cutting. It is not anticipated that such activities would result in erosion or water quality degradation. Maintenance cutting of woody vegetation in wetland areas would be hand-cut by chain saws, hydro-axes, or other non-mechanized techniques.

(5) Mitigation Procedures

(a) ***Post-construction Site Restoration and Stabilization:*** Experience shows that seeding in non-wetland and non-agricultural areas is advantageous to control erosion on areas disturbed by construction activities. In lightly disturbed wetland areas, existing seed banks are quite often capable of quickly reestablishing vegetation that is compatible with the surrounding wetland. A SWPPP and BMPs will be implemented during construction to control erosion. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation.

Construction activities within wetlands may result in temporary, short-term impacts. Natural re-vegetation in any disturbed wetland areas will begin after construction crews have completed the installation activities. Wetland mitigation, to the extent necessary, will be addressed as part of the process of obtaining any necessary wetland permits.

In wetland areas, the disturbance will be minor. If any unanticipated significant disturbance occurs in wetlands, topsoil will be segregated and replaced so that the existing seed banks will be allowed to initially revegetate the areas. Additional seeding will only take place if the existing seed bank does not repopulate an area. These measures should preserve the aesthetic qualities along the route, prevent erosion, and promote habitat diversity.

(b) ***Frac-out Contingency Plan:*** Not applicable.

(c) ***Demarcation of Surface Waters and Wetlands during Construction:*** The Project SWPPP will include requirements for silt fencing, orange barrier fencing, and other demarcation materials along the edges of surface waters and wetlands.

(d) ***Erosion Control Inspection and Repair:*** BMPs, including silt fencing and other erosion control measures, will be inspected routinely to assure proper installation and function. Inspections will also be triggered by significant rainfall events, to evaluate the need for repairs or adjustments in erosion control strategy.

(e) ***Storm Water Diversion Away from Fill Slopes and Exposed Surfaces:*** The SWPPP will include measures to control runoff during construction. BMPs will be removed only after sufficient revegetation.

(f) ***Methods to Protect Vegetation from Damage:*** The ROW and access roads will be surveyed and staked to clearly mark the clearing boundaries. Vegetation outside the ROW that will not present a danger to the safe and reliable operation of the transmission line will be avoided. BMPs

will be implemented during construction to control erosion that may affect neighboring vegetation. Only non-mechanized clearing will occur in wetlands and riparian areas within 25 feet of streams.

(g) Disposal of Cleared Vegetation: All vegetative waste (such as tree limbs and trunks) which is generated during the construction phase will be wind-rowed or chipped and disposed of appropriately.

(h) Herbicide Use for Maintenance: Use of herbicides is expected to be minimal, if at all, and will be conducted according to manufacturer's specifications.

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

(1) List of Species Identified Within Project Vicinity

(a) Protected Species Agency Consultation: The first phase of the survey involved a review of online lists of federal and state species of concern. In addition to the review of available literature, a request to Ohio Department of Natural Resources (ODNR) Ohio Natural Heritage Database (ONHD) for Geographical Information System (GIS) records of species of concern that were reported within close proximity to the Project. Coordination letters to the U.S. Fish and Wildlife Service (USFWS) and ODNR – Office of Real Estate soliciting comments on the project were also submitted.

Correspondence with the USFWS and the ODNR indicated that the project area is within the range of species that are on federal and/or state lists of threatened or endangered species, or are of high interest. **Section 3.5 of Appendix 08-1** provides details of the special status species identified during the agency consultation for the Project, including correspondence letters from the USFWS and ODNR and a table of species of concern identified in the project area.

(b) Species Descriptions: The proposed transmission line corridors are suitable habitat for several major wildlife species. Descriptions of protected species potentially present in the Project area based on literature review and agency coordination are included in **Section 3.5 of Appendix 08-1**. Commercial and recreational species identified were obtained from the ODNR-DOW annual hunting and trapping regulations.[2] No survey of major aquatic species was conducted.

Details on the expected impacts of construction, operation and maintenance, and mitigation procedures can be found following the commercial, recreational, and threatened and endangered species descriptions.

Protected Species: The USFWS and ODNR-DOW were contacted regarding the potential for occurrence of rare, threatened and endangered species along the project corridors. Twelve protected animals were reported by the ODNR and USFWS to be potentially near the range of the transmission line corridors. No animal species of concern were observed during field surveys. See **Table 6 of Appendix 08-1** for a list of the species of concern.

[2] ODNR–DOW Ohio Hunting and Trapping Regulations 2015-2016

Commercial Species: The commercially important species along the proposed routes consist of those hunted or trapped for fur or other byproducts, including the following:

Beaver (Castor canadensis): Beavers are commonly found throughout Ohio within forested ponds, lakes, and rivers. In rivers, beavers make burrows with an underwater entrance in the riverbank, while in streams, lakes, and ponds, they usually build dams that incorporate a lodge. Based on the habitat present along the routes, beavers could potentially inhabit only a few locations. This species may inhabit the proposed routes but was not observed.

Coyote (***Canis latrans***): Historically coyotes prefer open territory, but in Ohio they have adapted to various habitat types. Coyotes are a very adaptable species that has prospered despite the expanding presence of human impact. This species is likely to inhabit the proposed routes but was not observed.

Gray Fox (***Urocyon cinereogentus***): Gray fox habitat is generally dominated by wooded areas with some partially open brush land with little human presence. This species may inhabit the proposed routes but was not observed.

Long-tailed weasel (***Mustela frenata***): The long-tailed weasel is found throughout the state of Ohio in areas adjacent to rivers, lakes, streams, or marshes, where they feed on small mammals. This species is likely to inhabit the transmission line corridors but was not observed.

Mink (***Mustela vison***): The mink is almost invariably found near water, both running water of streams and rivers and the standing waters of marshes and lakes. Minks are drawn to areas of cluttered vegetation or wooded banks that offer protection. This species is expected to inhabit the transmission line corridors but was not observed.

Muskrat (***Ondatra zibethicus***): The muskrat is abundant throughout Ohio and prefers areas near intermittent streams, drainage courses, and farm ponds. It is the most extensively trapped fur-bearer in the State of Ohio. This species is likely to inhabit the transmission line corridors but was not observed.

Red fox (***Vulpes vulpes***): The red fox occurs throughout Ohio and is most prevalent in areas of maximum interspersion of woodland, cropland, brush, pastures, and edges of open areas that provide suitable hunting ground. It is likely that the species inhabits the transmission line corridors but was not observed.

Raccoon (***Procyon lotor***): The raccoon is abundant and widespread in Ohio, even in many suburban areas. Raccoons are found principally around aquatic and woodland habitats, with occasional forages into croplands. It is likely that the species inhabits the transmission line corridors but was not observed.

Striped skunk (***Mephitis mephitis***): The skunk prefers a semi-open habitat of mixed woods, brush, farmland, open grassland, and small caves in proximity to water. These mammals are common statewide. This species is expected to inhabit the transmission line corridors but was not observed.

Virginia Opossum (***Didelphis virginiana***): The opossum's preferred habitat is an area interspersed with woods, wetlands, and farmland. This species is expected to inhabit the proposed routes but was not observed.

Recreational Species: Recreational terrestrial species consist of those hunted as game. Recreational species expected to inhabit areas along the transmission line corridors include the following:

American woodcock (***Scolopax minor***): Woodcock are native Ohio shorebirds that prefer a combination of wet, early successional under story, and drier uplands. They prefer to nest in northeast and northwest Ohio along Lake Erie, or wherever habitat is suitable. Typical nests in Ohio are found in reverting brushy fields or in young, second growth woods. This species was not observed during the project surveys.

Eastern cottontail rabbit (***Sylvilagus floridanus***): This species is abundant in both rural and urban areas and prefers field borders, brushy areas, and thickets that occur along the proposed routes. This species was observed along the proposed routes.

Gray, red, and fox squirrels (***Sciurus carolinensis, Tamiasurius hudsonicus*** and ***S. niger***): These tree squirrel species occur throughout the State of Ohio. The fox squirrel (***Sciurus niger***) is primarily an inhabitant of small, typically isolated woodlots. This species was observed along the proposed routes. The gray squirrel (***Sciurus carolinensis***) and red squirrel (***Tamiasurius hudsonicus***) prefer more extensive woodland areas and were observed.

White-tailed deer (***Odocoileus virginianus***): White-tailed deer occur throughout Ohio. Deer are a very adaptable animal that can be found in almost all habitats throughout Ohio. Signs and several sightings of this species were observed along the proposed routes.

Wild turkey (***Meleagris gallopavo***): Wild turkeys are very adaptable animals. Although they prefer mature forests, with substantial cover and suitable food sources, they can live successfully in areas with as little as 15 percent forest cover. Signs of this species were observed along the project routes.

Woodchuck (***Marmota monax***): The woodchuck or groundhog is a common ground squirrel found throughout Ohio. It prefers sloped areas at the fringe of wooded and open areas. Indications and sightings of this species were found along the proposed routes.

Wood duck (***Aix sponsa***): The wood duck prefers mature riparian corridors along streams, quiet backwaters of lakes and ponds bordered by large trees, and secluded wooded swamps as ample areas to raise young. They feed on acorn, berries, and grapes on the forest floor. This species was not observed during field studies.

Game Fish: Based upon the nature of the surface waters crossed, various game fish may inhabit the streams and ponds that are crossed by the proposed routes.

Bluegill Sunfish (***Lepomis macrochirus***): Bluegill sunfish are found throughout the state in nearly every stream and water body. Their preferred habitat is clear, warm lakes with some rooted vegetation. This species is likely to occur in streams and ponds along the routes.

Green Sunfish (***Lepomis cyanellus***): Green sunfish are present in most lakes, reservoirs, and all streams. They are tolerant of turbid water unlike most other sunfish species. They appear to have no preference for a particular bottom type, but are usually 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.

Longear Sunfish (***Lepomis megalotis***): Longear sunfish favor sluggish, clear streams of moderate size with beds of aquatic vegetation to seek shelter in. This species is likely to occur in streams and ponds along the routes.

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

Smallmouth Bass (***Micropterus dolomieu***): Smallmouth bass are native to Ohio and are found in every county of the state. Smallmouth bass thrives in streams with gravel or rock bottoms with a visible current. This species is likely to occur in streams and ponds along the routes.

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 is likely to occur in streams and ponds along the routes.

(2) Construction Impact

Based on the nature of the proposed Project activities, habitat characteristics of the surrounding vicinity, and mobility of various species, construction impacts to protected and commercial species are not anticipated. While portions of the transmission line corridor may need to be cleared for construction purposes, the undeveloped land not disturbed by construction will retain its current vegetation composition and provide mobile species with available habitat in the surrounding area.

To avoid direct impacts to Indiana bat and northern long-eared bat roosting and foraging habitat, USFWS recommends that mechanized tree clearing be done between October 1st and March 31st. AEP Ohio Transco proposes to limit potential Indiana bat and northern long-eared bat habitat tree removal activities to those times outside of the summer roosting months for these species.

To avoid impacting federal and state-listed fish and mussel species, no in-stream water work is proposed for the Project. Additionally, AEP Ohio Transco will utilize best management practices to avoid any indirect impact to streams through its use of erosion and sediment controls within the SWPPP.

(3) Operation and Maintenance Impact

During operation of the transmission line along the proposed routes, any impacts on protected wildlife that may be present should be minor. While portions of the transmission line corridors will need to be cleared, the undeveloped land not disturbed by construction will retain its current vegetation composition. Periodic maintenance along the transmission line corridors is not expected to result in a significant impact to the local wildlife. Operational impact to local wildlife is also expected to be negligible, given the quantity of additional comparable habitat throughout the Project area.

(4) Mitigation Procedures

The Preferred and Alternate Routes, including the Rebuild Sections, have been examined in the field and reviewed on aerial photographs by experienced biologists and environmental scientists. No significant problem areas that would require the use of special mitigation measures for protected wildlife have been identified. If, however, such conditions are recognized at a later date, the condition will be mitigated appropriately on an individual basis.

(D) SITE GEOLOGY

(1) Local Geology

The Project falls within the Little Switzerland Plateau section of the Allegheny Plateau physiographic region. Bedrock geology beneath both routes consists of primarily of red and gray shales, siltstones, sandstones, limestones, and coals.

(2) Slopes and Soil Suitability for Foundation Construction

Approximately 1.1 miles (73%) of Preferred Route, 1.0 miles (59%) of the Alternate Route, and 3.2 miles (74%) of the Rebuild Sections cross areas mapped with slopes greater than 12 percent. Maps of slopes exceeding 12 percent (as estimated based on soil series maps) are provided on **Figures 2A through 2E of Appendix 08-1**. In general, transmission line poles will be placed on the ridge tops to allow spanning of stream valleys and reduce the possibility that the line will interfere with vegetation where terrain is challenging. Poles will be placed on stable ridge tops rather than more unstable steep slopes. Slope and soil mechanics will be carefully considered in the decision making process where access roads must be improved or constructed. In these areas, soils with the lowest slope and erosion characteristics will be used to construct access roads to the transmission pole locations.

During construction, AEP Ohio Transco will implement a SWPPP and associated BMPs as necessary to control erosion and sedimentation in areas with slopes exceeding 12 percent. Once construction is complete, soils will be revegetated and stabilized. As a result, no erosional impacts resulting from slopes exceeding 12 percent are expected.

Soil associations that will be crossed by the Preferred and Alternate Routes, including the Rebuild Sections, are shown on **Figures 04-1A** through **04-1B**. These soil associations include: Lowell-

Westmoreland-Morristown (OH159) and Lowell-Westmoreland-Wellston (OH118) (U.S. Department of Agriculture [USDA], 1990). No soil conditions were found that would potentially limit construction of the proposed project.

To obtain further site-specific details on the suitability of the soils for foundation construction, AEP Ohio Transco will conduct detailed engineering design and geotechnical soil borings. Engineering design and geotechnical test drilling will likely be completed soon after the Project is certificated by OPSB and engineering plans and boring logs will be provided to the staff shortly thereafter.

At a minimum, geotechnical soil borings will provide the following information to be utilized for structure placement and foundation design engineering, as needed:

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

AEP Ohio Transco 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 boring and laboratory test results to ensure they are sited in locations considered suitable based on soil and rock properties and surface slope.

Once the transmission line is in place, disturbed areas will be stabilized and re-vegetated. No impacts or erosion hazards are expected. Maintenance activities that involve excavation around poles are anticipated to be extremely rare, but in these cases, standard measures will be implemented to prevent soil erosion and run off into any nearby streams and wetlands.

No special mitigation procedures are anticipated beyond standard erosion prevention measures which take place during any construction activity. BMPs consisting mainly of silt fences will be used when construction takes place adjacent to drainage channels, streams, and wetlands. A SWPPP will be generated for the certificated route and meeting the requirements of Ohio EPA Permit No. OHC000004 will be followed for erosion and sedimentation control.

(E) ENVIRONMENTAL AND AVIATION COMPLIANCE INFORMATION

(1) List and Discussion of Permits Required

The Applicant anticipates submitting Notice of Intent (NOI) for coverage under the Ohio EPA General NPDES Permit associated with construction activity.

(2) Description, Quantification, Characterization, Removal and Disposal of Construction Debris

As construction work proceeds, the site will be kept clean of rubbish and debris resulting from the work. Debris associated with construction of the proposed transmission line is expected to

consist of conductor scrap, construction material packaging including cartons, insulator crates, conductor reels and wrapping, and used stormwater erosion control materials. Clearance poles, 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 Ohio EPA approved landfill or other appropriately licensed and operated facility.

Where vegetation must be cleared, the resulting brush will be removed or wind-rowed along the edge of the ROW. Marketable timber will generally be cut into appropriate lengths for sale or disposition by the landowner. Generally, stumps will not be removed.

(3) Storm Water and Erosion Controls during Construction and Restoration of Soils, Wetlands, and Streams Disturbed as a Result of Construction of the Facility

A SWPPP will be prepared and incorporated into the Construction Plans and Specifications, and shall be made available on site during construction of the Project. Implementation of erosion and sediment control practices shall conform to the ODNR Rainwater and Land Development Manual (2006); the Ohio EPA NPDES Permit Program for the discharge of storm water from construction sites, and any erosion and sediment control practices and standards required by the County.

Wetlands, streams and other environmentally sensitive areas shall be clearly flagged before commencement of clearing or construction. No construction or access will be permitted in these areas unless clearly specified in the Construction Plans and Specifications.

Grubbing activities are not expected to be required. Sediment basins, traps and perimeter sediment controls shall be implemented within seven days of grubbing activities and shall continue to function until disturbed areas are permanently stabilized.

Silt fencing and/or other appropriate best management practices for erosion control shall be constructed before upslope land disturbance begins. All silt fences shall be placed as close to the contour as possible so that water will not concentrate at low points in the fence and so that small swales or depressions which may carry concentrated flows to the silt fence are dissipated along its length. Where possible, vegetation shall be preserved for five feet upslope from the silt fence. Silt fence shall be placed so that eight inches of cloth are below the ground surface. Excess material shall lie at the bottom of the six-inch deep trench and the trench shall be backfilled and compacted. Silt fence shall allow runoff to pass only as diffuse flow through the geotextile fabric. If runoff overtops the silt fence, flows under or around the ends, one of the following shall be performed, as appropriate: 1) the layout of the silt fence shall be changed, 2) accumulated sediment shall be removed, or 3) other practices shall be installed. Fence posts shall be a minimum of 32 inches in length made by 2”x2” hardwood of sound quality. Silt fence fabric shall be ODOT Type C geotextile fabric or equivalent.

Disturbed areas that remain unworked for more than 21 days shall be stabilized with seed and mulch no later than 14 days after the last construction in that area.

All erosion and sediment control practices shall be inspected at least once every seven days and within 24 hours after any storm event greater than 0.5" of rain per 24-hour period.

All erosion and sediment control measures shall be maintained 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, for assurance fabric is securely attached to the fence posts, and to assure 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 shall include, at a minimum, the name of the Inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

(4) Plans for Disposition of Contaminated Soil and Hazardous Materials Generated or Encountered During Construction:

All materials stored on-site shall be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Products shall 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) will be retained and available on-site at all times.

All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in clearly labeled and tightly sealed containers.

Secondary containment will be provided for all on-site fuel storage tanks.

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 on-site. Spills will be reported to the appropriate government agency as required.

Any suspected hazardous materials encountered during construction will be reported to the AEP Regional Environmental Coordinator by the AEP Transmission Construction Representative. In addition, the AEP Ohio Transco Project Manager is notified, as well as the requisite levels of AEP Management.

AEP Ohio Transco requires a Spill Prevention Plan to be created and available for review on-site for construction projects of this scope by its contractors. This Spill Prevention Plan will cover proper handling techniques for all electrical equipment, materials and construction equipment that require a MSDS. AEP Ohio Transco also requires its employees and contractors to follow all Federal and State mandated material handling requirements.

AEP Ohio Transmission follows an internal Spill Prevention Notification Plan that is closely aligned to the AEP Spill Response and Cleanup – Field Guide. This Spill Response and Cleanup – Field Guide covers the following procedures:

I. Oil/PCB Spill Response and Cleanup Procedure

II. When to Report an Oil/PCB Spill to the Regional Environmental Coordinator

III. Hazardous Substance Spill Response Procedure

IV. Regional Environmental Coordinator Contact List

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

(5) Height of Tallest Anticipated Above Ground Structures and Construction Equipment within the Vicinity of Airports and Landing Strips.

The height of the tallest anticipated above ground structure and construction equipment is designed to be approximately 182 feet. AEP Ohio Transco submitted coordinates and approximate heights for major turning points along the Preferred and Alternate Routes, and Rebuild Sections to the FAA through the Notice Criteria Tool website. Based on the approximate locations submitted, determinations of no hazard to air navigation are expected. Once the exact pole locations and heights are engineered, AEP Ohio Transco will submit them to the FAA prior to construction. Construction and operation along the Preferred or Alternate Routes, including the Rebuild Sections, are not anticipated to impact any airports, landing strips, or heliports.

(6) Construction during Excessively Dusty or Excessively Muddy Soil Conditions

(a) Dust Control: The project construction areas and immediate vicinity will be kept free from dust nuisance resulting from project activities. During excessively dry periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

(b) Excessive Muddy Soil Conditions: Construction entrances will be established and maintained to a condition which will prevent tracking or flowing of sediment onto public rights of way. All sediment spilled, dropped, washed, or tracked onto public rights-of-way will be removed immediately.

APPENDIX 08-1

WETLAND DELINEATION AND STREAM ASSESSMENT REPORT

WEST BELLAIRE-GLENCOE 138/69 KV TRANSMISSION LINE PROJECT, BELMONT COUNTY, OHIO

WETLAND DELINEATION AND STREAM ASSESSMENT REPORT

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Project #: 60518004

January 2017

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LIST OF ACRONYMS and ABBREVIATIONS

AEP Ohio Transco	American Electric Power Ohio Transmission Company
FAC	Facultative
FACU	Facultative upland
FACW	Facultative wetland
GPS	Global Positioning System
IBI	Index of Biotic Integrity
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate wetland
OEPA	Ohio Environmental Protection Agency
OHWM	Ordinary high water mark
ORAM	Ohio Rapid Assessment Method
PEM	Palustrine emergent
POW	Palustrine open water
QHEI	Qualitative Habitat Evaluation Index
ROW	Right-of-way
UPL	Upland
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

American Electric Power Ohio Transmission Company's (AEP Ohio Transco) is proposing to rebuild the existing 6-mile long West Bellaire-Glencoe 69 kV electric transmission line for operation of one circuit at 138 kV, while a second circuit will remain in operation at 69 kV in Belmont County, Ohio ("Project"). The proposed Project consists of a Preferred, Alternate, and Rebuild Section Routes which is illustrated on Figure 1.

Land uses crossed by the Project survey corridor were assigned a general classification based upon the principal land characteristics of the location as observed through aerial photography review and observations during the field surveys. General land use types in the vicinity of the proposed Project include: wooded areas, agricultural fields, pasture, residential lots, old fields, and maintained transmission line right-of-way (ROW). Maintained transmission line ROW, wooded areas, and agricultural land are the dominant land use in the vicinity of the Project.

2.0 METHODOLOGY

The purpose of the field survey was to assess whether wetlands and other "waters of the U.S." exist within the Project survey corridor which was at least 350-foot wide. The field survey consisted of evaluation of Preferred, Alternate, and Rebuild Section Routes. Prior to conducting field surveys, digital and published county Natural Resources Conservation Service (NRCS) soil surveys, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, and U.S. Geological Survey (USGS) 7.5-minute topographic maps were reviewed as an exercise to identify the occurrence and location of potential wetland areas.

In September and December of 2016, AECOM ecologists walked the Project survey corridor to conduct a wetland delineation and stream assessment. During the field survey, the physical boundaries of observed water features were recorded using sub-decimeter accurate Trimble Global Positioning System (GPS) units. The GPS data was imported into ArcMap GIS software, where the data was then reviewed and edited for accuracy.

2.1 WETLAND DELINEATION

The Project survey corridor was evaluated according to the procedures outlined in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (1987 Manual) (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain and Piedmont Region (Version 2.0) (Regional Supplement) (USACE, 2012). The Eastern Mountain and Piedmont Regional Supplement was released by the USACE in August 2012 to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineation procedures. The 1987 Manual and Regional Supplement define wetlands as areas that have positive evidence of three

environmental parameters: hydric soils, wetland hydrology, and hydrophytic vegetation. Wetland boundaries are placed where one or more of these parameters give way to upland characteristics.

Since quantitative data were not available for any of the identified wetlands, AECOM utilized the routine delineation method described in the 1987 Manual and Regional Supplement that consisted of a pedestrian site reconnaissance, including identifying the vegetation communities, soils identification, a geomorphologic assessment of hydrology, and notation of disturbance. The methodology used to examine each parameter is described in the following sections.

2.1.1 SOILS

Soils were examined for hydric soil characteristics using a spade shovel to extract soil samples. A *Munsell Soil Color Chart* (Kollmorgen Corporation, 2010) was used to identify the hue, value, and chroma of the matrix and mottles of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (Environmental Laboratory, 1987). In sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are considered to be hydric soils.

2.1.2 HYDROLOGY

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

The *Regional Supplements* also state that if onsite data gathering is not practical, the growing season can be approximated by the number of days between the average (five years out of ten, or 50 percent probability) date of the last and first 28^{o}F air temperature in the spring and fall, respectively. The National Weather Service WETS data obtained from the NRCS National Water and Climate Center reveals for Belmont County that in an average year, this period lasts from April 17 to October 26, or 191 days. In the Project area, five percent of the growing season equates to approximately ten days.

The soils and ground surface were examined for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the *1987 Manual* and the *Regional Supplement.* Evidence indicating wetland hydrology typically includes primary indicators such as surface

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

2.1.3 VEGETATION

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb and woody vine) and an indicator status of obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and/or upland (UPL) was assigned to each plant species based on the U.S. Army Corps of Engineers *2016 National Wetland Plant List: Midwest Region,* which encompasses the area of the Project. An area is determined to have hydrophytic vegetation when, under normal circumstances, 50 percent or more of the composition of the dominant species are OBL, FACW and/or FAC species. Vegetation of an area was determined to be non-hydrophytic when more than 50 percent of the composition of the dominant species was FACU and/or UPL species. In addition to the dominance test, the FAC-Neutral test and prevalence tests are used to determine if a wetland has a predominance of hydrophytic vegetation. Recent USACE guidance indicates that to the extent possible, the hydrophytic vegetation decision should be based on the plant community that is normally present during the wet portion of the growing season in a normal rainfall year (USACE, 2012).

Vegetation sampling for wetland delineation can be challenging when some plants are covered by snow or die back due to freezing temperatures or other factors (USACE, 2010). The end of the growing season is indicated when woody deciduous species lose their leaves or the last herbaceous plants cease flowering and their leaves become dry or brown, whichever occurs latest. The wetland delineation field work within the Project area was conducted after the occurrence of these events and therefore, outside the normal growing season. Conducting a wetland delineation outside the normal growing season can make identifying the wetland/upland boundary more challenging and may require further assessment during the next growing season.

2.1.4 WETLAND CLASSIFICATIONS

Wetlands were classified based on the naming convention found in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al*, 1979). The identified wetland within the survey corridor was classified as a freshwater, Palustrine system, which includes non-tidal wetlands dominated by trees, shrubs, emergents, mosses, or lichens. Two palustrine wetland classes were identified within the Project survey corridor:

- ***PEM*** – Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.

- ***POW -*** Open water wetlands classified are characterized by a body of water with unknown depth and no indication of vegetation.

2.1.5 OHIO RAPID ASSESSMENT METHOD v. 5.0

The Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method for Wetlands v. 5.0 (ORAM) was developed to determine the relative ecological quality and level of disturbance of a particular wetland in order to meet requirements under Section 401 of the Clean Water Act. Wetlands are scored on the basis of hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v. 5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between “Categories 1 and 2” from 30 to 34.9 and between “Categories 2 and 3” from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower Category (Mack, 2001).

Category 1 Wetlands

Category 1 wetlands support minimal wildlife habitat, hydrological and recreational functions, and do not provide for or contain critical habitats for threatened or endangered species. In addition, Category 1 wetlands are often hydrologically isolated and have some or all of the following characteristics: low species diversity, no significant habitat for wildlife use, limited potential to achieve wetland functions, and/or a predominance of non-native species. These limited quality wetlands are considered to be a resource that has been severely degraded or has a limited potential for restoration, or is of low ecological functionality.

Category 2 Wetlands

Category 2 wetlands "...support moderate wildlife habitat, or hydrological or recreational functions," and as wetlands which are "...dominated by native species but generally without the presence of, or habitat for, rare, threatened or endangered species; and wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions." Category 2 wetlands constitute the broad middle category of "good" quality wetlands, and can be considered a functioning, diverse, healthy water resource that has ecological integrity and human value. Some Category 2 wetlands are lacking in human disturbance and considered to be naturally of moderate quality; others may have been Category 3 wetlands in the past, but have been degraded to Category 2 status.

Category 3 Wetlands

Wetlands that are assigned to Category 3 have "...superior habitat, or superior hydrological or recreational functions." They are typified by high levels of diversity, a high proportion of native species, and/or high functional values. Category 3 wetlands include wetlands which contain or provide habitat for threatened or endangered species, are high quality mature forested wetlands, vernal pools, bogs, fens, or which are scarce regionally and/or statewide. A wetland may be a Category 3 wetland because it exhibits one or all of the above characteristics. For example, a forested wetland located in the flood plain of a river may exhibit "superior" hydrologic functions (e.g. flood retention, nutrient removal), but not contain mature trees or high levels of plant species diversity.

2.2 STREAM CROSSINGS

Regulatory activities under the Clean Water Act provide authority for states to issue water quality standards and "designated uses" to all waters of the U.S. upstream to the highest reaches of the tributary streams. In addition, the Federal Water Pollution Control Act of 1972 and its 1977 and 1987 amendments require knowledge of the potential fish or biological communities that can be supported in a stream or river, including upstream headwaters. Streams were identified by the presence of a defined bed and bank, and evidence of an ordinary high water mark (OHWM). The USACE defines OHWM as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE, 2005).

Stream assessments were conducted using the methods described in the OEPA's Methods for Assessing Habitat in Flowing Waters: Using OEPA's *Qualitative Habitat Evaluation Index* (Rankin, 2006) and in the OEPA's Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams (Davic, 2012).

2.2.1 OEPA QUALITATIVE HABITAT EVALUATION INDEX

The qualitative habitat evaluation index (QHEI) is designed to provide a rapid determination of habitat features that correspond to those physical factors that most affect fish communities and which are generally important to other aquatic life (*e.g.,* macroinvertebrates). The quantitative measure of habitat used to calibrate the QHEI score are Indices (or Index) of Biotic Integrity (IBI) for fish. In most instances the QHEI is sufficient to give an indication of habitat quality, and the intensive quantitative analysis used to measure the IBI is not necessary. It is the IBI, rather than the QHEI, that is directly correlated with the aquatic life use designation for a particular surface water.

The QHEI method is generally considered appropriate for waterbodies with drainage basins greater than one square mile, if natural pools are greater than 40 cm, or if the water feature is shown as blue-line

waterways on USGS 7.5-minute topographic quadrangle maps. In order to convey general stream habitat quality to the regulated public, the OEPA has assigned narrative ratings to QHEI scores. The ranges vary slightly for headwater streams (H are those with a watershed area less than or equal to 20 square miles) versus larger streams (L are those with a watershed area greater than 20 square miles). The Narrative Rating System includes: Very Poor (<30 H and L), Poor (30 to 42 H, 30 to 44 L), Fair (43 to 54 H, 45 to 59 L), Good (55 to 69 H, 60 to 74 L) and Excellent (70+ H, 75+ L).

2.2.2 OEPA PRIMARY HEADWATER HABITAT EVALUATION INDEX

Headwater streams are typically considered to be first-order and second-order streams, meaning streams that have no upstream tributaries (or "branches") and those that have only first-order tributaries, respectively. The stream order concept can be problematic when used to define headwater streams because stream-order designations vary depending upon the accuracy and resolution of the stream delineation. Headwater streams are generally not shown on USGS 7.5-minute topographic quadrangles and are sometimes difficult to distinguish on aerial photographs. Nevertheless, headwater streams are now recognized as useful monitoring units due to their abundance, widespread spatial scale and landscape position (Fritz, et al. 2006). Impacts to headwater streams can have a cascading effect on the downstream water quality and habitat value. The headwater habitat evaluation index (HHEI) is a rapid field assessment method for physical habitat that can be used to appraise the biological potential of most Primary Headwater Habitat (PHWH) streams. The HHEI was developed using many of the same techniques as used for QHEI, but has criteria specifically designed for headwater habitats. To use HHEI, the stream must have a "defined bed and bank, with either continuous or periodically flowing water, with watershed area less than or equal to 1.0 mi^2 (259 ha), ***and*** a maximum depth of water pools equal to or less than 15.75 inches (40 cm)" (Davic, 2012).

Headwater streams are scored on the basis of channel substrate composition, bankfull width, and maximum pool depth. Assessments result in a score (0 to 100) that is converted to a specific PHWH stream class. Streams that are scored from 0 to 29.9 are typically grouped into "Class 1 PHWH Streams", 30 to 69.9 are "Class 2 PHWH Streams", and 70 to 100 are "Class 3 PHWH Streams". Technically, a stream can score relatively high, but actually belong in a lower class, and vice-versa. According to the OEPA, if the stream score falls into a class and the scorer feels that based on site observations that score does not reflect the actual stream class, a decision-making flow chart can be used to determine appropriate PHWH stream class using the HHEI protocol (Davic, 2012). Evidence of anthropogenic alterations to the natural channel will result in a "Modified" qualifier for the stream.

Class 1 PHWH Streams: Class 1 PHWH Streams are those that have "normally dry channels with little or no aquatic life present" (Davic, 2012). These waterways are usually ephemeral, with water present for short periods of time due to infiltration from snowmelts or rainwater runoff.

Class 2 PHWH Streams: Class 2 PHWH Streams are equivalent to "warm-water habitat" streams. This stream class has a "moderately diverse community of warm-water adapted native fauna either present seasonally or on an annual basis" (Davic, 2012). These species communities are composed of vertebrates (fish and salamanders) and/or benthic macroinvertebrates that are considered pioneering, headwater temporary, and/or temperature facultative species.

Class 3 PHWH Streams: Class 3 PHWH Streams usually have perennial water flow with cool-cold water adapted native fauna. The community of Class 3 PHWH Streams is comprised of vertebrates (either cold water adapted species of headwater fish and or obligate aquatic species of salamanders, with larval stages present), and/or a diverse community of benthic cool water adapted macroinvertebrates present in the stream continuously (on an annual basis).

2.3 Threatened and Endangered Species

AECOM conducted a rare, threatened, and endangered species review and general field habitat surveys within areas crossed by the Project survey area. This report will be used to assist AEP Ohio Transco's efforts to avoid impacts to threatened and endangered species potentially present in the survey area during construction activities. The first phase of the survey involved a review of online lists of federal and state species of concern. In addition to the review of available literature, AECOM submitted a request to Ohio Department of Natural Resources (ODNR) Ohio Natural Heritage Database (ONHD) for Geographical Information System (GIS) records of species of concern that were reported within close proximity to the Project. AECOM also submitted coordination letters to the USFWS, ODNR – Division of Wildlife (DOW), and ODNR – Division of Soil and Water Resources (DSWR) soliciting comments on the Project. Agency-identified species and available species-specific information was reviewed to identify the various habitat types that listed species are known to frequent. AECOM field ecologists conducted general habitat surveys in conjunction with the stream and wetland field surveys in October and December 2016.

3.0 RESULTS

Within the Project survey corridor, AECOM delineated 10 wetlands, 33 streams, and four ponds. These features are discussed in detail in the following sections.

3.1 WETLAND DELINEATION

3.1.1 Preliminary Soils Evaluation

Soils in the delineated wetlands were observed and documented as part of the delineation methodology. According to the USDA/NRCS Web Soil Surveys of Belmont County, Ohio (NRCS 2016), and the NRCS Hydric Soils Lists of Ohio, 18 soil series are mapped within the Project survey corridor (NRCS 2016). Within the 18 soil series, two soil map units are listed as hydric. Table 1 provides a detailed overview of

all soil series and soil map units within the Project survey corridor. Soil map units located within the Project survey corridor are shown on Figures 2A through 2E.

TABLE 1

SOIL MAP UNITS AND DESCRIPTIONS WITHIN THE WEST BELLAIRE-GLENCOE 138/69 kV TRANMISSION LINE PROJECT SURVEY CORRIDOR

Soil Series	Symbol	Map Unit Description	Topographic Setting	Hydric	Hydric Component (%)
Ashton	As	Ashton silt loam, occasionally flooded	alluvial fans, terraces	No	N/A
Brookside	BsC	Brookside silty clay loam, 8 to 15 percent slopes	hillslopes on uplands	No	N/A
	BsD	Brookside silty clay loam, 15 to 25 percent slopes	hillslopes on uplands	No	N/A
	BsE	Brookside silty clay loam, 25 to 40 percent slopes	hillslopes on uplands	No	N/A
Chagrin	Cg	Chagrin silt loam, 0 to 3 percent slopes, occasionally flooded	flood plains on valleys	Yes	5%
Culleoka	CuC	Culleoka silt loam, 8 to 15 percent slopes	knolls, ridges	No	N/A
Elba	EbE	Elba silty clay loam, 25 to 40 percent slopes	hills	No	N/A
Elkinsville	ElB	Elkinsville silt loam, 3 to 8 percent slopes	terraces	No	N/A
	ElC	Elkinsville silt loam, 8 to 15 percent slopes	terraces	No	N/A
Fairpoint	Mwh4F1	Morristown channery silt loam, 25 to 70 percent slopes, unreclaimed, highwall	spoil piles on surface mines	No	N/A
Hartshorn	He	Hartshorn silt loam, occasionally flooded	flood plains	No	N/A
Itmann	Itm6F1	Itmann very channery loam, 25 to 70 percent slopes	spoil piles on uplands	No	N/A
Lowell	LeD	Lowell silt loam, moderately wet, 15 to 25 percent slopes	hills on uplands	No	N/A
	LoB	Lowell-Westmoreland silt loams, 3 to 8 percent slopes	ridges on hills	No	N/A
	LoC	Lowell-Westmoreland silt loams, 8 to 15 percent slopes	ridges on hills	No	N/A
	LoD	Lowell-Westmoreland silt loams, 15 to 25 percent slopes	hillslopes on hills	No	N/A
	LoE	Lowell-Westmoreland silt loams, 25 to 35 percent slopes	hillslopes on hills	No	N/A
	LoF	Lowell-Westmoreland silt loams, 35 to 70 percent slopes	hillslopes on hills	No	N/A
	LpF	Lowell-Westmoreland silt loams, benched, 30 to 70 percent slopes	hills	No	N/A

TABLE 1

SOIL MAP UNITS AND DESCRIPTIONS WITHIN THE WEST BELLAIRE-GLENCOE 138/69 kV TRANMISSION LINE PROJECT SURVEY CORRIDOR

Soil Series	Symbol	Map Unit Description	Topographic Setting	Hydric	Hydric Component (%)
Newark	Ne	Newark silt loam, frequently flooded	flood plains	Yes	15
Omulga	Omm1B1	Omulga silt loam, mixed substratum, 2 to 6 percent slopes	terraces on river valleys	No	N/A
	Omm1C1	Omulga silt loam, mixed substratum, 6 to 12 percent slopes	terraces on river valleys	No	N/A
Richland	RhB	Richland silt loam, 3 to 8 percent slopes	hills	No	N/A
Udorthents	Ud	Udorthents-Urban land complex		Unranked	
Water	W	Water		Unranked	
Wellston	WhC	Wellston silt loam, 8 to 15 percent slopes	ridges on uplands	No	N/A
Westmore	WkB	Westmore silt loam, 3 to 8 percent slopes	hills	No	N/A
Westmoreland	WmB	Westmoreland silt loam, 3 to 8 percent slopes	hills	No	N/A
	WmC	Westmoreland silt loam, 8 to 15 percent slopes	hills on uplands	No	N/A
	WmD	Westmoreland silt loam, 15 to 25 percent slopes	hills on uplands	No	N/A

NOTES:

(1) Data sources include:

USDA, NRCS. 2016 Soil Survey Geographic (SSURGO) Database. Available online at: http://soildatamart.nrcs.usda.gov/

USDA, NRCS. December 2015. National Hydric Soils List by State. Available online at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/

3.1.2 National Wetland Inventory Map Review

National Wetland Inventory (NWI) wetlands are areas of potential wetland that have been identified from USFWS aerial photograph interpretation which have typically not been field verified. Forested and heavy scrub/shrub wetlands are often not shown on NWI maps as foliage effectively hides the visual signature that indicates the presence of standing water and moist soils from an aerial view. The USFWS website states that the NWI maps are not intended or designed for jurisdictional wetland identification or location. As a result, NWI maps do not show all the wetlands found in a particular area nor do they necessarily provide accurate wetland boundaries. NWI maps are useful for providing indications of potential wetland areas, which are often supported by soil mapping and hydrologic predictions, based upon topographical analysis using USGS topographic maps.

According to the NWI maps of the Attica, Bloomville, Chatfield, and Tiffin South, Ohio quadrangles, the Project survey corridor contains 14 mapped NWI wetlands. The NWI wetlands were identified with one palustrine pond, intermittently exposed (PUBG), one palustrine pond, intermittently exposed, and excavated (PUBGx), and 12 riverine wetlands, unknown perennial, unconsolidated bottom, permanently flooded (R5UBH). The location of the NWI mapped wetlands are shown on Figure 2A through Figure 2E.

3.1.3 Delineated Wetlands

During the field survey, AECOM identified a total of 10 wetlands, ranging in size from 0.01 to 0.19 acre, within the Project survey corridor. Some wetland boundaries extend beyond the Project survey corridor, but only what was identified within the Project survey corridor was assessed.

The 10 wetlands within the Project survey corridor are of two different wetland habitat types: nine PEM wetlands and one POW wetland. See Table 2 for a summary of the delineated wetlands within the Project survey corridor.

The locations and approximate extent of the wetlands identified within the Project survey corridor are shown on Figures 3A through Figure 3E. Completed USACE and ORAM wetland delineation forms are provided in Appendix A and B, respectively. Representative color photographs taken of the wetlands are provided in Appendix D.

TABLE 2
DELINEATED WETLANDS WITHIN THE WEST BELLAIRE-GLENCOE 138 kV TRANSMISSION LINE REBUILD PROJECT SURVEY CORRIDOR

Wetland Name	Latitude	Longitude	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Length Spanned by Centerline (feet)[b]	Acreage within Project Survey Corridor	Acreage within Proposed Maintained Right-of-way[c]
Rebuild Sections								
Wetland 03	40.0293007	-80.8200989	PEM	23	Category 1	14	0.18	0.06
Wetland 04	40.0228996	-80.8414001	PEM/POW	27.5	Category 1	36	0.15	0.06
Wetland 05	40.0224991	-80.8417969	PEM	28.5	Category 1	23	0.14	0.04
Wetland 06	40.0222015	-80.8426971	PEM	22	Category 1	96	0.09	0.09
Wetland 07	40.0222015	-80.8432999	PEM	21	Category 1	NS	0.01	0
Wetland 08	40.012001	-80.8604965	PEM	19	Category 1	NS	0.01	0
Wetland 09	40.0135002	-80.8927002	PEM	34.5	Category 2	NS	0.05	0.01
Wetland 10	40.0139008	-80.8933029	PEM	36	Category 2	NS	0.03	0.01
Rebuild Sections Totals						168	0.65	0.27
Preferred Route								
Wetland 03	40.0293007	-80.8200989	PEM	23	Category 1	57	0.19	0.15
Preferred Route Totals						57	0.19	0.15
Alternate Route								
Wetland 01	40.0313988	-80.8066025	PEM	18	Category 1	NS	0.04	0.02
Wetland 02	40.0335999	-80.8106995	PEM	16	Category 1	21	0.03	0.03
Wetland 03	40.0293007	-80.8200989	PEM	23	Category 1	NS	0.04	0.03
Alternate Route Totals						21	0.04	0.03

Cowardin Wetland Type[a]: PEM = palustrine emergent, POW = palustrine open water

Length Spanned by Centerline (feet)[b]: NS = Not Spanned by proposed centerline

Acreage within Proposed Maintained ROW[c]: "0" indicates the wetland is not within proposed ROW

3.1.4 Delineated Wetlands ORAM V5.0 Results

Within the Project survey corridor, eight wetlands are Category 1 wetlands and two wetlands are Category 2 wetlands. Wetland 02 had the lowest ORAM score, 16, while Wetland 10 had the highest score, 36. A breakdown of ORAM scores can be found in Table 2 and Table 3. Completed ORAM forms are provided in Appendix B.

Category 1 Wetlands

The eight Category 1 wetlands delineated within the Project survey corridor include: seven PEM wetlands and one PEM/POW wetland. The highest Category 1 ORAM score was 28.5 (Wetland 05), and the lowest ORAM score was 16 (Wetland 02). These wetlands typically exhibited very narrow to medium upland buffers and intensive use of adjacent upland areas (residential or pasture), exhibited limited plant community development with a moderate to high percentage of invasive species, and characteristically had habitat and hydrology in the early stages of recovering from previous manipulation due to mowing, clearcutting, and other disturbances.

Category 2 Wetlands

The two Category 2 wetlands delineated within the Project survey corridor were both PEM wetlands. The highest Category 2 ORAM score was 36 (Wetland 10) and the lowest was 34.5 (Wetland 09). The Category 2 wetlands generally exhibited medium upland buffers, low to moderately high intensive surround land use (e.g. young 2nd growth forest, old field, shrubland), very low to moderate percentage of invasive species, and had habitat and hydrology generally recovering or recovered from previous manipulation due to clearcutting, shrub/sapling removal, sedimentation, and other disturbances.

Category 3 Wetlands

No Category 3 wetlands were identified within the Project survey corridor.

TABLE 3
SUMMARY OF DELINEATED WETLANDS WITHIN THE WEST BELLAIRE-GLENCOE 138/69 kV TRANSMISSION LINE REBUILD PROJECT SURVEY CORRIDOR

Cowardin Wetland Type[a]	ORAM Category 1	ORAM Category 2	ORAM Category 3	Number of Wetlands	Acreage within Proposed Maintained Right-of-way[c]	Length Crossed by Centerline (feet)[b]
Rebuild Sections						
PEM	5	2	0	7	0.21	132
PEM/POW	1	0	0	1	0.06	36
Total	**6**	**2**	**0**	**8**	**0.27**	**168**
Preferred Route						
PEM	1	0	0	1	0.15	57
Total	**1**	**0**	**0**	**1**	**0.15**	**57**
Alternate Route						
PEM	3	0	0	3	0.07	21
Total	**3**	**0**	**0**	**3**	**0.07**	**21**

Cowardin Wetland Type[a]: PEM = palustrine emergent, POW = palustrine open water

3.2 STREAM CROSSINGS

AECOM identified 34 streams, totaling 15,760 linear feet, within the Project survey corridor, as listed in Table 4. The streams are comprised of 16 ephemeral streams, 13 intermittent streams, and five perennial streams. A breakdown of streams and lengths found within the Preferred, Alternate, and

Rebuild Section Routes are listed in Table 4. The locations of the streams identified within the survey corridor are shown on Figures 3A through 3E.

HHEI evaluations were conducted on 31 streams in the survey corridor. QHEI evaluations were conducted on three streams in the survey corridor. The evaluations were conducted at or near the proposed transmission line crossing or access road crossing of each stream. These streams were identified using USGS topographic maps, aerial photography, and field reconnaissance.

AECOM has preliminarily determined that all assessed streams within the Project survey corridor appear to be jurisdictional (i.e., waters of the U.S.), as they all appear to be tributaries that flow into or combine with other streams (waters of the U.S).

TABLE 4

STREAMS IDENTIFIED WITHIN THE GLENCOE-WEST BELLAIRE 138/69 kV TRANSMISSION LINE REBUILD PROJECT SURVEY CORRIDOR

Stream Report Name	Latitude	Longitude	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (in)	Form[a]	Score	Class/ Narrative Rating	Spanned by Centerline	Length (feet) within Project Survey Corridor	Length (feet) within Proposed Maintained Right-of-way (100 feet)[b]
Rebuild Sections											
Stream 01	40.026552	-80.806341	Ephemeral	1	0	HHEI	16	Modified Class 1	yes	1182	691
Stream 02	40.028657	-80.809753	Intermittent	1.5	1	HHEI	26	Modified Class 1	yes	361	0
Stream 08	40.02918	-80.820301	Intermittent	1.5	1	HHEI	15	Modified Class 1	yes	65	80
Stream 09	40.028226	-80.820032	Perennial	16	16	QHEI	52.5	Fair Warmwater	yes	353	100
Stream 10	40.026638	-80.827808	Ephemeral	3	0	HHEI	17	Modified Class 1	yes	483	228
Stream 11	40.027266	-80.828677	Perennial	10	6	HHEI	77	Class 3	yes	413	121
Stream 12	40.025492	-80.833548	Ephemeral	2.5	1	HHEI	26	Modified Class 1	yes	366	112
Stream 13	40.024814	-80.837651	Ephemeral	3	0	HHEI	27	Class 1	yes	370	71
Stream 14	40.024478	-80.837342	Intermittent	4.5	3	HHEI	49	Modified Class 2	yes	319	101
Stream 15	40.022258	-80.841678	Intermittent	6	2.5	HHEI	43	Modified Class 2	yes	415	115
Stream 16	40.022269	-80.842187	Ephemeral	3	1	HHEI	24	Modified Class 1	no	143	0
Stream 17	40.021275	-80.845718	Ephemeral	3	0.25	HHEI	27	Modified Class 1	no	408	0
Stream 18	40.017807	-80.849566	Intermittent	4	1	HHEI	37	Modified Class 2	no	726	38
Stream 19	40.017147	-80.851025	Ephemeral	3	0.5	HHEI	32	Class 2	yes	318	149
Stream 20	40.015561	-80.853808	Perennial	15	2	QHEI	43.5	Fair Warmwater	yes	364	102
Stream 21	40.013722	-80.864836	Ephemeral	3	0.5	HHEI	25	Modified Class 1	no	51	0
Stream 25	40.012088	-80.872289	Intermittent	3	1	HHEI	29	Modified Class 1	no	84	0
Stream 26	40.013561	-80.880424	Intermittent	2.5	1.5	HHEI	30	Modified Class 2	yes	364	103
Stream 27	40.013563	-80.886479	Ephemeral	2	0	HHEI	16	Class 1	no	631	175
Stream 28	40.013906	-80.887842	Perennial	9	18	HHEI	66	Class 3	yes	356	100
Stream 29	40.013433	-80.88819	Ephemeral	2	1	HHEI	22	Modified Class 1	yes	92	65
Stream 30	40.014005	-80.891447	Intermittent	2.5	0.25	HHEI	21	Modified Class 1	yes	395	266

TABLE 4

STREAMS IDENTIFIED WITHIN THE GLENCOE-WEST BELLAIRE 138/69 kV TRANSMISSION LINE REBUILD PROJECT SURVEY CORRIDOR

Stream Report Name	Latitude	Longitude	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (in)	Form[a]	Score	Class/ Narrative Rating	Spanned by Centerline	Length (feet) within Project Survey Corridor	Length (feet) within Proposed Maintained Right-of-way (100 feet)[b]
Stream 31	40.013111	-80.89174	Ephemeral	3	0.5	HHEI	23	Modified Class 1	no	127	0
Stream 32	40.012954	-80.892572	Perennial	20	12	QHEI	49	Fair Warmwater	no	964	0
Stream 33	40.013165	-80.892737	Intermittent	2	2	HHEI	21	Modified Class 1	yes	710	135
Rebuild Sections Totals										10,062	2,754
Preferred Route											
Stream 05	40.029869	-80.812137	Intermittent	6	8	HHEI	66	Modified Class 2	yes	1191	575
Stream 06b	40.030623	-80.810444	Ephemeral	3	1	HHEI	42	Modified Class 2	no	104	5
Stream 07	40.031234	-80.814303	Intermittent	6	3.5	HHEI	57	Class 3	yes	351	128
Stream 08	40.02918	-80.820301	Intermittent	1.5	1	HHEI	15	Modified Class 1	yes	87	73
Stream 21	40.013722	-80.864836	Ephemeral	3	0.5	HHEI	25	Modified Class 1	yes	515	271
Stream 22	40.014538	-80.869945	Ephemeral	1.5	0.5	HHEI	19	Modified Class 1	yes	271	263
Stream 23	40.014872	-80.870665	Ephemeral	3	0	HHEI	25	Modified Class 1	no	95	0
Stream 24	40.012025	-80.87068	Intermittent	6	10	HHEI	78	Class 3	yes	775	285
Stream 25	40.012088	-80.872289	Intermittent	3	1	HHEI	29	Modified Class 1	yes	312	152
Preferred Route Totals										3,701	1,753
Alternate Route											
Stream 03	40.031623	-80.806198	Intermittent	1	1	HHEI	16	Modified Class 1	yes	227	108
Stream 04	40.033194	-80.80908	Ephemeral	1.5	0.5	HHEI	25	Modified Class 1	no	182	0
Stream 06a	40.030623	-80.810444	Ephemeral	1	0.5	HHEI	17	Modified Class 1	no	94	0
Stream 07	40.031234	-80.814303	Intermittent	6	3.5	HHEI	57	Class 3	yes	319	100
Stream 08	40.02918	-80.820301	Intermittent	1.5	1	HHEI	15	Modified Class 1	yes	0	73
Stream 21	40.013722	-80.864836	Ephemeral	3	0.5	HHEI	25	Modified Class 1	yes	301	137
Stream 24	40.012025	-80.87068	Intermittent	6	10	HHEI	78	Class 3	yes	368	106
Stream 25	40.012088	-80.872289	Intermittent	3	1	HHEI	29	Modified Class 1	yes	506	237

TABLE 4

STREAMS IDENTIFIED WITHIN THE GLENCOE-WEST BELLAIRE 138/69 kV TRANSMISSION LINE REBUILD PROJECT SURVEY CORRIDOR

Stream Report Name	Latitude	Longitude	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (in)	Form[a]	Score	Class/ Narrative Rating	Spanned by Centerline	Length (feet) within Project Survey Corridor	Length (feet) within Proposed Maintained Right-of-way (100 feet)[b]
Alternate Route Totals										1,998	762

Form Used[a] : QHEI = Qualitative Habitat Evaluation Index, HHEI = Headwater Habitat Evaluation Index

Length within Proposed Maintained ROW[b] : "0" indicates the stream is not within proposed ROW

3.2.1 Qualitative Habitat Evaluation Index

Three streams within the Project survey corridor were assessed using the QHEI methodology and all three were Fair Warmwater habitat streams. The three perennial streams totaled 1,681 linear feet within the Project survey corridor. Forms for the streams assessed using the QHEI methodology are provided in Appendix C.

Fair Warmwater Habitat Streams – The three Fair Warmwater habitat streams, totaling 1,681 linear feet were Streams 09, 20, and 32. These streams received QHEI scores ranging between 43.5 (Stream 20) and 52.5 (Stream 09). The substrates of the streams primarily consisted of cobble and silt with lesser amounts of bedrock, boulder, gravel, and sand. The streams generally showed evidence of little to moderate bank erosion, fair to good development, none to low sinuosity, and the presence of in-stream cover such as: undercut banks, overhanging vegetation, shallows, rootwads, boulders, aquatic macrophytes, and logs/woody debris. Pool depths did not exceed 16 inches and average bankfull widths did not exceed 20 feet.

3.2.2 Primary Headwater Habitat Evaluation Index

Thirty-one headwater streams, totaling 14,078 linear feet, were identified along the Project survey corridor. These streams included two Class 1 streams, 18 Modified Class 1 streams, one Class 2 stream, six Modified Class 2 streams, and four Class 3 streams. Completed HHEI forms for each stream are provided in Appendix C. Representative color photographs were taken of each stream during the field survey and are provided in Appendix D.

Class 1 Headwater Streams – Two Modified Class 1 headwater streams, totaling 1,001 linear feet, with scores of 16 (Stream 27) and 27 (Stream 13), were identified during the field investigations. These two streams were identified as ephemeral with substrates primarily consisting of sand and silt with lesser amounts of cobble, gravel, and leaf pack/woody debris. No water was observed and average bankfull widths ranged from two to three feet.

Modified Class 1 Headwater Streams – Eighteen Modified Class 1 headwater streams, totaling 7,059 linear feet, with scores ranging from 16 (Stream 01) to 29 (Stream 25), were identified during the field investigations. Twelve of the Modified Class 1 streams were identified as ephemeral and six were identified as intermittent. The substrates primarily consisted of silt cobble with lesser amounts of sand, gravel, and leaf pack/woody debris. The streams showed evidence of stream channel modification (e.g., channelization, culverting, etc.) that resulted in the stream receiving a Modified Class 1 designation. The maximum pool depths ranged from zero to two inches, and average bankfull widths ranged from one to three feet.

Class 2 Headwater Streams – Stream 19, totaling 318 linear feet, was identified as an ephemeral stream with a HHEI score of 32. The substrates primarily consisted of cobble and silt with lesser amounts of boulder, gravel, and leaf pack/woody debris. The maximum pool depth is 0.5 inch and average bankfull width is three feet.

Modified Class 2 Headwater Streams – Six Modified Class 2 headwater streams, totaling 3,119 linear feet, with scores ranging from 30 (Stream 26) to 66 (Stream 05) were identified during the field investigations. Five of the Modified Class 2 streams were identified as intermittent and the remaining was identified as ephemeral. The substrates generally consisted of gravel and sand with lesser amounts of cobble, boulder, and leaf pack/woody debris. The streams showed evidence of stream channel modification (e.g., channelization, culverting, etc.) that resulted in the streams receiving a Modified Class 2 designation. The maximum pool depths ranged from one to eight inches, and average bankfull widths ranged from three to six feet.

Class 3 Headwater Streams – Four Class 3 headwater streams, totaling 2,581 linear feet, with scores ranging from 57 (Stream 07) to 78 (Stream 24), were identified during the field investigations. Two of the Class 3 streams were identified as intermittent and two were identified as perennial. The substrates primarily consisted of cobble and bedrock with lesser amounts of gravel, silt, sand, and leaf pack/woody debris. The maximum pool depths ranged from six to eighteen inches, and average bankfull widths ranged from six to 10 feet.

3.3 PONDS

Four ponds, totaling approximately 0.75 acre, were observed within the Rebuild Sections of the Project survey corridor. These ponds appear to be man-made for stormwater retention, recreational, wildlife, or livestock use. The locations of ponds are shown on Figures 3A through 3E.

3.4 VEGETATIVE COMMUNITIES WITHIN THE PROJECT SURVEY AREA

AECOM field ecologists conducted a general habitat survey in conjunction with the stream and wetland field surveys in October and December 2016. Portions of the Project survey area were identified as old field, pasture, scrub-shrub, agricultural land, young to mature woodland forests, residential landscaped areas, stream/wetland areas, and urban areas. A variety of woody and herbaceous lands, as described below in Table 5, are present within the Project survey area. Habitat descriptions, applicable to the Project, and details on the expected impacts of construction are provided below. Vegetated land cover can be seen visually from aerial photography provided on Figures 04A through 04E.

TABLE 5

VEGETATIVE COMMUNITIES WITHIN THE PROJECT AREA

Vegetative Community	Description	Approximate Acreage Within the Project Survey Area	Approximate Percentage within the Project Survey Area
Agricultural Land	Agricultural land consisting of soybean and corn fields were present along the Project survey area. The agricultural land contains row crops and is not used for pasture or hay fields.	22.29	6.8%
Bottomland Hardwood Woodlands	Bottomland hardwood forests are present along areas of the Project survey corridor, particularly in the broad floodplain of large streams and rivers. These forests are dominated by green ash (Fraxinus pennsylvanica), osage orange (Maclura pomifera), sycamore (Platanus occidentalis), eastern cottonwood (Populus deltoides), black willow (Salix nigra), honey locust (Gleditsia triacanthos), and various other deciduous wood species. The dominant shrub-layer species included honeysuckle (Lonicera japonica), spicebush (Lindera benzoin), poison ivy (Toxicodendron radicans), and false nettle (Boehmeria cylindrica).	9.32	2.9%
Landscaped Areas	Landscaped areas, including residential properties and commercial properties, were observed within the Project vicinity. These landscaped areas within the Project survey corridor and adjacent areas are frequently mowed grasses and forbs.	12.42	3.8%
Oak-Hickory and Successional Hardwood Woodlands	Oak-Hickory and successional mixed hardwood woodlands are present along the Project survey corridor. Woody species dominating these areas included red oak (Quercus rubra), white oak (Quercus alba), sugar maple (Acer saccharum), red maple (Acer rubrum), box elder (Acer negundo), American Beech (Fagus grandfolia), shagbark hickory (Carya ovata), and black walnut (Juglans nigra). The dominant shrub-layer species included spicebush (Lindera benzoin), poison ivy (Toxicodendron radicans), honeysuckle (Lonicera japonica), and blackberry (Rubus occidentalis).	137.38	42.2%
Old Field	Herbaceous cover exists alongside roads, field borders, and abandoned fields within the survey corridor of the Project in the form of successional old-field communities. These communities are the earliest stages of recolonization by plants following disturbance. This community type is typically short-lived, giving way progressively to shrub and forest communities unless periodically re-disturbed, in which case they remain as old fields. The old-field areas within the study corridors and adjacent areas are infrequently mowed areas of grasses, forbs, and occasional shrubs.	42.59	13.1%
Beech-Maple Mesic Upland Forest	Beech-Maple mesic forest communities were observed within the Project survey corridor. This type of community consists of closed-canopy hardwood forests including sugar maple (Acer saccharum), American beech (Fagus grandifolia) and Tulip poplar (Liriodendron tulipifera). Typically there is also an abundance of tree seedlings, especially of sugar maple.	18.59	5.7%
Pasture/Hay Fields	Pasture for cattle and hay fields were observed in various portions of the study area. Pasture areas within the study corridors and adjacent areas are frequently mowed and grazed areas of grasses and forbs.	48.27	14.8%

TABLE 5

VEGETATIVE COMMUNITIES WITHIN THE PROJECT AREA

Vegetative Community	Description	Approximate Acreage Within the Project Survey Area	Approximate Percentage within the Project Survey Area
Scrub-Shrub	Scrub-shrub habitats represent the successional stage between old-field and second growth forest, and often emerge in recently harvested forests responding to the lightness of the removed canopy. Dominant species consist of herbaceous communities similar to that of old field habitat with a few woody species, to a community dominated by forest herbs and woody species.	19.04	5.8%
Streams/Wetlands	Streams and wetlands were observed both within and beyond the survey corridor for the Project.	8.77	2.7%
Urban	Urban areas are areas developed with residential and commercial land uses, including roads, buildings and parking lots. These areas are generally devoid of significant woody and herbaceous vegetation.	7.19	2.2%
Totals:		**325.9**	**100%**

3.5 THREATENED AND ENDANGERED SPECIES AGENCY COORDINATION

Protected Species Agency Consultation –

AECOM conducted a rare, threatened, and endangered species review for areas crossed by the Project survey area. The first phase of the evaluation involved a review of online lists of federal and state species of concern. In addition to the review of available literature, a request was submitted to ODNR Ohio Natural Heritage Database for records of species of concern that were reported within close proximity to the Project. Coordination letters to the USFWS, ODNR – DOW, and ODNR – DSWR soliciting comments on the project were also submitted. A summary of the agency coordination is provided below. Correspondence letters from the USFWS and ODNR are included as Appendix E. Table 6 provides a list of these species of concern identified in the Project area during the rare, threatened, and endangered species review.

TABLE 6

ODNR AND USFWS LISTED SPECIES WITHIN THE PROJECT AREA

Common Name (Scientific Name)	State Status	Federal Status	Habitat Description	Potential Habitat Observed in the Project Survey Area	Impact Assessment	Agency Comments
Mammals						
Indiana bat (*Myotis sodalis*)	Endangered	Endangered	Winter Indiana bat hibernacula include caves and mines, while summer habitat typically includes tree species exhibiting exfoliating bark or cavities that can be used for roosting. The 8- to 10-inch diameter size classes of several species of hickory (*Carya* spp.), oak (*Quercus* spp.), ash (*Fraxinus* spp.), birch (*Betula* spp.), and elm (*Ulmus* spp.) have been found to be utilized by the Indiana bat. These tree species and many others may be used when dead, if there are adequately sized patches of loosely-adhering bark or open cavities. The structural configuration of forest stands favored for roosting includes a mixture of loose-barked trees with 60 to 80 percent canopy closure and a low density sub-canopy (less than 30 percent between about 6 feet high and the base canopy). The suitability of roosting habitat for foraging or the proximity to suitable foraging habitat is critical to the evaluation of a particular tree stand. An open subcanopy zone, under a moderately dense canopy, is important to allow maneuvering while catching insect prey. Proximity to water is critical, because insect prey density is greater over or near open water.	Yes	Some potentially suitable habitat is present within the Project area (woodlands).	USFWS commented that due to the project type, size, and location, plus the project proposal for seasonal cutting tree cutting between October 1 and March 31, there should be no expected impacts to the Indiana bat. ODNR requested that suitable Indiana bat habitat should be conserved or cut between October 1 and March 31.

TABLE 6

ODNR AND USFWS LISTED SPECIES WITHIN THE PROJECT AREA

Common Name (Scientific Name)	State Status	Federal Status	Habitat Description	Potential Habitat Observed in the Project Survey Area	Impact Assessment	Agency Comments
Northern long-eared bat (*Myotis septentrionalis*)	Threatened	Threatened	Winter hibernacula include caves and mines, while summer habitat typically includes tree species exhibiting exfoliating bark or cavities that can be used for roosting. The 8- to 10-inch diameter size classes of several species of hickory (*Carya* spp.), oak (*Quercus* spp.), ash (*Fraxinus* spp.), birch (*Betula* spp.), and elm (*Ulmus* spp.) have been found to be utilized by northern long-eared bats. These tree species and many others may be used when dead, if there are adequately sized patches of loosely-adhering bark or open cavities. The structural configuration of forest stands favored for roosting includes a mixture of loose-barked trees with 60 to 80 percent canopy closure and a low density sub-canopy (less than 30 percent between about 6 feet high and the base canopy). The suitability of roosting habitat for foraging or the proximity to suitable foraging habitat is critical to the evaluation of a particular tree stand. An open subcanopy zone, under a moderately dense canopy, is important to allow maneuvering while catching insect prey. Proximity to water is critical, because insect prey density is greater over or near open water. Northern long-eared bats have also been found, albeit rarely, roosting in structures like barns and sheds.	Yes	Some potentially suitable habitat is present within the Project area (woodlands).	USFWS commented that due to the project type, size, and location, plus the project proposal for seasonal cutting tree cutting between October 1 and March 31, there should be no expected impacts to the northern long-eared bat.

TABLE 6

ODNR AND USFWS LISTED SPECIES WITHIN THE PROJECT AREA

Common Name (Scientific Name)	State Status	Federal Status	Habitat Description	Potential Habitat Observed in the Project Survey Area	Impact Assessment	Agency Comments
Black bear (*Ursus americanus*)	Endangered	None	Found throughout North America in a wide variety of more heavily wooded habitats, ranging from swamps and wetlands to dry upland hardwood and coniferous forests.	Yes	Some potentially suitable habitat is present within the Project area (woodlands).	Due to mobility of this species, this project is not likely to impact this species.
Fish						
Western banded killfish (*Fundulus diaphanous menona*)	Endangered	None	Found in areas with an abundance of rooted aquatic vegetation, clear waters, and with substrates of clean sand organic debris free of silt.	No	No in-water work is planned as part of the Project. No impacts to fish species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Channel darter (*Percina copelandi*)	Threatened	None	Found in large, coarse sand or fine gravel bars in large rivers or along the shore of Lake Erie.	No	No in-water work is planned as part of the Project. No impacts to fish species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
River darter (Percina shumardi)	Threatened	None	Found in very large rivers typically in areas of swift current over gravel or rocky bottom in depths of three feet or more.	No	No in-water work is planned as part of the Project. No impacts to fish species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Tippacanoe darter (*Etheostoma tippecanoe*)	Threatened	None	Found in medium to large streams and rivers in the Ohio River drainage in riffles of moderate current with a substrate of gravel and small cobble sized rocks.	No	No in-water work is planned as part of the Project. No impacts to fish species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Paddlefish (*Polyodon spathula*)	Threatened	None	Found in the Ohio River and up to the first dam on its larger tributaries. They prefer the sluggish pools and backwater areas of these rivers and streams.	No	No in-water work is planned as part of the Project. No impacts to fish species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

TABLE 6

ODNR AND USFWS LISTED SPECIES WITHIN THE PROJECT AREA

Common Name (Scientific Name)	State Status	Federal Status	Habitat Description	Potential Habitat Observed in the Project Survey Area	Impact Assessment	Agency Comments
Mussels						
Butterfly (*Elipsaria lineolate)*	Endangered	None	Can be found in large rivers in stretches with pronounced current and a substrate of coarse sand and gravel.	No	No in-water work is planned as part of the Project. No impacts to mussel species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Threehorn wartyback *(Obliquaria reflexa)*	Threatened	None	Can be found in large rivers where there is a moderately strong current and a substrate of gravel, sand, and mud.	No	No in-water work is planned as part of the Project. No impacts to mussel species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Black sandshell (*Ligumia recta*)	Threatened	None	Can be found in large streams in sandy mud to gravel	No	No in-water work is planned as part of the Project. No impacts to mussel species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.
Amphibians						
Eastern hellbender (*Cryptobranchus alleganiensis*)	Endangered	Species of Concern	Found mostly in unglaciated Ohio. Prefer large, swift flowing streams.	No	No in-water work is planned as part of the Project. No impacts to mussel species and their habitat are anticipated.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact this species.

ODNR-DOW Coordination –

Coordination with the ODNR-DOW was initiated during the planning stages of the Project to obtain ONHD records located in the vicinity of the project. On September 12, 2016, the ODNR-DOW replied to an e-mailed request for records of protected species within an extended area around the Project site. ODNR-DOW indicated that no records of rare or endangered species were identified within one mile of the Project area.

In a letter dated October 20, 2016, the ODNR-DOW provided comments on the Project with regard to state and/or federally-listed threatened and endangered species that may occur within the Project vicinity, which are summarized in Table 6.

USFWS Coordination –

In a letter dated October 18, 2016, the USFWS provided comments on the Project with regard to federally-listed threatened and endangered species that may occur within the project vicinity. The USFWS noted that the Project lies within the range of the federally endangered Indiana bat (*Myotis sodalis*), and the federally threatened northern long-eared bat (*Myotis septentrionalis*). USFWS recommends that should the proposed site contain trees ≥3 inches dbh, that trees be saved wherever possible. If tree clearing cannot be avoided, USFWS recommends that tree removal occur between October 1 and March 31 avoid adverse effects to Indian bats and northern long-eared bats during the brood-rearing months. Due to the project type, size, and location, the USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.

4.0 SUMMARY

The ecological survey of the Project survey corridor identified a total of 10 wetlands, 34 streams, and four ponds. The 10 wetlands within the Project survey corridor are of two different wetland habitat types: nine PEM wetlands and one PEM/POW wetland. Within the Project survey corridor, eight wetlands were identified as Category 1 wetlands and two wetlands were identified as Category 2 wetlands. No Category 3 wetlands were identified within the Project survey corridor.

The 34 streams identified within the Project survey corridor include 16 ephemeral streams, 13 intermittent streams, and five perennial streams. Thirty-one streams were assessed using the HHEI methodology (drainage area less than 1 mi2) and three streams were assessed using the QHEI methodology (drainage area greater than 1 mi2).

Four ponds, totaling approximately 0.75-acre, were identified within the Project survey corridor. The ponds appear to be man-made for stormwater retention, recreational, wildlife, and livestock use.

With regard to state and/or federally-listed threatened and endangered species that may occur within the Project vicinity, 12 species of concern were listed by the ODNR or USFWS including the following: Indiana bat, northern long-eared bat, black bear, butterfly mussel, threehorn wartyback, black sandshell, western banded killifish, channel darter, river darter, Tippecanoe darter, paddlefish, and eastern hellbender. Based on agency responses, the Project is not likely to impact the black bear.

ODNR recommends that impacts to wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation. Based on agency responses, the project is not likely to impact the butterfly mussel, threehorn wartyback, black sandshell, western banded killifish, channel darter, river darter, Tippecanoe darter, paddlefish, and eastern hellbender due to the project location, and that there is no in-water work proposed in a perennial stream.

Based on general observations during the ecology survey, a large portion of the Project survey area contained potential summer habitat for the Indiana bat and the northern long-eared bat. The agencies, however, do not anticipate impacts to the species due to the project type, size, location, and proposed implementation of seasonal tree cutting (during October 1st and March 31st), to avoid impacts to these bat species.

The reported results of the ecological survey conducted by AECOM on this Project are limited to the areas within the Project survey boundary provided in Figures 3A-3E: Wetland Delineation and Stream Assessment Map. Areas that fall outside of the Project survey boundary, including any portion of work pads or access roads, were not evaluated in the field and are not included in the reporting of this survey.

The information contained in this wetland delineation report is for a study area that may be much larger than the actual Project limits-of-disturbance; therefore, lengths and acreages listed in this report may not constitute the actual impacts of the Project defined in subsequent permit applications. If necessary, a separate report that identifies the actual Project impacts will be provided with agency submittals.

The field survey results presented herein apply to the existing and reasonably foreseeable site conditions at the time of our assessment. They cannot apply to site changes of which AECOM is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to natural processes or human impacts at the project site or on adjacent properties. Changes in applicable

standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond the control of AECOM.

5.0 REFERENCES

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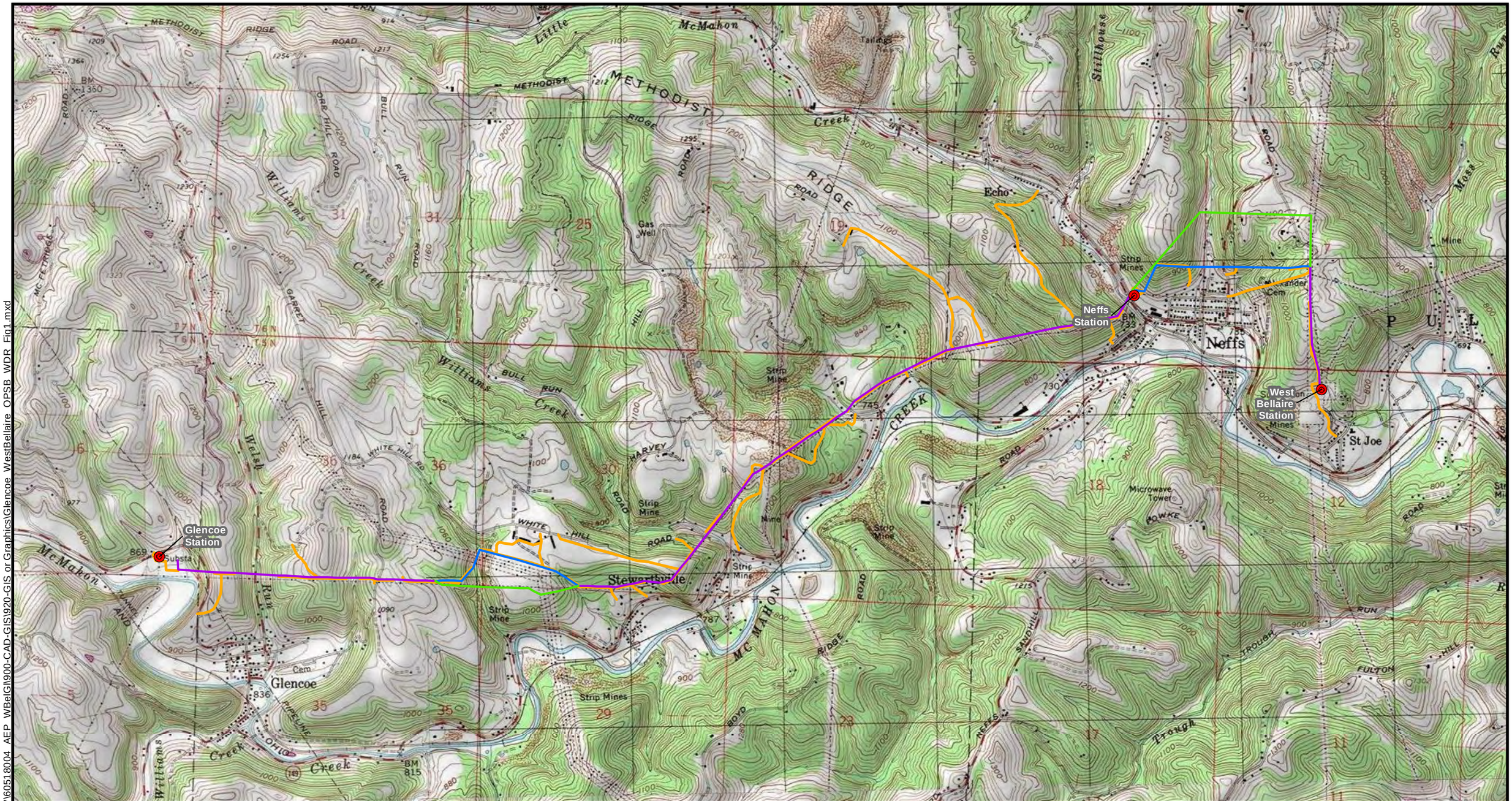

LEGEND:

- Substation
- Preferred Route
- Alternate Route
- Rebuild Section
- Preliminary Access Road

0 2,000 4,000
Feet

Base Map Source:
ArcGIS Online, Bing Map Hybrid

N

AEP OHIO TRANSMISSION COMPANY

West Bellaire-Glencoe
138 kV Line Rebuild Project

FIGURE 1
OVERVIEW MAP

JOB NO. 60518004

AECOM

Summary: Application electronically filed by Mrs. Erin C Miller on behalf of AEP Ohio Transmission Company