



Figure 20. View of the wooded area surrounding the existing access road leading to structure 36.



Figure 21. View of the disturbed area within the proposed access corridor near structure 32.



Figure 22. View of the shovel tested areas around structure 30.



Figure 23. View of the sloped area leading towards structure 28.



Figure 24. View of the sloped area near structure 27.



Figure 25. View of the surface collected area around structure 46.



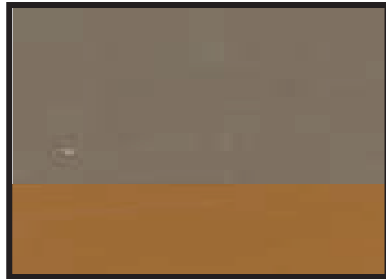
Figure 26. View of the shovel probed area near structure 23.



Figure 27. View of the surface visibility in the soybean stubble portion of the project around structure 24.

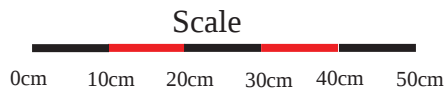
Schematic of a Test Unit Profile

Rarden Silt Loam (RdC)



Ap 10YR4/2 Dark Greyish Brown silty clay loam

B 7.5YR5/6 Strong Brown silty clay loam



Provenience: 200E, 0N (Fig.6)

Depth to Subsoil: 28 cm

Excavator: AL



Figure 28. A typical shovel test unit excavated within the project.



Figure 29. View of S-1 property.



Figure 30. View of S-2 property.



Figure 31. View of S-3 property.



Figure 32. View of S-4 property.

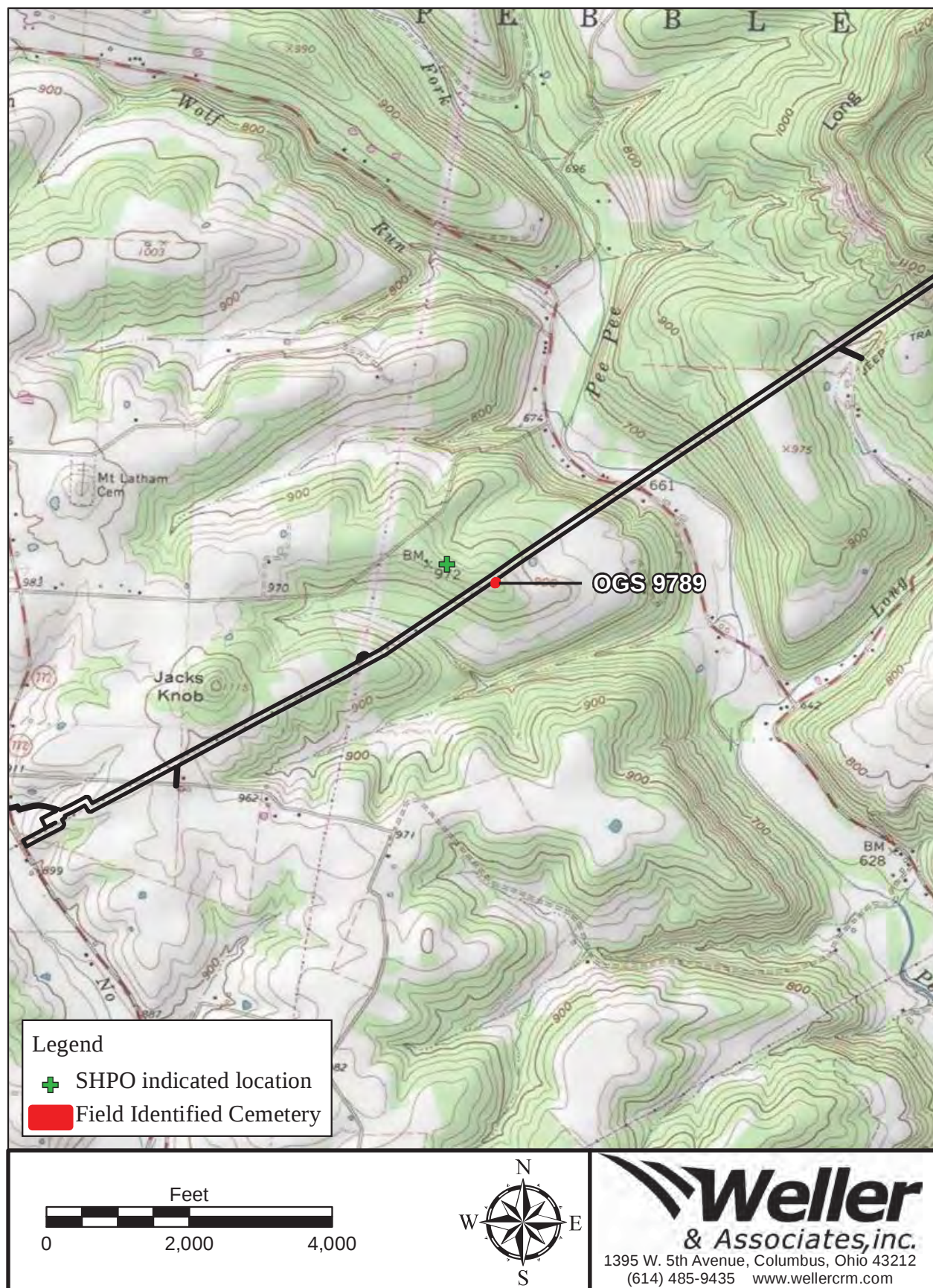


Figure 33. Portions of the USGS 1976 Summithill, 1976 Latham, 1976 Piketon, and 1963 Morgantown, Ohio 7.5 Minute Series (Topographic) maps indicating the location of the project, SHPO indicated cemetery location, and the field identified location of OGS 9789.

**LETTER OF NOTIFICATION FOR
WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT**

Appendix C Ecological Resources Inventory Report
February 3, 2017

Appendix C Ecological Resources Inventory Report

**Waverly-Ware Road 138 kV
Transmission Line Project, Pike
County, Ohio**

**Ecological Resources Inventory
Report**



Prepared for:
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January 25, 2017

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1.0 Introduction

AEP Ohio Transmission Company, Inc. (AEP) is proposing to rebuild the Waverly-Ware Road 138 kV electric transmission line in Pike County, Ohio (Figure 1, Appendix A). The Project will include the rebuild of approximately 4.6 miles of the 138 kV transmission line within the existing right-of-way (ROW) and construction of associated access roads needed to perform the rebuild activities (Figure 1, Appendix A). The existing ROW and the proposed access roads were surveyed for wetlands, waterbodies, and potential threatened, endangered and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on December 7 through 13, 2016 and on January 20, 2017. The approximate locations of features located up to approximately 50 feet outside of the ROW and access road survey corridor limits were also recorded during the field surveys, where landowner access was permitted. However, no data forms were collected on features that did not extend into the ROW or access road survey corridors. These features are shown on the Figure 2 maps in Appendix A as “approximate” wetlands, streams, open waters, and upland drainage features.

2.0 Methods

2.1 WETLAND DELINEATION

Prior to completing the field surveys, a desktop review of the Project area was conducted using U.S. Geological Survey (USGS) topographic mapping, National Wetlands Inventory (NWI) maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil surveys, and aerial imagery mapping. Stantec completed a wetland delineation study in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) (USACE 2012). Wetland categories were classified using the Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001).

2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE’s Guidance on Ordinary High Water Mark Identification (Regulatory Guidance Letter, No. 05-05) (USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definitions in the Federal Register/Vol. 67, No. 10 (USACE 2002). Functional assessment of streams within the Project area was based on completion of the Ohio Environmental Protection Agency’s (OEPA) Headwater Habitat Evaluation Index (HHEI) and/or Qualitative Habitat Evaluation Index (QHEI). The centerline of each waterway was identified and surveyed using a handheld sub-meter accuracy GPS unit and mapped with GIS software. Additionally, the locations of ponds/open water features and

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

upland drainage features (which lacked a continuously defined bed and bank/OHWM) identified within the Project area were also recorded with a sub-meter accuracy GPS unit during the field surveys.

2.3 RARE SPECIES

Prior to conducting the field surveys, Stantec contacted the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) for information regarding rare, threatened, or endangered species and their habitats of concern within the vicinity of the Project area (Appendix B – Agency Correspondence). To assess potential impacts to rare, threatened, or endangered species, Stantec scientists conducted a pedestrian reconnaissance of the proposed Project area, collected information on existing habitats within the Project area, and assessed the potential for these habitats to be used by these species.

3.0 Results

3.1 TERRESTRIAL HABITAT

Stantec completed field surveys within the Project area on December 7 through 13, 2016, and on January 20, 2017, for threatened and endangered species or their habitats. Figure 3 (Appendix A) shows the vegetation communities/habitats and locations of any identified rare, threatened or endangered species habitat observed within the Project area. Representative photographs of the vegetation communities/habitats identified within the Project area are included in Appendix C of this report (photo locations are shown on Figures 2 and 3, Appendix A). Information regarding the vegetation communities/habitats identified within the Project area is provided in Table 1.

Table 1. Vegetation Communities and Land Cover Found within the Waverly-Ware Road 138 kV Transmission Line Project Area, Pike County, Ohio

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Agricultural Row Crop	Extreme Disturbance/Ruderal Community (dominated by planted non-native row crop species, opportunistic invaders, or native highly tolerant taxa)	No	9.24
Hay Field	Extreme Disturbance/Ruderal Community (dominated by planted non-native herbaceous species, opportunistic invaders, or native highly tolerant taxa)	No	1.49
New Field	Extreme Disturbance/Ruderal Community (dominated by planted non-native herbaceous species, opportunistic invaders, or native highly tolerant taxa)	No	1.22
Old Field	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders or native highly tolerant taxa)	No	36.42
Residential Lawn	Extreme Disturbance/Ruderal Community (dominated by opportunistic invaders, planted non-native species, and/or native highly tolerant taxa)	No	2.02
Existing Gravel Access Road	Extreme Disturbance/existing gravel road	No	0.81

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

Vegetation Communities and Land Cover Types within the Project Area	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Approximate Acreage Within Project Area
Palustrine Emergent Wetland	Moderate Disturbance/Natural Community (dominated by native herbaceous species and/or opportunistic invaders)	No	0.43
Early Successional Deciduous/Coniferous Forest	Moderate Disturbance/Natural Community (dominated by native woody and herbaceous species and/or opportunistic invaders)	No	4.16
Industrial	Extreme Disturbance/existing gravel pad	No	1.05
Total			56.84

3.2 WETLANDS

Stantec completed field surveys within the Project area on December 7 through 13, 2016, and on January 20, 2017, for wetlands and waterbodies. Figure 2 (Appendix A) shows the wetlands identified by Stantec within the Project area. Representative photographs of the wetlands identified within the Project area are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). Completed wetland determination and ORAM data forms are included in Appendix D. Information regarding the Cowardin classification and ORAM categories of wetlands identified within the Project is provided in Table 2.

Table 2. Summary of Wetland Resources Found within the Waverly-Ware Road 138 kV Transmission Line Project Area, Pike County, Ohio

Wetland Name	Figure 2 Photo Location¹	Isolated?	Wetland Classification²	ORAM Score⁴	ORAM Category⁴	Delineated Area (acres) within Project Area
Wetland 1	3	No	PEM ³	22	1	0.03
Wetland 2	4	Yes	PEM ³	24	1	0.08
Wetland 3	5	No	PEM ³	38	2	0.29
Wetland 4	6	No	PEM ³	31	1	0.01

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Wetland Name	Figure 2 Photo Location ¹	Isolated?	Wetland Classification ²	ORAM Score ⁴	ORAM Category ⁴	Delineated Area (acres) within Project Area
Wetland 5	13	No	PEM ³	21	1	0.02
TOTAL						0.43
¹ Figure 2 and Appendix C – Representative Photographs						
² Wetland classification is based on Cowardin et al. (1979).						
³ PEM = Palustrine Emergent Wetland						
⁴ ORAM Score and Category are based on the Ohio Rapid Assessment Method for Wetlands v. 5.0 (Mack 2001).						

3.3 STREAMS

Stantec completed field surveys within the Project area on December 7 through 13, 2016, and on January 20, 2017, for wetlands and waterbodies. Figure 2 (Appendix A) shows the waterbodies (streams and open water features) identified by Stantec within the Project area, as well as the locations of upland drainage features identified within the Project area. Representative photographs of the streams, open waters, and upland drainage features identified within the Project area are included in Appendix C of this report (photo locations are shown on Figure 2, Appendix A). Completed QHEI and HHEI data forms for streams identified in the Project area are included in Appendix D. Information regarding the streams identified within the Project area is provided in Table 3.

Table 3. Summary of Stream Resources Found within the Waverly-Ware Road 138 kV Transmission Line Project Area, Pike County, Ohio

Stream Name	Photo Location ¹	Receiving Waters	Stream Flow Regime ²	Stream Evaluation Method	Stream Evaluation Score	OHWM Width (feet) ³	Delineated Length (feet) within Project Area
Stream 1	1	No Name Creek	Ephemeral	HHEI	41	3	31
Stream 2	7	Pee Pee Creek	Intermittent	HHEI	61	5	103
Stream 3 (Pee Pee Creek)	9	Long Branch	Perennial	QHEI	54	20	138
Stream 4	11	Long Branch	Ephemeral	HHEI	18	1.5	119
Stream 5	12	Long Branch	Intermittent	HHEI	53	3.5	30
Stream 6	15	Long Branch	Ephemeral	HHEI	15	1	25
Stream 7	16	Long Branch	Ephemeral	HHEI	24	2	357

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Stream Name	Photo Location ¹	Receiving Waters	Stream Flow Regime ²	Stream Evaluation Method	Stream Evaluation Score	OHWM Width (feet) ³	Delineated Length (feet) within Project Area
Stream 8	17	Long Branch	Ephemeral	HHEI	35	3	124
Stream 9	18	Long Branch	Ephemeral	HHEI	52	1.5	103
Stream 10	19	Pee Pee Creek	Intermittent	HHEI	71	7	113
Stream 11	20	Long Branch	Ephemeral	HHEI	21	1.2	113
Stream 12	21	Long Branch	Ephemeral	HHEI	20	1.5	129
Stream 13	22	Left Fork Crooked Creek	Ephemeral	HHEI	17	1	122
Stream 14	23	Left Fork Crooked Creek	Intermittent	HHEI	40	6	129
Stream 15	24	Left Fork Crooked Creek	Ephemeral	HHEI	34	5	218
TOTAL							1,854
¹ Figure 2 and Appendix C – Representative Photographs							
² Stream classification is based on Federal Register/Vol. 67, No. 10 (USACE 2002)							
³ OHWM = Ordinary High Water Mark							

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

3.4 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 4. Summary of Potential Ohio State-Listed Species within the Waverly-Ware Road 138 kV Transmission Line Project Area, Pike County, Ohio

Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Fishes								
Shorthead Gar	<i>Lepisosteus platostomus</i>	E	Yes	No	Habitat includes large weedy lakes and reservoirs, backwaters, and quiet pools of medium to large rivers, stagnant ponds, sloughs, canals, brackish waters of coastal inlets, and occasionally coastal marine waters; often near vegetation or close to submerged or overhanging objects by day. Young tend to occupy shallows, larger individuals in deeper water. Spawning occurs over weed beds of shallow waters in rivers, usually in grass and weeds in shoal water in lakes; or near stone piles of railroad bridges, in nests of smallmouth bass, or over gravel bars (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Popeye Shiner	<i>Notropis anominus</i>	E	Yes	No	Habitat includes warm, relatively clear flowing waters of large creeks and small to medium rivers. These shiners are closely associated with gravel substrates and are they typically occur in runs, backwaters near appreciable current, and the head of pools (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
River Darter	<i>Percina shumardi</i>	T	Yes	No	Large rivers and lower portions of tributaries; deep chutes and riffles where current is swift and bottom consists of coarse gravel or rock (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Goldeye	<i>Hiodon alosoides</i>	E	Yes	No	Habitat includes quiet turbid water of medium to large lowland rivers, small lakes, ponds, fringe wetlands and muddy shallows of larger lakes. Occurs in shallow firm-bottomed sites in river pools or backwaters or over gravel shoals in tributary streams (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.

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Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Shovelnose Surgeon	<i>Scaphirhynchus platyrhynchus</i>	E	Yes	No	Deep channels and embayments of large turbid rivers; often over sand mixed with gravel or mud in areas with strong current (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Blue Sucker	<i>Cyprinotus elongatus</i>	T	Yes	No	Habitat includes the largest rivers and lower portions of major tributaries. Usually occurs in channels and flowing pools with moderate current (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Tippecanoe Darter	<i>Etheostoma tippecanoe</i>	T	Yes	No	This species prefers medium to large streams in the Ohio River drainage system and are found in riffles with moderate current with substrates of gravel or cobble-sized rocks (ODNR 2016b).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Bigeye Shiner	<i>Notropis boops</i>	T	Yes	No	Flowing pools of moderately clear creeks and small to medium rivers with large permanent pools over a bottom of clear sand, gravel, or rock. Often at stream margins in beds of emergent vegetation (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Reptiles								
Timber Rattlesnake	<i>Crotalus horridus horridus</i>	E	Yes	No	In the central Midwest, optimum habitat is a high, dry ridge with oak-hickory forest interspersed with open areas. Hibernacula are typically located in a rocky area where underground crevices provide retreats for overwintering, such as a fissure in a ledge, a crevice between ledge and ground, and fallen rock associated or unassociated with cliffs (NatureServe 2016).	Yes	Some potentially suitable habitat was observed within the Project area (high dry ridgetop areas interspersed with open areas). However, due to the mobility of the species and lack of typical optimum habitat for this species, the Project may impact but is not expected to negatively affect the species.	ODNR Office of Real Estate comments are pending.

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Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Mussels								
Fanshell	<i>Cyprogenia stegaria</i>	E	Yes	No	Medium to large streams and rivers with moderate to strong current in coarse sand and gravel and depths ranging from shallow to deep (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Snuffbox	<i>Epioblasma triquetra</i>	E	Yes	No	Occurs in medium-sized streams to large rivers, generally on mud, rocky, gravel, or sand substrates in flowing water. Often deeply buried in substrate and overlooked by collectors (NatureServe 2016). Snuffbox is commonly found buried in the substrate. It is found in a wide range of particle sized substrates; however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998; Watters et al. 2009).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Ebonyshell	<i>Fusconaia ebena</i>	E	Yes	No	Inhabits large rivers and prefers swift water and stable sand or gravel shoals. Coarse sand and gravel substrates provide the most suitable habitat. It can occur at depths of 10-15 feet with current associated (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Sharp-ridged Pocketbook	<i>Lampsilis ovata</i>	E	Yes	No	Very generalized in habitat preference, adapting well to both impoundment situations as well as free-flowing, shallow rivers. Usually found in moderate to strong current, it can survive in standing water. The most suitable substrate consists of a mixture of gravel and coarse sand mixed with some silt or mud (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Yellow Sandshell	<i>Lampsilis teres</i>	E	Yes	No	Occurs in medium-sized creeks to large rivers, often in slower current areas of stream borders having sand as primary substrate as well as mud, gravel, and silt (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Washboard	<i>Megalaniais nervosa</i>	E	Yes	No	This species is typically a large river species, living in the main channel and in some of the overbank areas of reservoirs, but in some instances it may also become established in medium-sized and even small rivers. It is found in areas with a slow current with muddy to coarse gravel substrates (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.

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Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County ²	Known Within One Mile of Project Area ^{2,3}	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Sheepnose	<i>Pleurobasus cyphus</i>	E	Yes	No	Usually found in large rivers in current on mud, sand, or gravel bottoms at depth of 1-2 meters or more (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Clubshell	<i>Pleurobema clava</i>	E	Yes	No	This is a species of small to medium-sized rivers and streams; generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle, and cannot tolerate mud or slackwater conditions (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Ohio Pigtoe	<i>Pleurobema cordatum</i>	E	Yes	No	This species prefers strong currents of large rivers with substrates of sand and gravel, though it is somewhat tolerant of lotic systems (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	E	Yes	No	Typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Rabbitsfoot are also found in medium to large rivers in sand and gravel (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Monkeyface	<i>Quadrula metanevra</i>	E	Yes	No	This is a species of medium to large rivers and is typically found in runs with a substrate of mixed sand or gravel (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Rayed Bean	<i>Villosa fabalis</i>	E	Yes	No	Habitat includes gravel or sandy substrates, especially in areas of thick roots of aquatic plants, and increased substrate stability (NatureServe 2016, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998). Typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobble in water depths from several inches to six feet or more (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Black Sandshell	<i>Ligumia recta</i>	T	Yes	No		No	No suitable habitat was observed within the Project area and no in-water work is proposed	ODNR Office of Real Estate comments are pending.

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Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
							to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	
Threehorn Wartyback	<i>Obliquaria reflexa</i>	T	Yes	No	This species is typical of large rivers where there is moderately strong current and a stable substrate composed of gravel, sand, and mud (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Fawnfoot	<i>Truncilla donaciformis</i>	T	Yes	No	This species occurs in both large and medium-sized rivers at normal depths varying from less than three feet up to 15 to 18 feet in big rivers such as the Tennessee. A substrate of either sand or mud is suitable and although it is typically found in moderate current, it can adapt to a lake or embayment environment lacking current (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Yes	No	This species inhabits riffles in small to large streams with swift current and a substrate of firmly packed fine gravel and sand (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Mammals								
Indiana Bat	<i>Myotis sodalis</i>	E	Yes	No	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2015b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	Several potential bat roost trees were observed in the Project area, but no potential hibernacula were observed. It is anticipated that AEP will complete tree cleaning activities between October 1 and March 31. Therefore, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Eastern Harvest Mouse	<i>Reithrodontomys humulis</i>	T	Yes	No	Prefers old fields, marshes, and wet meadows. Climbs among herbaceous vegetation. Nests are placed in tangled vegetation under debris or above ground (NatureServe 2016).	Yes	Potentially suitable habitat (old fields, emergent wetlands) were identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	ODNR Office of Real Estate comments are pending.
Black Bear	<i>Ursus americanus</i>	E	Yes	No	Black bears inhabit forests and nearby openings, including forested wetlands. When inactive, they occupy dens under fallen trees at ground-level or above-ground tree cavities or hollow logs, underground cave-like sites, or the ground surface in dense cover (NatureServe 2016).	Yes	Suitable foraging habitat is present within the Project area. However, due to the mobility of this species, no impacts are anticipated.	ODNR Office of Real Estate comments are pending.
Amphibians								
Eastern Spadefoot	<i>Scaphiopus holbrookii</i>	E	Yes	No	Eastern spadefoots occur in areas of sandy, gravelly, or soft, light soils in wooded or unwooded terrain. In Ohio, it is found only in areas of sandy soils that are associated with river valleys in the southeastern portion of the State. Breeding habitats are located within these areas and may include flooded agricultural fields or other water-holding depressions (NatureServe 2016; ODNR 2016b).	No	No impacts are anticipated due to lack of suitable habitat observed within the Project area.	ODNR Office of Real Estate comments are pending.
Midland Mud Salamander	<i>Pseudotriton montanus diastictus</i>	T	Yes	No	Muddy springs, slow floodplain streams, and swamps along slow streams; backwater ponds and marshes created by beaver activity (NatureServe 2016).	Yes	Potentially suitable habitat was present in the form of logs and stones within streams. However, due to the anticipated lack of work taking place within this stream, no impacts to this species are anticipated.	ODNR Office of Real Estate comments are pending.
Eastern Hellbender	<i>Cryptobranchius alleganiensis alleghaniensis</i>	E	Yes	No	In Ohio, this species is found mostly in the unglaciated portion of the State and prefers large, swift flowing streams where they hide under larger rocks (ODNR 2016b).	No	No impacts are anticipated due to lack of suitable habitat observed within the Project area.	ODNR Office of Real Estate comments are pending.
Plants								

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Scaly Blazing-star	<i>Liatris squarrosa</i>	P	No	No	Found in dry prairie sites with poor soil or sand on oak ridges; also found on Great Lakes dunes (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.
Wall-rue	<i>Asplenium ruta-muraria</i>	T	Yes	No	Wall-rue is found on dry to moist calcareous rock exposures. It is rarely found in full sun (ODNR 2016c).	No	No impacts are anticipated due to lack of suitable habitat observed within the Project area.	ODNR Office of Real Estate comments are pending.
Walter's Violet	<i>Viola walteri</i>	T	No	No	Walter's Violet is found in open woods and on rocky ledges, usually in calcareous substrates; frequently collected on dolomite outcrops and promontories (ODNR 2016c).	No	No impacts are anticipated due to lack of suitable habitat observed within the Project area.	ODNR Office of Real Estate comments are pending.
Arbor Vitae	<i>Thuja occidentalis</i>	P	No	No	Arbor vitae occurs in open to semi-open habitats on calcareous substrates; cliffs, limestone ledges, uplands, and fens (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.
Wedge-leaved Whitlow-grass	<i>Draba cuneifolia</i>	T	Yes	No	Occurs in dry, open situations, usually in sandy areas or calcareous cliff tops and prairies (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Carolina Whitlow-grass	<i>Draba reptans</i>	T	No	No	Occurs in dry, open situations, usually in sandy soil: ledges, fields, pastures, dunes, waste places, and roadsides (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.
Early Buttercup	<i>Ranunculus fascicularis</i>	T	No	No	Occurs in calcareous soils of prairies, pastures, and dry, open woods; also on calcareous rock outcrops (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.
Narrow-leaved Toothwort	<i>Cardamine dissecta</i>	P	No	No	Rich to disturbed woods and wooded stream terraces (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.
Wherry's Catchfly	<i>Silene caroliniana</i> ssp. <i>wherryi</i>	T	Yes	No	Occurs in rocky upland woods of calcareous regions; also tolerant of slightly acidic soil conditions (ODNR 2016c).	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

Common Name	Scientific Name	State Status ¹	Known to Occur Within Pike County? ²	Known Within One Mile of Project Area? ³	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/Recommendations
Tennessee Pondweed	<i>Potamogeton tennesseensis</i>	T	Yes	No	Still or flowing water (ODNR 2016c)	Yes	Some potentially suitable habitat occurs within the Project area. However, this species is not known to occur within one mile of the Project area and no individuals were observed during the field surveys. Therefore, impacts are possible but not anticipated.	ODNR Office of Real Estate comments are pending.

¹E=Endangered; T=Threatened; P=Potentially Threatened

²According to Ohio Department of Natural Resources, State Listed Wildlife Species by County (ODNR 2016a).

³According to Ohio Natural Heritage Program (Appendix B).

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

Table 5. Summary of Potential Federally-Listed Species within the Waverly-Adams-Seaman 138 kV Transmission Line Project Area, Pike County, Ohio

Common Name	Scientific Name	Federal Status ¹	Known to Occur Within Pike County? ²	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	USFWS Comments/ Recommendations
Mammals							
Indiana Bat	<i>Myotis sodalis</i>	E	Yes	The Indiana bat is likely distributed over the entire State of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas; Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2015b). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	Several potential roost trees were observed in the Project area, but no potential hibernacula were observed. It is anticipated that ACP will complete tree clearing activities between October 1 and March 31. Therefore, no impacts are anticipated.	The USFWS response letter (Appendix B) indicated that, due to the project type, size, and location, if caves and mines (potential bat hibernacula) will not be disturbed and seasonal tree cutting (clearing of trees ≥3 inches' diameter at breast height between October 1 and March 31) to avoid impacts to Indiana bats is implemented, they do not anticipate adverse effects to this species.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	T	Yes	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2016). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	Several potential roost trees were observed in the Project area, but no potential hibernacula were observed. It is anticipated that ACP will complete tree clearing activities between October 1 and March 31. Therefore, no impacts are anticipated.	If no caves or abandoned mines may be disturbed and tree removal is unavoidable, seasonal tree cutting (clearing of trees ≥3 inches diameter at breast height between October 1 and March 31) is recommended. Following this seasonal tree clearing recommendation should ensure that no adverse effects to the northern long-eared bat will occur. Incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule.
Mussels							
Clubshell	<i>Pleurobema clava</i>	E	Yes	This is a species of small to medium-sized rivers and streams; generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle, and cannot tolerate mud or slackwater conditions (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	No comment.
Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Yes	This species inhabits riffles in small to large streams with swift current and a substrate of finely packed fine gravel and sand (NatureServe 2016).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	No comment.
Rayed Bean	<i>Villosa fabalis</i>	E	Yes	Habitat includes gravel or sandy substrates, especially in areas of thick roots of aquatic plants, and increased substrate stability (NatureServe 2016, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	No	No suitable habitat was observed within the Project area and no in-water work is proposed to occur in perennial streams by AEP. Therefore, no impacts are anticipated.	No comment.
¹ E=Endangered; T=Threatened ² According to USFWS (2015a).							

4.0 Conclusions and Recommendations

Stantec conducted a wetland and waterbodies delineation and a preliminary habitat assessment for threatened and endangered species or their habitats within the Project area from December 7 through 13, 2016, and on January 20, 2017. During the field surveys, 5 palustrine emergent wetlands totaling approximately 0.43 acres were identified within the Project area. See Table 2 for more information regarding the wetland classifications and ORAM categories for wetlands identified within the Project area. Ten ephemeral streams totaling approximately 1,341 linear feet in length, four intermittent stream totaling approximately 375 linear feet in length, and one perennial stream totaling approximately 138 linear feet in length were delineated within the Project area. The only perennial stream identified within the Project area included Pee Pee Creek. See Table 3 for more information regarding the streams identified within the Project area.

The information provided by Stantec regarding wetland and stream boundaries is based on an analysis of the wetland and upland conditions present within the Project area at the time of the fieldwork. The delineations were performed by experienced and qualified professionals using regulatory agency-accepted practices and sound professional judgment.

An environmental review request letter was sent to the ODNR-Office of Real Estate and the ODNR Natural Heritage Program (NHP). The Project area includes potentially suitable habitat for the following state-listed threatened and endangered species: midland mud salamander, Indiana bat, black bear, timber rattlesnake, and eastern harvest mouse. However, no occurrences of these species are known from the Project area or a one-mile radius of it, according to correspondence received from the ODNR Natural Heritage Database (NHD) (Appendix B). No in-water work will take place during Project construction activities. Therefore, no impacts to the midland mud salamander are anticipated. Winter tree clearing (clearing of trees between October 1 and March 31) is anticipated to occur. Therefore, no impacts are anticipated for the Indiana bat. Due to the mobility of the black bear, no impacts to that species are anticipated. Potentially suitable foraging habitat was observed within the Project area for the timber rattlesnake. However, there were no hibernacula habitats observed. Therefore, impacts to this species may occur but are not anticipated. Potentially suitable habitat for the eastern harvest mouse was identified within the Project area. However, this species is not known to occur within Project area. Therefore, impacts to this species may occur but are not anticipated.

The ODNR NHP response letter indicated that records of the following state-listed threatened, endangered, and potentially threatened species are known within the southern portion of the Waverly-Adams-Seaman 138 kV Transmission Line ROW or a one-mile radius of it: scaly blazing-star, wall-rue, Walter's violet, arbor vitae, wedge-leaved Whitlow-grass, Carolina Whitlow-grass, early buttercup, narrow-leaved toothwort, Wherry's catchfly, bigeye shiner, and Tennessee pondweed. However, none of these species are known to occur within the Waverly-Ware Road

WAVERLY-WARE ROAD 138 KV TRANSMISSION LINE PROJECT, PIKE COUNTY, OHIO

138 kV Transmission Line Project Area or a one-mile radius of it, according to correspondence received from the ODNR NHP (Appendix B).

The ODNR NHD also listed a Tranquility Wildlife Area, the Chalet Nivale/Bacon Flats – Highlands Nature Sanctuary, the Appalachian Highway Cliffs Conservation Site, Brush Creek State Forest, a mussel bed, a cave or cavern, and a natural bridge or arch within the southern portion of the Waverly-Adams-Seaman 138 kV Transmission Line ROW or within a one-mile radius of it. However, none of these sites were within a one-mile radius of the Waverly-Ware Road 138 kV Transmission Line Project area (Appendix B).

A response has not yet been received from the ODNR Office of Real Estate.

A technical assistance request letter was submitted to the USFWS. The Project area includes potential roosting and foraging habitat for the Indiana bat and northern long-eared bat and is in the range of these species in Ohio, according to the USFWS (USFWS 2015a; Appendix B). Should the project site contain trees ≥ 3 inches dbh, the USFWS recommended that trees be saved whenever possible. If any caves or abandoned mines may be disturbed, further coordination was requested. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, USFWS recommends that removal of trees ≥ 3 inches dbh only occur between October 1 and March 31 to avoid adverse effects to this species. If implementation of seasonal tree clearing is not possible, USFWS recommends summer presence/absence surveys be conducted between June 1 and August 15. In addition, the USFWS stated that due to the project type, size, and location, they do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.

Additionally, the USFWS indicated that there are no federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the Project area (Appendix B). The USFWS recommended that impacts to wetlands and other water resources be avoided or minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

5.0 References

- Brack, Virgil Jr., Dale W. Sparks, John O. Whitaker Jr., Brianne L. Walters, and Angela Boyer. 2010. Bats of Ohio. Indiana State University Center for North American Bat Research and Conservation.
- Cowardin, L.M., V. Carter V., F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31. Washington, D.C.
- Lichvar, R.W. 2013. The National Wetland Plant List: 2013 wetland ratings. *Phytoneuron* 2013-49:1-241.
- Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. The National Wetland Plant List: 2014 Update of Wetland Ratings. *Phytoneuron* 2014-41: 1-42.
- Mack, J.J. 2001. Ohio Rapid Assessment Method for Wetlands, Manual for Using Version 5.0. Ohio EPA Technical Bulletin Wetland/2001-1-1. Ohio Environmental Protection Agency, Division of Surface Water, 401 Wetland Ecology Unit, Columbus, Ohio.
- NatureServe. 2016. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.0. NatureServe, Arlington, VA. U.S.A. Available at <http://explorer.natureserve.org>. Accessed December 6, 2016.
- Ohio Department of Natural Resources (ODNR) Division of Wildlife. 2016a. State Listed Wildlife Species by County. Available at <http://wildlife.ohiodnr.gov/species-and-habitats/state-listed-species/state-listed-species-by-county>. Accessed December 6, 2016.
- ODNR Division of Wildlife. 2016b. Species Guide Index. Available at <http://wildlife.ohiodnr.gov/species-and-habitats/species-guide-index/>. Accessed November 15, 2016.
- ODNR, Division of Natural Areas and Preserves. 2016c. Rare Plants of Ohio. Available at: <http://naturepreserves.ohiodnr.gov/rareplants>. Accessed December 2016.
- Ohio Environmental Protection Agency. 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI).
- Ohio Environmental Protection Agency (OEPA). 2012. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams, Version 3.0. Ohio EPA Division of Surface Water, Columbus, Ohio. 117 pp.
- Parmalee, P. W. and A. E. Bogan. 1998. The Freshwater Mussels of Tennessee. University of Tennessee Press: Knoxville, Tennessee. 328 pp.

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- Pfingsten, R.A., J.G. Davis, T.O. Matson, G.J. Lipps, Jr. D. Wynn, and B.J. Armitage (Editors). 2013. Amphibians of Ohio. Ohio Biological Survey Bulletin New Series. Volume 17 Number 1. Xiv +899 p.
- U.S. Army Corps of Engineers (USACE), Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterway Experiment Station, Vicksburg, Mississippi.
- USACE. 2002. Issuance of Nationwide Permits; Notice, 67 Fed. Reg. 10. January 15, 2002. Federal Register: The Daily Journal of the United States. Available at <https://www.gpo.gov/fdsys/pkg/FR-2002-01-15/pdf/02-539.pdf>.
- USACE. 2005. *Guidance on Ordinary High Water Mark Identification* (Regulatory Guidance Letter, No. 05-05). Available online at <http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf>. Accessed December 6, 2016.
- USACE. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- United States Fish and Wildlife Service (USFWS). 2007. Indiana bat (*Myotis sodalis*) draft recovery plan: First revision. U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota. 258 pp.
- USFWS. 2015a. Federally Listed Species by Ohio Counties. Available at <https://www.fws.gov/midwest/endangered/lists/pdf/OhioCtyListJan2017.pdf>. Accessed December 6, 2016.
- USFWS. 2015b. 2015 Range-wide Indiana Bat Summer Survey Guidelines, April 2015. Available at [http://www.fws.gov/arkansas/docs/FINAL%202015%20Indiana%20Bat%20Summer%20Survey%20Guidelines%20\(with%20blue%20revisions\)%2004-01-2015.pdf](http://www.fws.gov/arkansas/docs/FINAL%202015%20Indiana%20Bat%20Summer%20Survey%20Guidelines%20(with%20blue%20revisions)%2004-01-2015.pdf). Accessed December 6, 2016.
- USFWS. 2016. Environmental Conservation Online System (ECOS): Species Profile for Northern Long-eared Bat (*Myotis septentrionalis*). Available online at https://ecos.fws.gov/tess_public/profile/speciesProfile?spcode=A0JE. Accessed December 6, 2016.
- Watters, G. T., M. A. Hoggarth, and D. H. Stansbery. 2009. The Freshwater Mussels of Ohio. The Ohio State University Press, Columbus, OH. 421 pp.

Appendix A Figures

A.1 FIGURE 1 – PROJECT LOCATION MAP

Appendix A Figures

A.1 FIGURE 1 - PROJECT LOCATION MAP

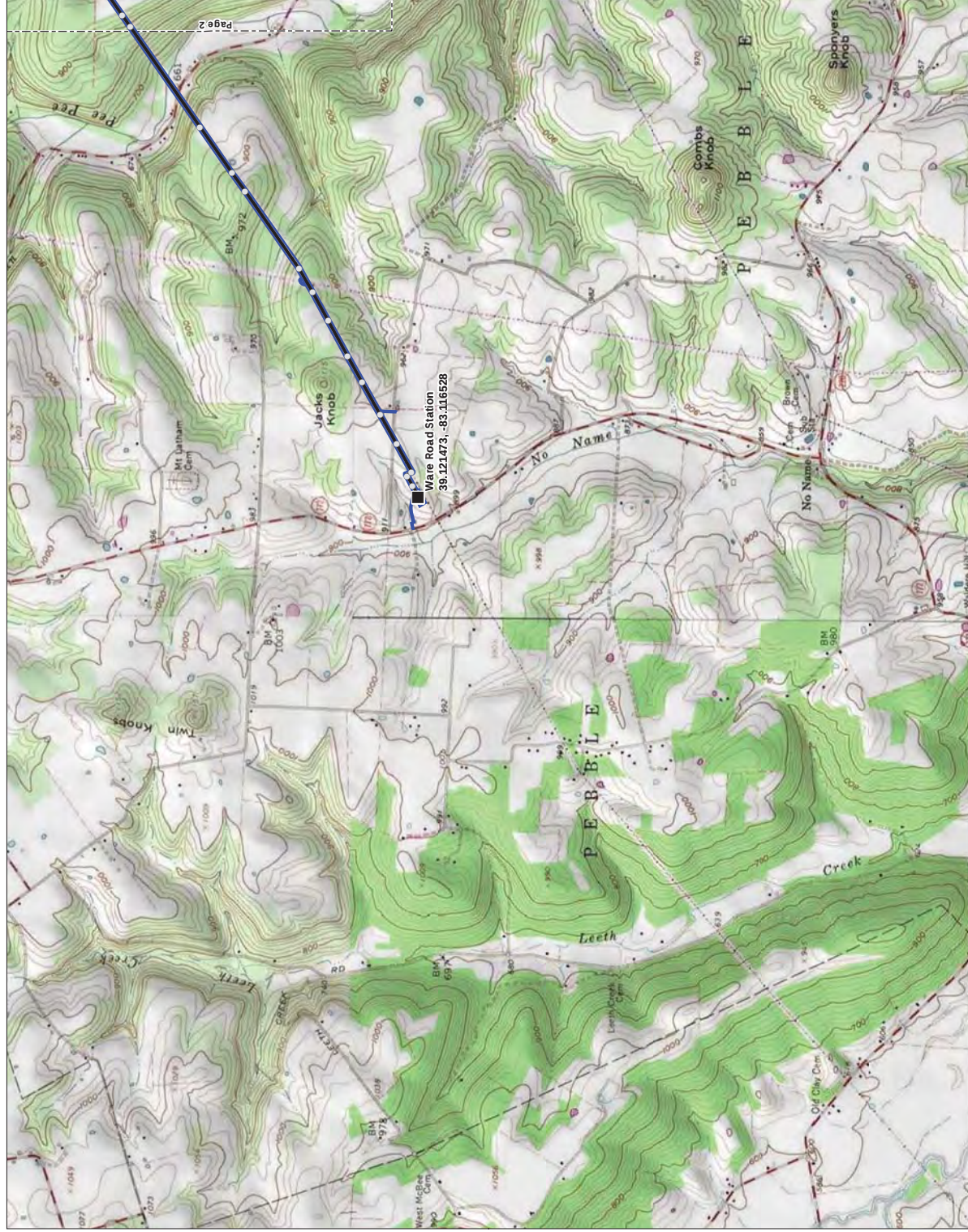


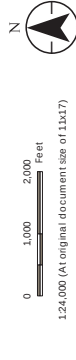
Figure No.

1

Project Location Map

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Waverly-Ware Road
138kV Transmission Line Project

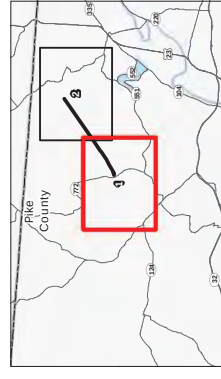
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Technical Review by JD on 2017-01-24
Independent Review by DJG on 2017-01-24



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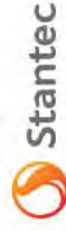
Legend

-  AEP Substation
 Structure to be Replaced
 138kV Transmission Line
 Project Area (100' ROW and 30' Access Roads)



Notes

- notes**
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
 2. Data Sources Include: Statelec, AEP, NADS
 3. Background: USGS 7.5' Topographic Quadrangles Piketon (OH, 1974), Summithill (OH, 1974)



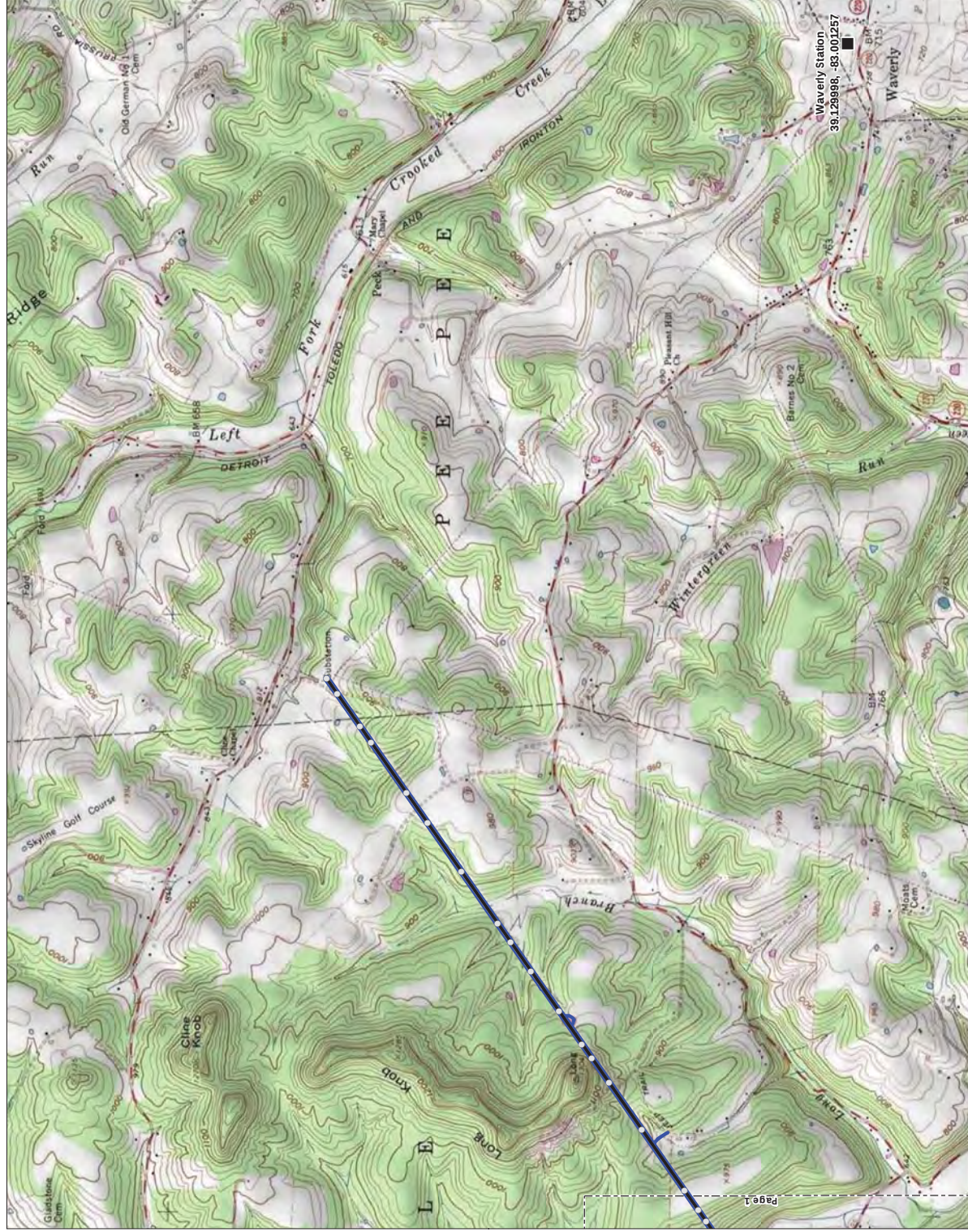
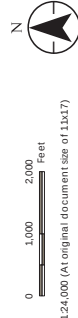


Figure No.

Project Location Map

Client/Project
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Waverly-Ware Road
138kV Transmission Line Project

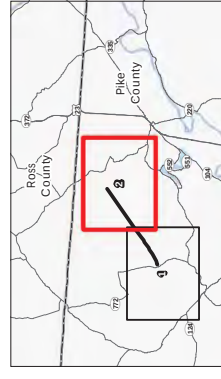
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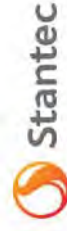
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-  AEP Substation
 Structure to be Replaced
 138kV Transmission Line
 Project Area (100' ROW and 30' Access Roads)



Notes

- notes**
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
 2. Data Sources Include: Statelec, AEP, NADS
 3. Background: USGS 7.5' Topographic Quadrangles Piketon (OH, 1974), Summithill (OH, 1974)



A.2 FIGURE 2 - WETLAND AND WATERBODY DELINEATION MAP

Figure No.

2

Title

Wetland and Waterbody Delineation Map

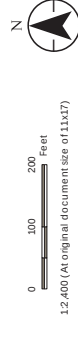
Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138KV Transmission Line Project

Project Location

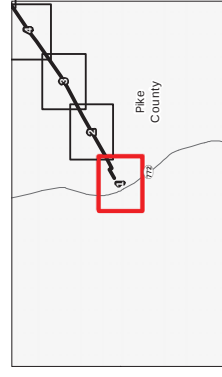
Pike County, Ohio

13870-0862
Prepared by: J. L. H. on 2017-09-24
Technical Review by: J. L. H. on 2017-09-24
Info: 614.233.1234 or 614.233.1235



Legend

- AEP Substation
- Structure to be Replaced
- 138KV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination
- Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Wetland Determination
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NAD



Figure No.

2

Title

Wetland and Waterbody Delineation Map

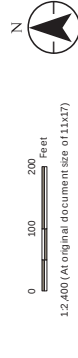
Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138KV Transmission Line Project

Project Location

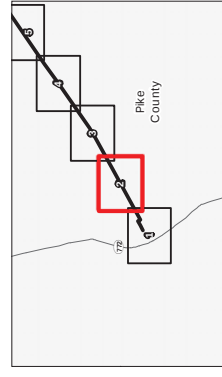
Pike County, Ohio

13070-0860
Prepared by: J. H. on 2017-09-24
Technical Review by: J. H. on 2017-09-24
Info: 614-291-1000 ext. 210 or 211 or 212



Legend

- AEP Substation
- Structure to be Replaced
- 138KV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Road)
- Wetland Determination Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Wetland Determination
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NAD



Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

13870-0662

Prepared by: J. L. H. on 2017-02-24

Technical Review by: J. L. H. on 2017-02-24

Info: 13870-0662, 13870-0662, 13870-0662

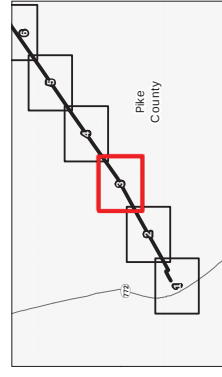
N

0 100 200 Feet

12,400 (At original document size of 11x17)

Legend

- AEP Substation
- Structure to be replaced
- 138kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination
- Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NAD



Figure No.

2

Title

Wetland and Waterbody Delineation Map

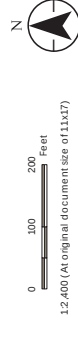
Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

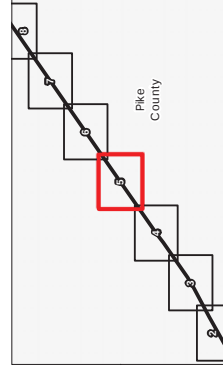
Pike County, Ohio

13870-0862
Prepared by J. Liu on 2017-09-24
Technical review by J. Liu on 2017-09-24
Info: 614.954.1900 ext. 232 or 233 or 234



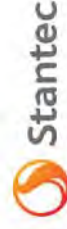
Legend

- AEP Substation
- Structure to be replaced
- 138kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NADP



Page 5 of 10



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Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

13070-0860

Prepared by: J. H. on 2017-05-24

Technical Review by: J. H. on 2017-05-24

Field Inspection by: J. H. on 2017-05-24

Field Inspection by: J. H. on 2017-05-24

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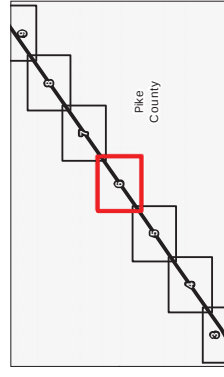
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Field Inspection by: J. H. on 2017-05-24

Field Inspection by: J. H. on 2017-05-24



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NAD



Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138KV Transmission Line Project

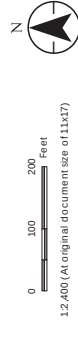
Project Location

Pike County, Ohio

13870-0862

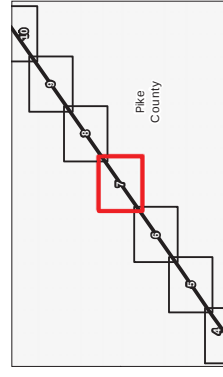
Technical Review by J. H. on 2017-05-24

Initial Design Review by J. H. on 2017-05-24



Legend

- AEP Substation
- Structure to be replaced
- 138KV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NAD



Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

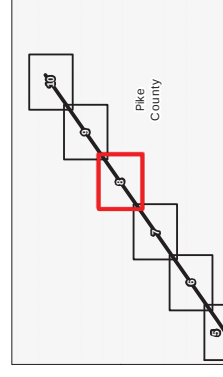
13870-0665
Prepared by J. H. on 2017-05-24
Technical Review by J. H. on 2017-05-24
Info: 614.937.4400 or 1.877.440.4400



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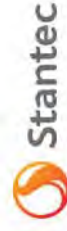
Legend

- AEP Substation
- Structure to be Replaced
- 138kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination
- Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NADP



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Figure No.

2

Title

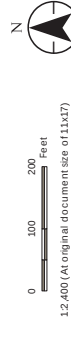
Wetland and Waterbody Delineation Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

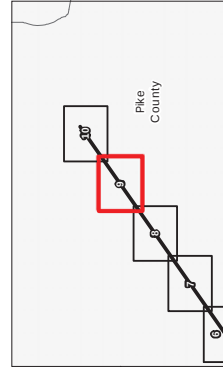
Project Location

Pike County, Ohio
13870-0860
Prepared by: J. H. on 2017-05-24
Technical Review by: J. H. on 2017-05-24
Info: 614.937.1900 ext. 210 or 211 or 212 or 213



Legend

- AEP Substation
- Structure to be Replaced
- 138kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination
- Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAOS, USGS, OGRIP
3. Orthophotography: 2015 NADP



Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

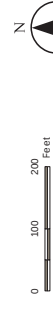
Pike County, Ohio

13870-0860

Prepared by J. L. on 2017-05-24

Technical Review by J. L. on 2017-05-24

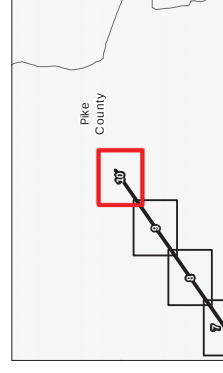
Info: 614.937.1200 or 800.333.3333



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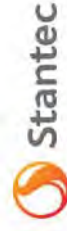
Legend

- AEP Substation
- Structure to be Replaced
- 138kV Transmission Line
- Access Road
- Project Area (100' ROW and 30' Access Roads)
- Wetland Determination Sample Point
- ▲ Existing Culvert
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Wetland Determination
- 100-year Flood Zone
- 100-year Floodway



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, FEMA, NAD83, USGS, OGRIP
3. Orthophotography 2015 NAD



A.3 FIGURE 3 - HABITAT ASSESSMENT MAP

Figure No.

3

Title

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

Prepared by: J. L. H. on 2017-05-24

Info: 2017-05-24

13870-0860

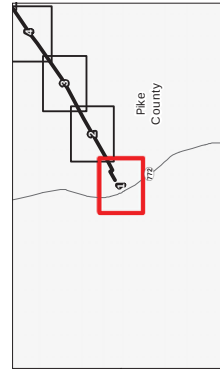
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0 100 200 Feet

N

Legend

- AEP Substation Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- Potential Bat Roost Tree
- Photo Location
- Upland Drainage
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Agricultural Row Crop
- Existing Gravel Access Road
- Early Successional Deciduous/Coniferous Forest
- Hayfield
- Industrial
- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, NADs, USGS, OGRP
3. Orthophotography 2015 NAD

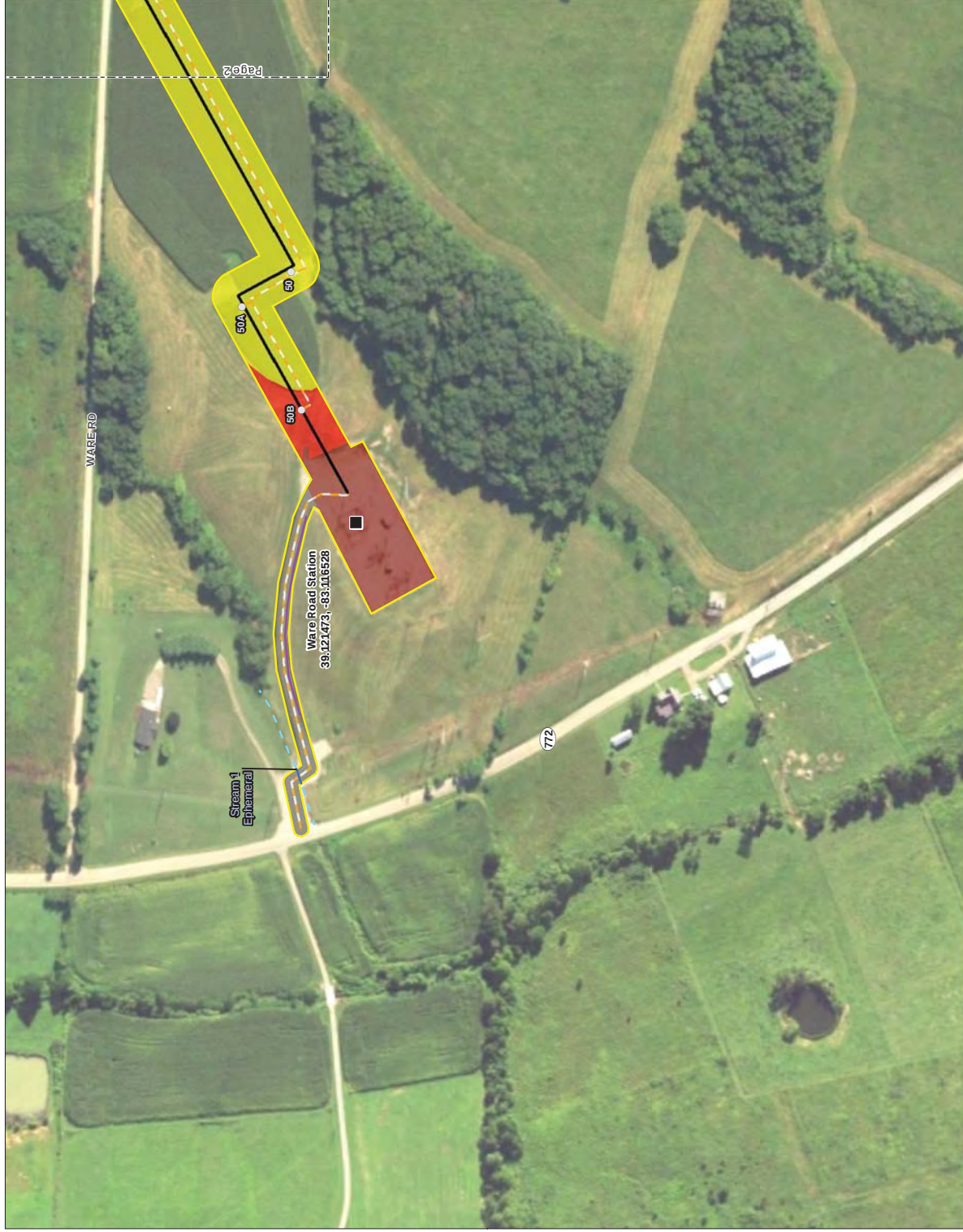
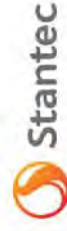


Figure No.

3

Habitat Assessment Map

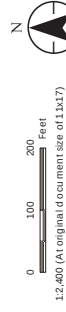
Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

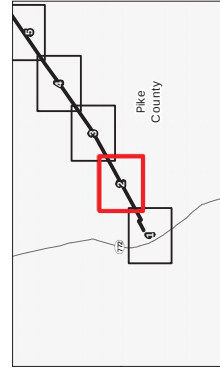
Pike County, Ohio

13870-0860
Technical Review by JLD on 2017-09-24
Info: 2017-09-24 17:25:00



Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
- Photo Location
- Upland Drainage
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Approximate Row Crop
- Existing Gravel Access Road
- Early Successional Deciduous/Coniferous Forest
- Hayfield
- Industrial
- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography 2015 NAD

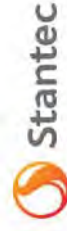


Figure No.

3

Title

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

13870-0660

Prepared by: J. H. on 2017-02-24

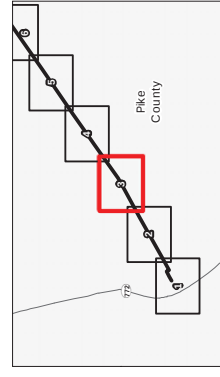
Technical Review by: J. H. on 2017-02-24

Information last updated: 07/25/2017 10:50 AM



Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
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- Field Delineated Open Water
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- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography 2015 NAD



Figure No.

3

Title

Habitat Assessment Map

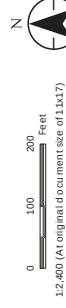
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Waverly-Ware Road
138kV Transmission Line Project

Project Location

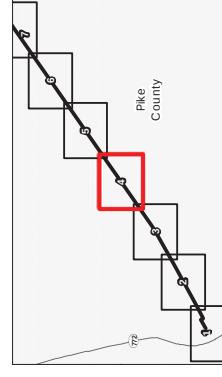
Pike County, Ohio

13870-0862
Technical Review by JLD on 2017-02-24
Prepared by JLD on 2017-02-24
Info: 2017-02-24 10:50 AM



Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
- Photo Location
- Upland Drainage
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
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- Field Delineated Open Water
- Approximate Open Water
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- Approximate Wetland
- Approximate Row Crop
- Agricultural Row Crop
- Existing Gravel Access Road
- Early Successional Deciduous/Coniferous Forest
- Hayfield
- Industrial
- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography 2015 NAD

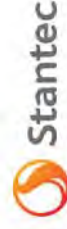


Figure No.

3

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

13870-0862

Prepared by: J. H. on 2017-09-24

Technical Review by: J. H. on 2017-09-24

Information Review by: J. H. on 2017-09-24

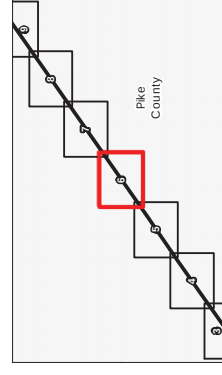
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0 100 200 Feet

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Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
- Photo Location
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- Approximate Upland Drainage Feature
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- Approximate Waterway
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- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Approximate Row Crop
- Existing Gravel Access Road
- Early Successional Deciduous/Coniferous Forest
- Hayfield
- Industrial
- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography: 2015 NIP

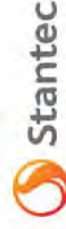


Figure No.

3

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

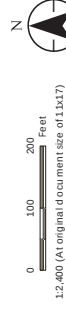
Pike County, Ohio

13270-0862

Technical Review by JLD on 2017-05-24

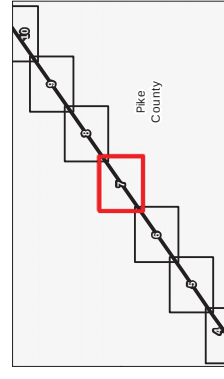
Prepared by JLD on 2017-05-24

Indep. peer review by JLD on 2017-05-24



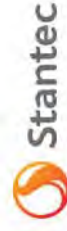
Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
- Photo Location
- Upland Drainage
- Approximate Upland Drainage Feature
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Approximate Row Crop
- Existing Gravel Access Road
- Early Successional Deciduous/Coniferous Forest
- Hayfield
- Industrial
- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography 2015 NAD



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Figure No.

3

Title

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

13870-0865

Technical Review by JLD on 2017-05-24

Initial Design Review by JLD on 2017-05-24

Initial Design Review by JLD on 2017-05-24

Initial Design Review by JLD on 2017-05-24

Initial Design Review by JLD on 2017-05-24

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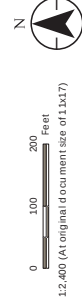
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Initial Design Review by JLD on 2017-05-24

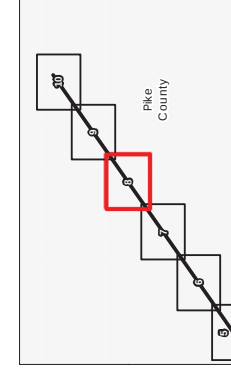
Initial Design Review by JLD on 2017-05-24

Initial Design Review by JLD on 2017-05-24



Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
- Photo Location
- Upland Drainage Feature
- Approximate Upland Drainage Feature
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- Approximate Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Approximate Open Water
- Field Delineated Emergent Wetland
- Approximate Wetland
- Approximate Row Crop
- Existing Gravel Access Road
- Early Successional Deciduous/Coniferous Forest
- Hayfield
- Industrial
- New Field
- Old Field
- Residential Lawn



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography 2015 NAD



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Figure No.

3

Title

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

Project Location

Pike County, Ohio

13870-0862

Prepared by: J. H. on 2017-02-24

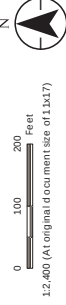
Technical Review by: J. H. on 2017-02-24

Information by: J. H. on 2017-02-24

Information by: J. H. on 2017-02-24

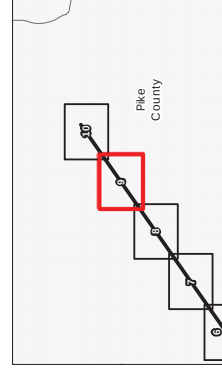
Information by: J. H. on 2017-02-24

Information by: J. H. on 2017-02-24



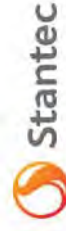
Legend

- AEP Substation
- Structure to be Replaced
- Access Road
- 138kV Transmission Line
- Project Area (100' ROW and 50' Access Roads)
- ▲ Potential Bat Roost Tree
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2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
3. Orthophotography 2015 NAD



Page 9 of 10



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Figure No. 3

Title

Habitat Assessment Map

Client/Project

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road
138kV Transmission Line Project

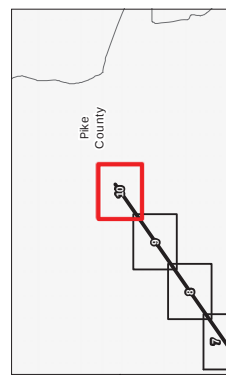
Project Location

Pike County, Ohio

13870-0862
Technical Review by JDO on 2017-09-24
Info: 2017-09-24
Info: 2017-09-24



- Legend**
- AEP Substation
 - Structure to be Replaced
 - Access Road
 - 138kV Transmission Line
 - Project Area (100' ROW and 50' Access Roads)
 - ▲ Potential Bat Roost Tree
 - Photo Location
 - Upland Drainage
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- Notes**
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
 2. Data Sources include: Stantec, AEP, MADS, USGS, OGRIP
 3. Orthophotography 2015 NAD



Appendix B Agency Correspondence

Godec, Daniel

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Monday, December 19, 2016 12:44 PM
To: Godec, Daniel
Subject: Waverly-Adams-Seaman 138 kV Trans Line Rebuild, Pike & Adams Co. (REVISED)



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



TAILS: 03E15000-2017-TA-0407

Dear Mr. Godec,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

Should the proposed site contain trees ≥ 3 inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend that removal of any trees ≥ 3 inches dbh only occur between October 1 and March 31. Seasonal clearing is being recommended to

avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the project area during the summer. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid federal permit. Please note that summer surveys may only be conducted between June 1 and August 15.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

The proposed project lies within the range of **running buffalo clover** (*Trifolium stoloniferum*), a federally listed endangered species. This plant can be found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails. Running buffalo clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but cannot tolerate full-sun, full-shade, or severe disturbance. If suitable habitat is present, we recommend that surveys for this species be conducted by a trained botanist in May or June when the plant is in flower. The survey must be coordinated with this office in advance.

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

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@dnr.state.oh.us.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Everson". The signature is fluid and cursive, with the first name "Dan" being more prominent than the last name "Everson".

Dan Everson

Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW

Kate Parsons, ODNR-DOW



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife
Raymond W. Petering, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

December 13, 2016

Dan Godec
Stantec Consulting Services, Inc.
11687 Lebanon Rd.
Cincinnati, OH 45241

Dear Mr. Godec,

I have reviewed the Natural Heritage Database for the Waverly-Adams-Seaman 138 kV Transmission Line Rebuild project area, including a one mile radius, in Scott, Meigs and Franklin Townships, Adams County and Sunfish, Benton, Pebble and Pee Pee Townships, Pike County, Ohio. The numbers/letters on the list below correspond to the areas marked on the accompanying map. Common name, scientific name and status are given for each species.

- A. Tranquility Wildlife Area – ODNR Division of Wildlife
- B. Chalet Nivale/Bacon Flats – Highlands Nature Sanctuary
- C. Appalachian Highway Cliffs Conservation Site
- D. Brush Creek State Forest – ODNR Division of Forestry (several parcels)
 - 1. Mussel Bed
 - 2. *Liatris squarrosa* – Scaly Blazing-star, potentially threatened
 - 3. Cave or Cavern
 - Natural Bridge or Arch
 - Asplenium ruta-muraria* – Wall-rue, threatened
 - Viola walteri* – Walter's Violet, threatened
 - Thuja occidentalis* – Arbor Vitae, potentially threatened
 - Draba cuneifolia* – Wedge-leaved Whitlow-grass, threatened
 - Draba reptans* – Carolina Whitlow-grass, threatened
 - Ranunculus fascicularis* – Early Buttercup, threatened
 - Cardamine dissecta* – Narrow-leaved Toothwort, potentially threatened
 - 4. *Silene caroliniana* ssp. *wherryi* – Wherry's Catchfly, threatened
 - 5. *Silene caroliniana* ssp. *wherryi* – Wherry's Catchfly, threatened
 - 6. *Notropis boops* – Bigeye Shiner, threatened
 - 7. *Potamogeton tennesseensis* – Tennessee Pondweed, threatened
 - 8. *Potamogeton tennesseensis* – Tennessee Pondweed, threatened

A Conservation Site is an area deemed by the Natural Heritage Program to be a high quality natural area not currently under formal protection. It may, for example, harbor one or more rare species,

be an outstanding example of a plant community or have geologically significant features, etc. These sites may be in private ownership and our listing of them does not imply permission for access.

We are unaware of any scenic rivers, state nature preserves or parks or national wildlife refuges, parks or forests within a one mile radius of the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

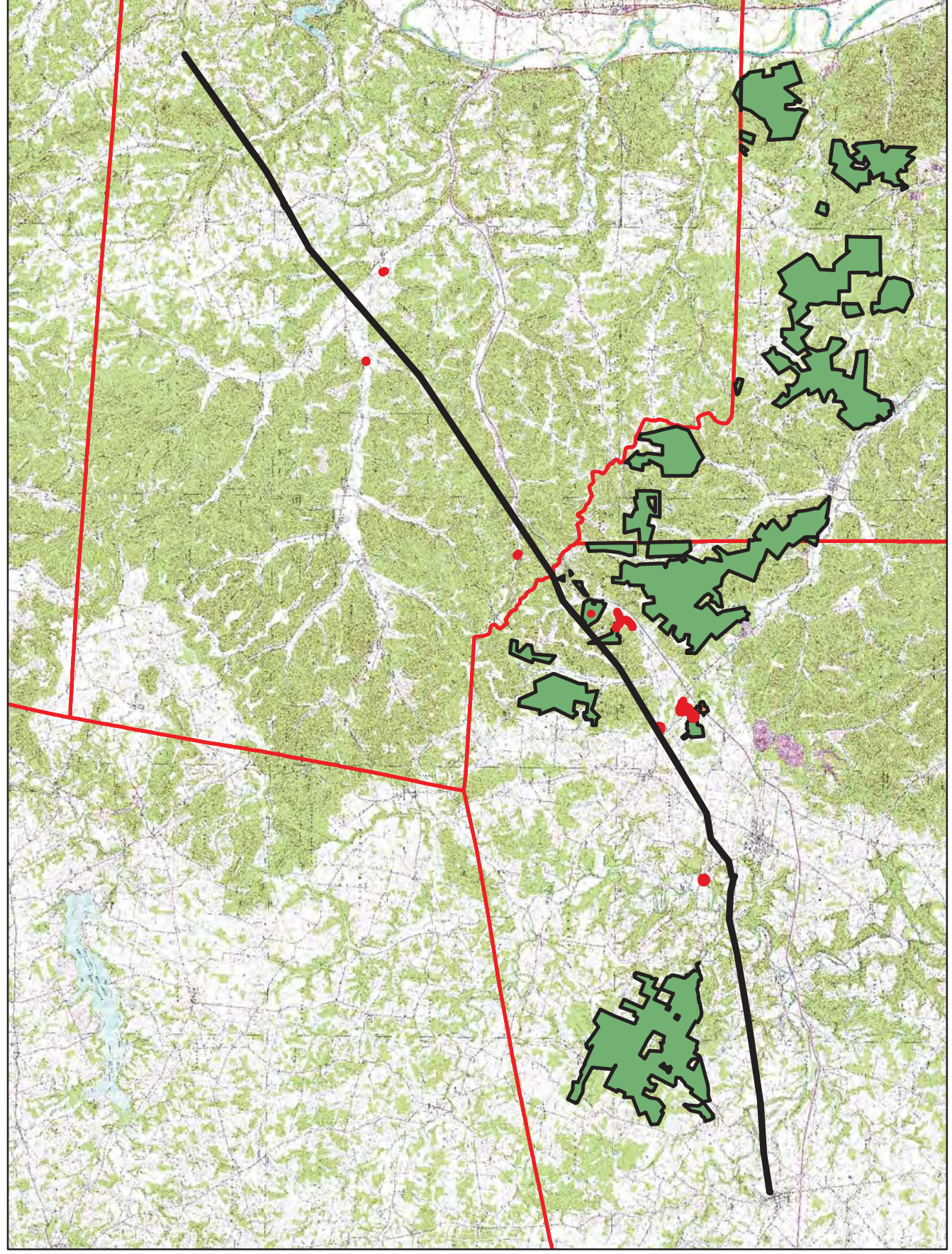
Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

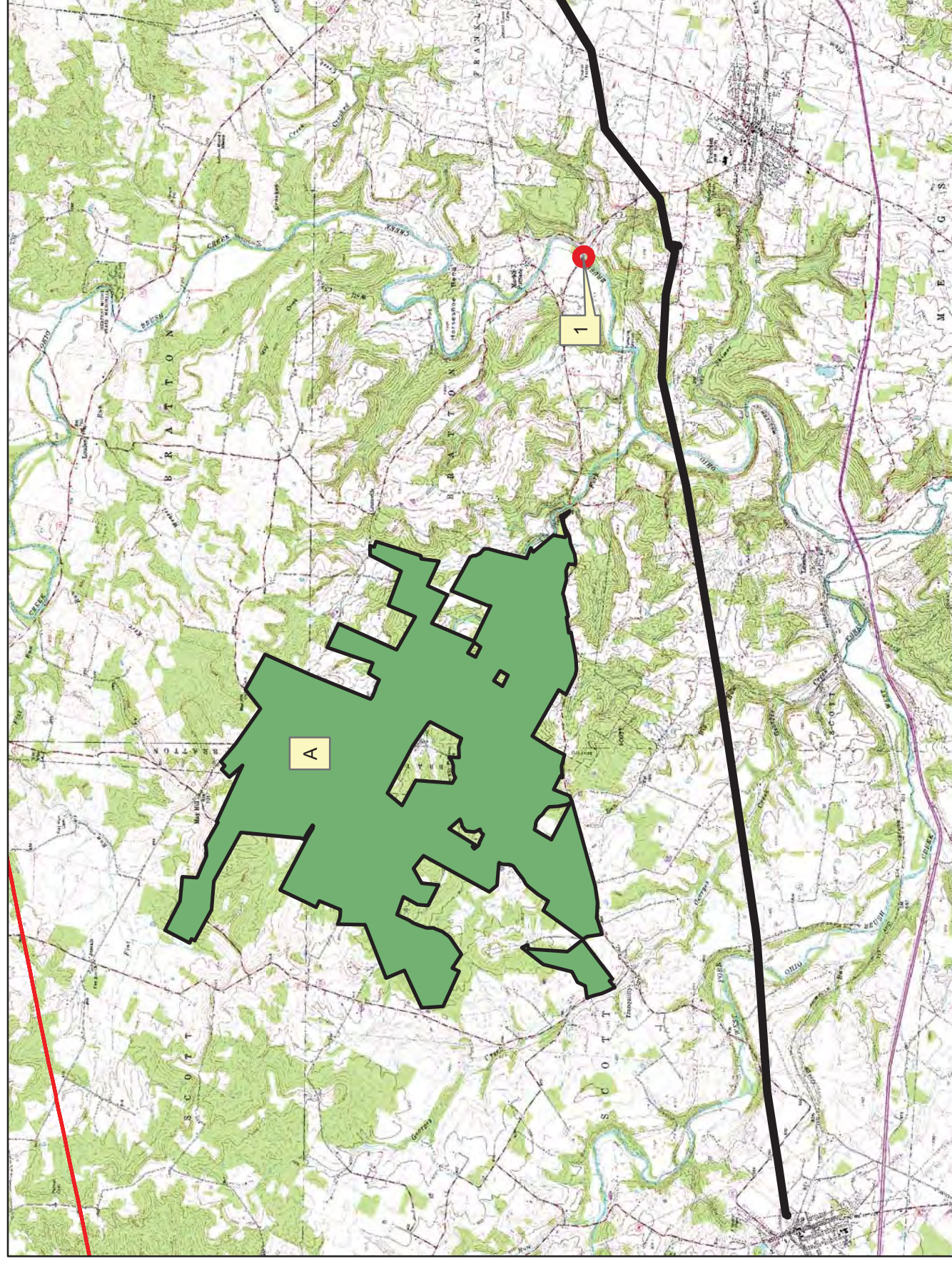
A handwritten signature in blue ink that reads "Debbie Woischke". The signature is written in a cursive, flowing style.

Debbie Woischke
Ohio Natural Heritage Program

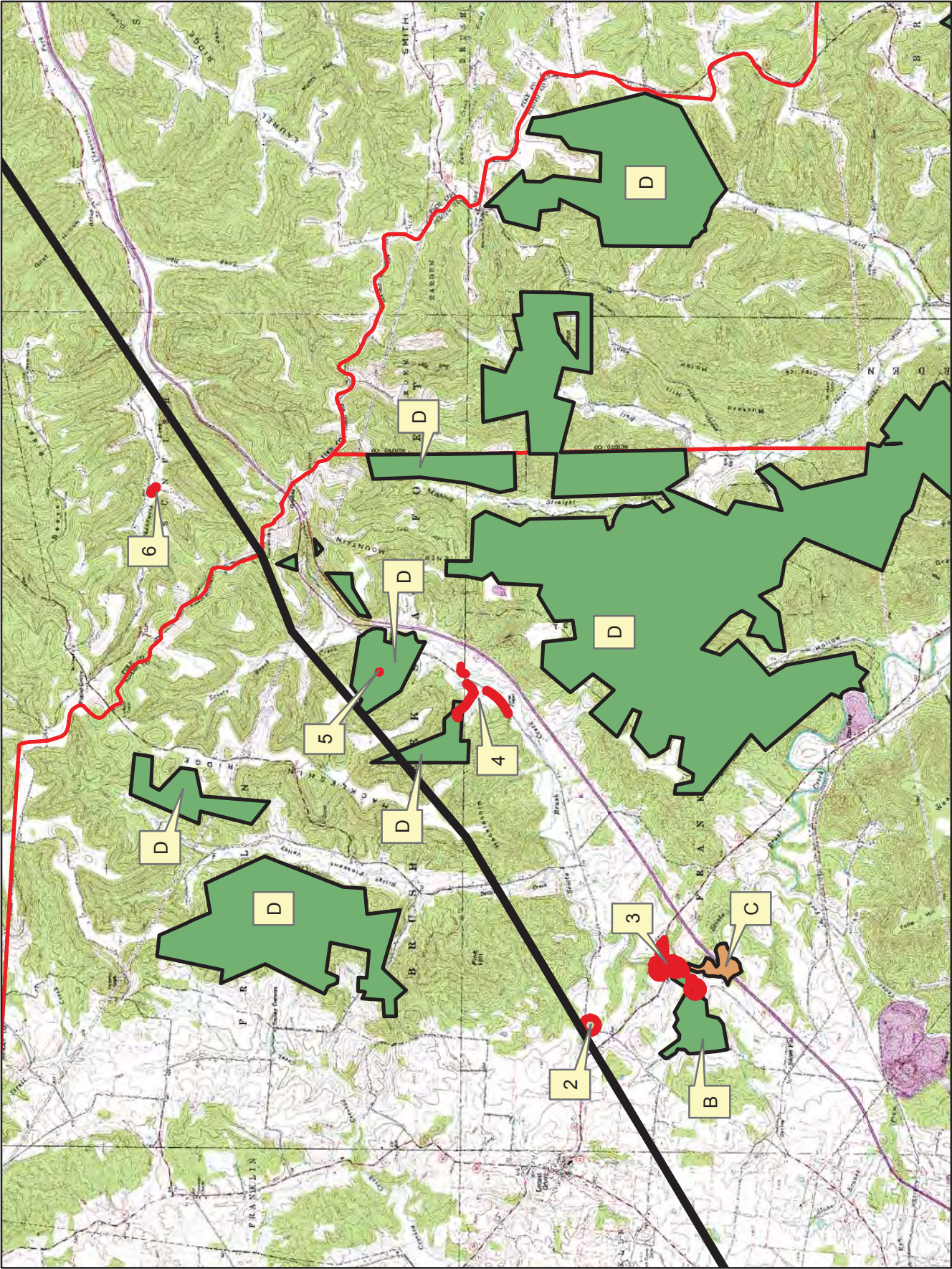
Waverly-Adams-Seaman 138 kV Transmission Line Rebuild Project



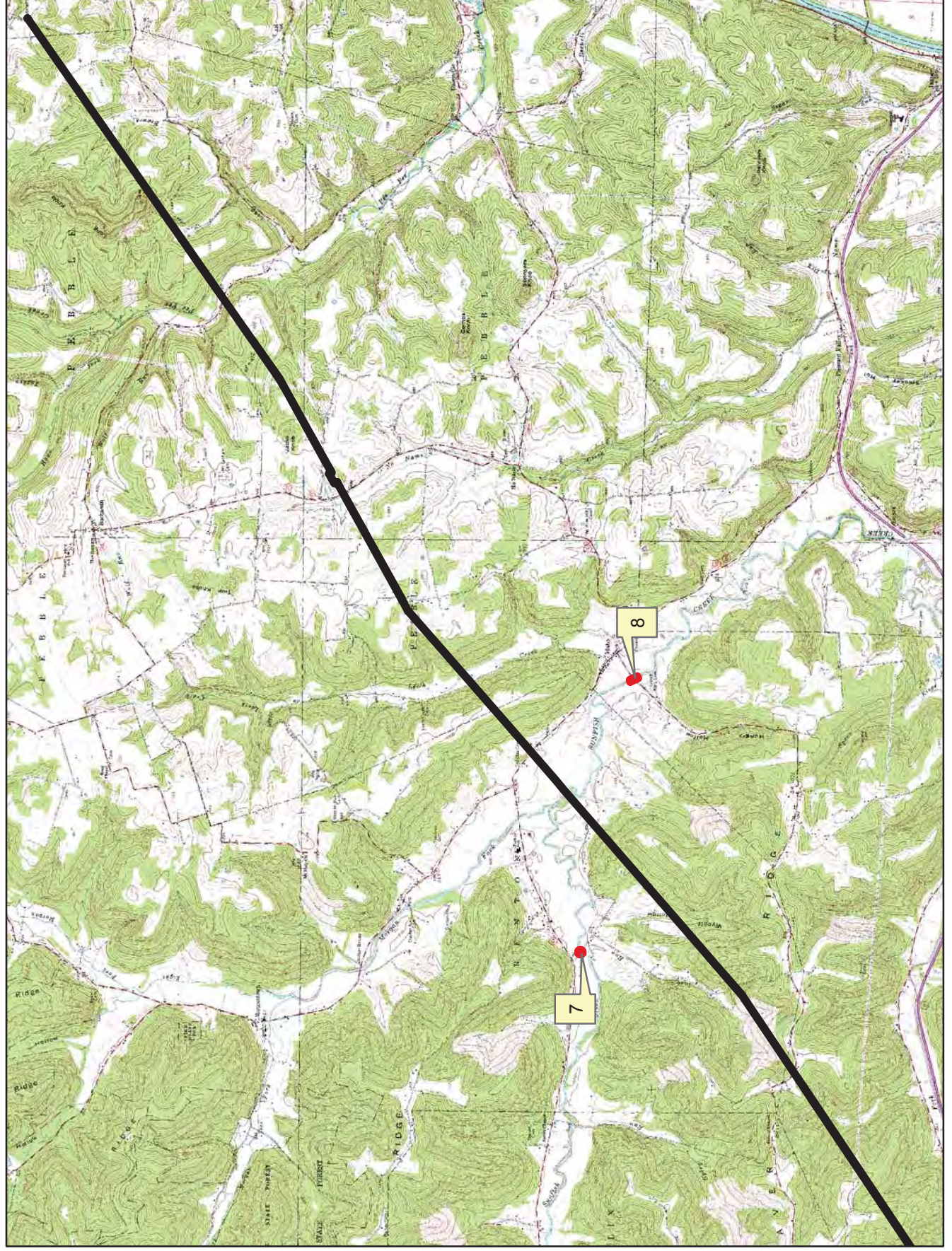
Waverly-Adams-Seaman 138 kV Transmission Line Rebuild Project



Waverly-Adams-Seaman 138 kV Transmission Line Rebuild Project



Waverly-Adams-Seaman 138 kV Transmission Line Rebuild Project



Appendix C Representative Photographs

Wetland and Waterbody Photographs

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road 138 kV Transmission Line Project
Pike County, Ohio



Photo Location 1. View of Stream 1. Photograph taken upstream/facing northeast.



Photo Location 1. View of Stream 1. Photograph taken downstream/facing southwest.

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road 138 kV Transmission Line Project
Pike County, Ohio



Photo Location 2. View of upland at wetland determination sample point (SP 1). Photograph taken facing northeast.



Photo Location 3. View of wetland determination sample point (SP 3) within Wetland 1. Photograph taken facing east.

AEP Ohio Transmission Company, Inc.
Waverly-Ware Road 138 kV Transmission Line Project
Pike County, Ohio



Photo Location 3. View of wetland determination sample point (SP 3) within Wetland 1.
Photograph taken facing northeast.



Photo Location 4. View of wetland determination sample point (SP 4) within Wetland 2.
Photograph taken facing east.

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

2/3/2017 3:32:21 PM

in

Case No(s). 17-0172-EL-BLN

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