



Legal Department

American Electric Power
1 Riverside Plaza
Columbus, OH 43215-2373
AEP.com

September 27, 2017

Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

Christen M. Blend
Senior Counsel –
Regulatory Services
(614) 716-1915 (P)
(614) 716-2950 (F)
cmbblend@aep.com

**Re: PUCO Case No. 17-1953-EL-BLN
In the Matter of the Letter of Notification for the
Haviland-North Delphos 138kV Transmission Line Rebuild Project**

Dear Chairman Haque,

Attached please find a copy of the Letter of Notification (LON) for the above-captioned project ("Project") by AEP Ohio Transmission Company, Inc. This filing and notice is in accordance with O.A.C. 4906-6-05

A copy of this filing will also be submitted to the executive director or the executive director's designee. A copy will be provided to the Board Staff, including an electronic copy.

If you have any questions, please do not hesitate to contact me.

Respectfully submitted,

/s/ Christen M. Blend
Christen M. Blend
Counsel for Ohio Power Company

cc: Jon Pawley, OPSB Staff

LETTER OF NOTIFICATION for Haviland-North Delphos 138 kV Transmission Line Rebuild Project



PUCO Case No.

17-1953-EL-BLN

Submitted to:
The Ohio Power Siting Board
Pursuant to O.A.C. 4906-6-05

Submitted by:
AEP Ohio Transmission Company, Inc.

September 27, 2017

LETTER OF NOTIFICATION FOR HAVILAND-NORTH DELPHOS 138 KV TRANSMISSION LINE PROJECT

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LETTER OF NOTIFICATION

AEP Ohio Transmission Company, Inc.'s
Haviland-North Delphos 138 kV Transmission Line Project

4906-6-05

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

4906-6-05(B) General Information

B(1) Project Description

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

AEP Ohio Transco proposes the Haviland-North Delphos 138 kV Transmission Line Project ("Project"), which is located in Paulding, Van Wert, and Putnam Counties, Ohio. The Project involves rebuilding approximately 17.1 miles of existing 138 kV transmission line between Haviland Station and North Delphos Station.

The Project consists of rebuilding the existing 138 kV single-circuit transmission line predominantly within an existing right-of-way ("ROW") between Haviland Station and North Delphos Station. Approximately 0.8 mile of the rebuild will occur outside of existing ROW in order to avoid physical obstructions or to meet engineering requirements. Figures 1A through 1D show the location of the 17.1-mile long Project in relation to the surrounding vicinity.

The Project meets the requirements for a Letter of Notification because it is within the types of projects defined by (1)(b) and (2)(b) of Appendix A to Ohio Administrative Code Section 4906-1-01, *Application Requirement Matrix for Electric Power Transmission Lines*:

1. *New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distributions line(s) for operation at a higher transmission voltage as follows:*
 - (b) *Line(s) greater than 0.2 miles in length but not greater than two miles in length.*
2. *Adding new circuits on existing structures designed for multiple circuit use, replacing conductors on existing structures with larger or bundled conductors, adding structures to an existing transmission line, or replacing structures with a different type of structure, for a distance of:*
 - (b) *More than two miles.*

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B(2) Statement of Need

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

The Haviland- North Delphos transmission line was originally placed in service in 1926. Because 138 kV standards have become more stringent since the line's original construction, and given the facilities' age, complete replacement of the line is necessary.

This Project is to support the 138kV transmission network serving Paulding, Putnam, Van Wert, and western Allen counties.

For purposes of PJM Interconnection, LLC Regional Transmission, the proposed facilities are a supplemental project that are necessary to renew and modernize the area's aging transmission line infrastructure. The Project will strengthen the 138 kV transmission network in northwest Ohio, support the electrical load required in future economic development in that area, and provide transmission grid reliability and resiliency. This project will be included in AEP Ohio Transco's 2018 PJM submittal and 2018 LTFR.

B(3) Project Location

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

Figures 1A through 1D show the location of the proposed Project in relation to existing transmission lines and stations. The Project directly impacts the following existing facilities:

- Haviland Station, North Delphos Station.
- Haviland-North Delphos 138 kV transmission line.

B(4) Alternatives Considered

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

Reconstructing and modernizing the existing double-circuit 138 kV transmission line, primarily utilizing the existing corridor, will have significantly lesser impacts than would constructing a replacement transmission line on a green field corridor. Most of the existing corridor will be utilized, but some alignment deviations are needed to avoid impacts to encroachments and non-conforming land uses or features. Alignment deviations will require additional ROW from property owners currently affected by the current transmission line route. No other primary alternatives were considered. By designing almost all of the transmission line rebuild to occur within the existing, maintained corridor, the proposed Project will not incur any significant socioeconomic, ecological, or construction impacts as the proposed Project will be largely within AEP Ohio Transco's currently-maintained easement.

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B(5) Public Information Program

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

AEP Ohio Transco will inform affected property owners and tenants about this Project through several different mediums. Within seven days after its filing this Letter of Notification ("LON"), AEP Ohio Transco will issue a public notice in a newspaper of general circulation in the Project area. The notice will comply with all requirements of O.A.C. 4906-6-08(A)(1)-(6). Further, AEP Ohio Transco has mailed (or will mail) a letter, via first class mail, to affected landowners, tenants, contiguous owners, and any other landowner AEP Ohio Transco may approach for an easement necessary for the construction, operation, or maintenance of the Project. The letter will comply with all requirements of O.A.C. 4906-6-08(B). AEP Ohio Transco also maintains a website (<http://aeptransmission.com/ohio/>) that provides the public access to an electronic copy of this LON and the public notice for this LON. A paper copy of the LON will be served to the public library in each political subdivision for this Project. AEP Ohio Transco retains ROW land agents that discuss Project timelines, construction and restoration activities and convey this information to affected owners and tenants.

B(6) Construction Schedule

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

Construction of the Project is planned to begin in first quarter of 2018, and the anticipated in-service date will be approximately December 2018.

B(7) Area Map

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

Figures 1A through 1D and 2A through 2D provide the proposed Project area on maps of 1:24,000-scale. Figures 1A through 1D provide the proposed Project centerline on the United States Geological Survey (USGS) 7.5-minute topographic maps of the Latty, Ottoville, Scott, and Wetsel quadrangles. Figures 2A through 2D show the Project area on recent aerial photography, as provided by Bing Maps. To visit the Project location from Columbus, Ohio, take I-670 West toward Dayton for approximately 3.9 miles before merging onto I-70 West. Follow I-70 West for approximately 2.1 miles and at exit 93, take the ramp right for I-270 North towards Cleveland. Continue approximately 9.0 miles, then take Exit 17B to merge onto OH-161 West/US-33 West. Continue 1.2 miles and keep left to stay on US-33 West for another approximately 45.3 miles. Exit onto OH-117 West toward OH-366/Huntsville/Lima. Continue on OH-117 West for approximately 23.1 miles. Turn right onto South Thayer Road and continue on South Thayer Road for approximately 3.7 miles. The name of the road changes to North Thayer Road at this point. Continue on North Thayer Road for 4.2 miles. Turn left onto US-30 West and continue approximately 31.0 miles. Take the US-127/US-224 East exit toward Van Wert/Paulding and then turn right onto US-127 North/US-224 East. Continue approximately 1.1 miles then turn left onto US-127 North. Continue

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7.2 miles then turn left onto Township Road 24. After approximately 1.0 mile, turn right at the first cross street onto Road 107/McDonald Park. The station entrance is on the left after approximately 0.8 mile. The approximate address of Haviland Station is 2759 Road 107, Haviland, Ohio 45851, at latitude 41.01621, longitude -84.593233.

B(8) Property Agreements

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

The proposed Project will be constructed predominantly within existing ROW. Approximately 0.8 miles of the rebuild project will be constructed outside of existing ROW. No new property owners will be impacted as a result of constructing outside the existing ROW.

B(9) Technical Features

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

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

The proposed Project will consist of one (1) –1033.5 kcmil ACSR 54/7 Curlew conductor per phase. One (1) 7#8 Alumoweld overhead ground wire and one (1) 48 fiber OPGW will be used as shield wires above the phase conductors. The insulator assemblies will consist of polymer suspension insulators. There will be a total of 91 structure replacements on the Project. The replacement structures will be primarily double-circuit galvanized steel monopole structures with davit arms. A total right-of-way width of 100-ft will be acquired for the propose Project.

Sketches of the proposed structure types are included as Figures 3A through 3F.

B(9)(b) Electric and Magnetic Fields

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

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

Three loading conditions were examined: (1) normal maximum loading, (2) emergency line loading, and (3) winter normal conductor rating. Normal maximum loading represents the peak flow expected with all system facilities in service; daily/hourly flows fluctuate below this level. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods of time. Winter normal (WN) conductor rating represents the maximum current flow that a line, including its

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terminal equipment, can carry during winter conditions. It is not anticipated that either circuit of this line would operate at its WN rating in the foreseeable future. Loading levels and the calculated electric and magnetic fields (“EMF”) are summarized below.

Haviland - North Delphos 138kV			
Condition	East Lima _ Haviland / Logtown - N Dolphos Load (A)	Electric Field (kV/m)*	Magnetic Field (mG)*
(1) Normal Max. Loading	33.08 / 185.88	0.25/1.05/0.25	4.53/20.94/9.86
(2) Emergency Line Loading	294.321 / 320.237	0.25/1.05/0.25	9.84/37.75/11.41
(3) Winter Conductor Rating	1567.97/1567.9	0.27/1.83/0.27	66.53/332.62/66.11

*EMF levels (left ROW edge/maximum/right ROW edge) computed one meter above ground at the point of minimum ground clearance, assuming balanced phase currents and nominal voltages. Electric fields reflect normal and emergency operations; lower electric fields are expected during emergency conditions when one mutually-coupled line is out of service.

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

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

Design alternatives were not considered because the proposed Project's EMF levels are well within the normal range. Transmission lines generate EMF when energized. Scientific studies have not found any causal relationship between exposure to EMF and effects on human health; some people, however, are concerned that EMF has such impacts. Due to these concerns, EMF levels associated with the new circuits were calculated for this project and are illustrated in the table above. The EMF was computed assuming the highest possible EMF values that could exist along the proposed transmission line. Normal daily EMF levels will operate below these maximum load conditions. Based on studies from the National Institutes of Health, the magnetic field (measured in milliGauss) associated with emergency loading at the highest EMF value for this transmission line is lower than those associated with normal household appliances like microwaves, electric shavers, and hair dryers. Based upon AEP Ohio Transco's ongoing review of the scientific literature on EMF, its experience with its existing 138 kV transmission lines and other voltage transmission lines, and the fact that the calculated maximum EMF levels at the edges of the ROW for the proposed lines associated with the Project are well within the limits specified in IEEE Standard C95.6™-2002, AEP Ohio Transco is of the opinion that no significant adverse health effects will result from the construction and operation of the Project. For additional information regarding EMF, the National

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Institute of Health has posted information on its website: <http://www.niehs.nih.gov/health/topics/agents/emf/>. Information on EMF is also available on AEP Ohio's website: <https://aepohio.com/info/projects/emf/Research.aspx>.

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

The estimated capital cost of the project.

The capital cost estimate for the proposed Project, which is composed of applicable tangible and capital costs, is approximately \$21,000,000.

B(10) Social and Economic Impacts

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

B(10)(a) Operating Characteristics

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

An AEP Ohio Transco consultant prepared a Socioeconomic, Land Use, and Agricultural District Review Report. This report is included as Appendix A.

B(10)(b) Agricultural Land Information

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

An AEP Ohio Transco consultant prepared a Socioeconomic, Land Use, and Agricultural District Review Report. This report is included as Appendix A.

B(10)(c) Archaeological and Cultural Resources

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

An archaeological and history architecture report conducted by AEP Ohio Transco's consultants is included under Appendix C.

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

Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

A Notice of Intent will be filed with the Ohio Environmental Protection Agency for authorization of construction storm water discharges under General Permit OHC000004. There are no other known local, state, or federal requirements that must be met prior to commencement of the proposed Project.

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

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

An AEP Ohio Transco consultant prepared report to address special status species. The consultant coordinated with the United States Fish and Wildlife Service and Ohio Department of Natural Resources regarding special status species in the vicinity of the Project. No impacts to threatened or endangered species are expected. A copy of the coordination for the Project is included in the Areas of Ecological Concern, Wetland Delineation, and Stream Assessment Report included as Appendix B.

B(10)(f) Areas of Ecological Concern

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

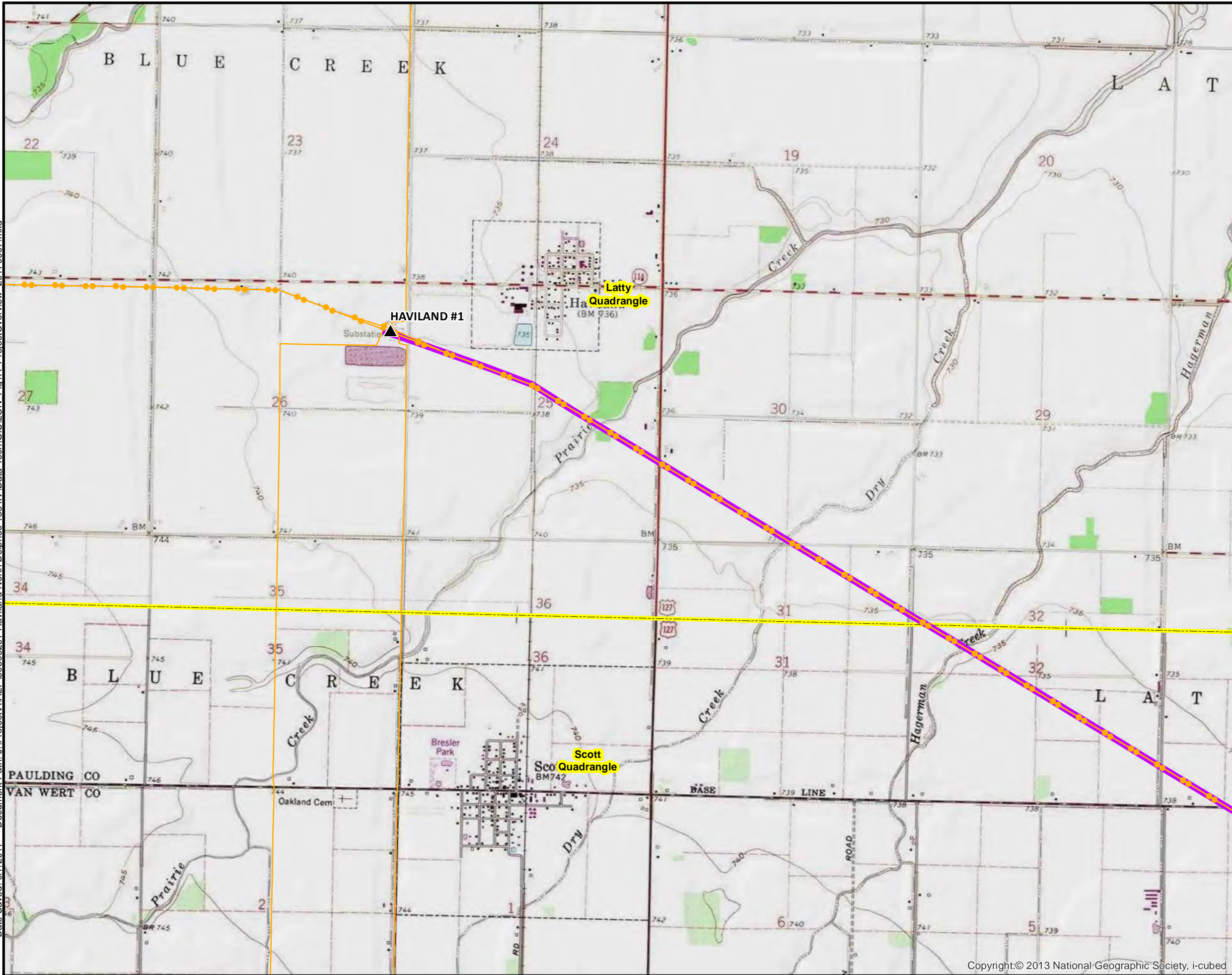
An AEP Ohio Transco consultant prepared an Areas of Ecological Concern, Wetland Delineation, and Stream Assessment Report. No impacts to wetlands or streams are anticipated. A copy of the Wetland Delineation and Stream Assessment Report for the Project is included as Appendix B.

B(10)(g) Unusual Conditions

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

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

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Paulding Co.
Van Wert Co.
Putnam Co.
OHIO

LEGEND:

- ▲ Existing Substation
- Proposed Haviland-North Delphos 138 kV Rebuild
- Existing Transmission Line (69 kV or lower)
- Existing Transmission Line (115 kV to 230 kV)
- Existing Transmission Line (345 kV or above)
- USGS 7.5-minute Topographic Quadrangle

N

0 2,000 4,000
Scale In Feet

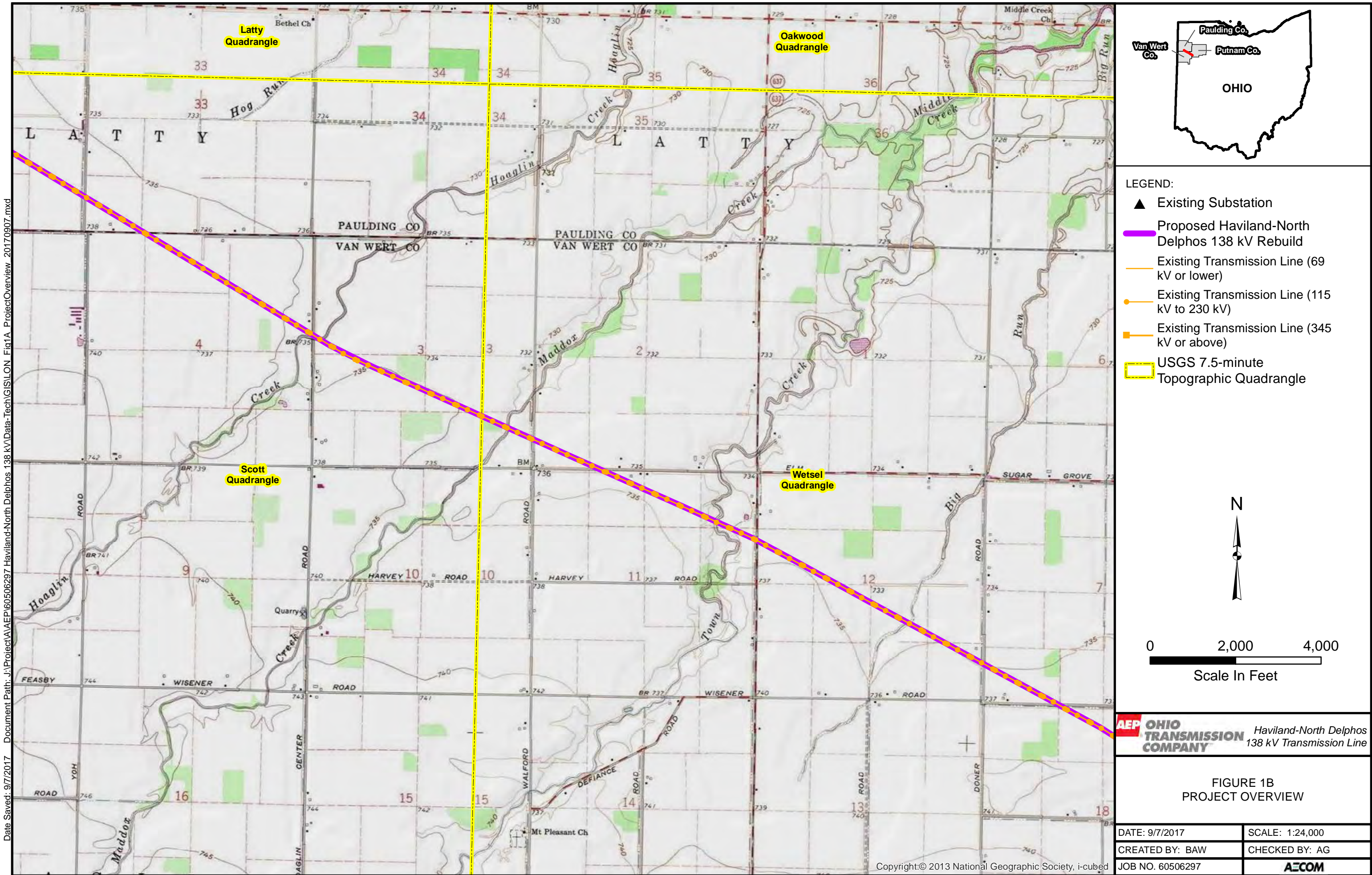
AEP OHIO TRANSMISSION COMPANY

Haviland-North Delphos
138 kV Transmission Line

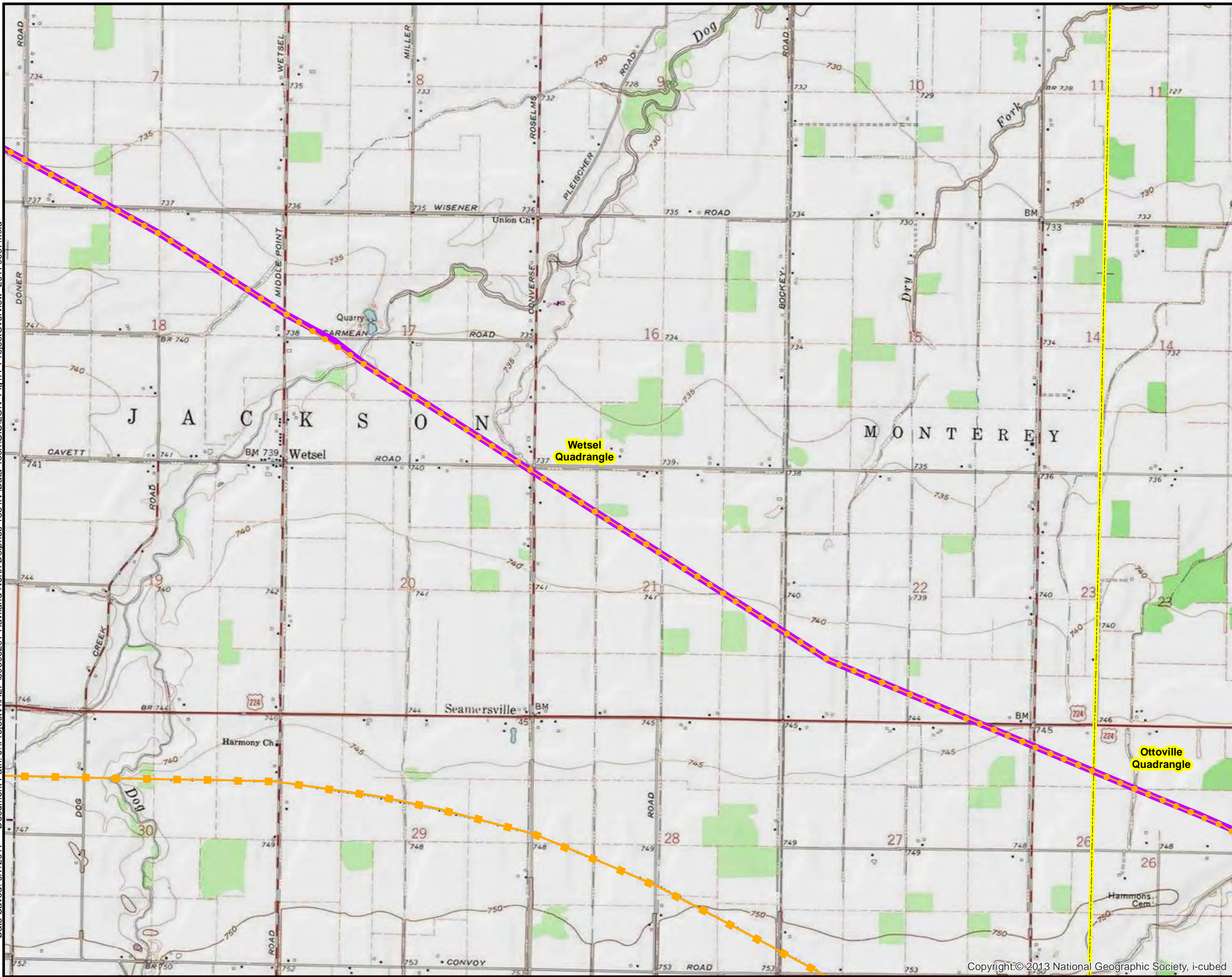
FIGURE 1A
PROJECT OVERVIEW

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OHIO

Van Wert Co. Paulding Co. Putnam Co.

LEGEND:

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N

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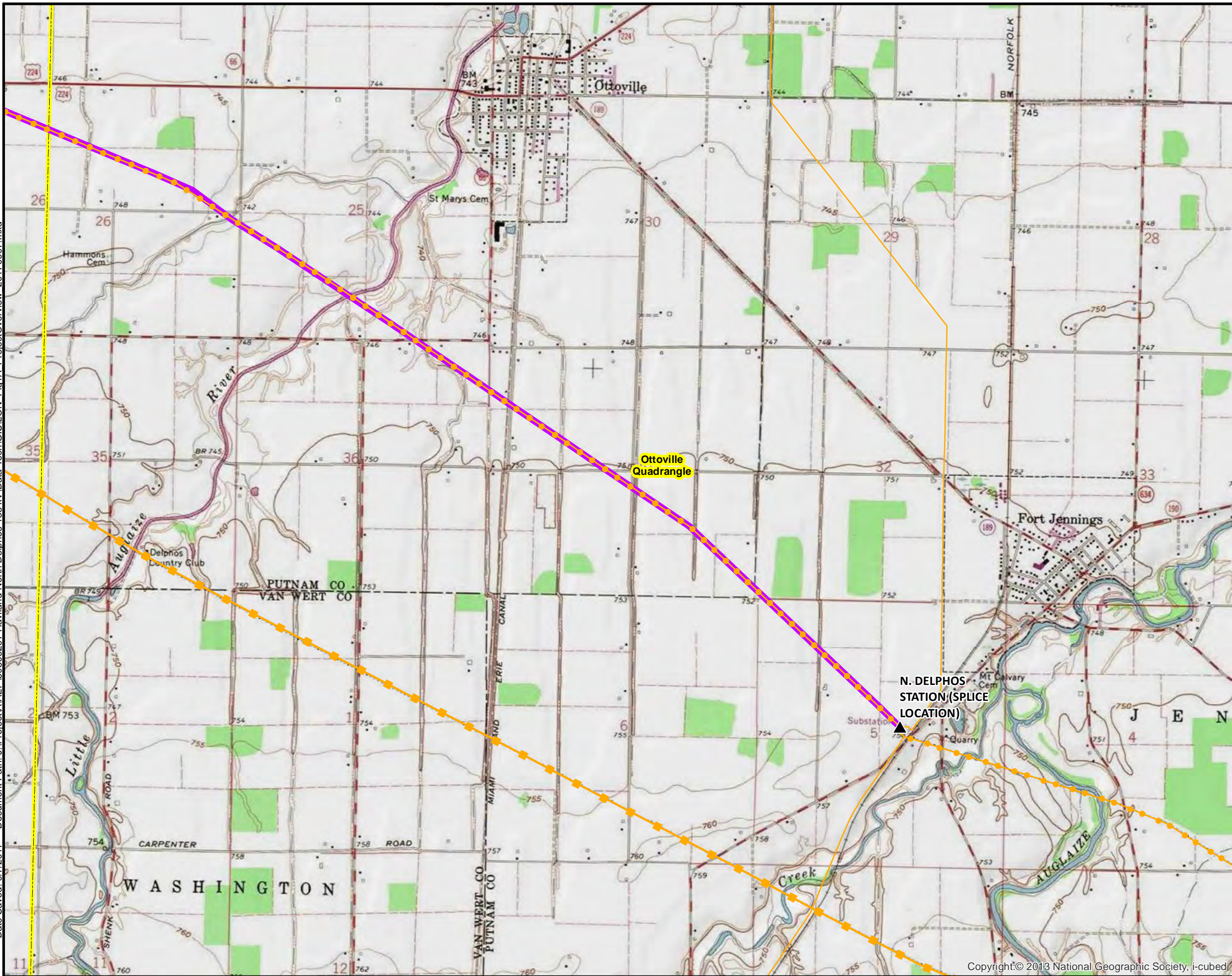
Scale In Feet

AEP OHIO TRANSMISSION COMPANY

Haviland-North Delphos 138 kV Transmission Line

FIGURE 1C
PROJECT OVERVIEW

DATE: 9/7/2017	SCALE: 1:24,000
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JOB NO. 60506297	AECOM



LEGEND:

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- Existing Transmission Line (115 kV to 230 kV)
- Existing Transmission Line (345 kV or above)
- USGS 7.5-minute Topographic Quadrangle

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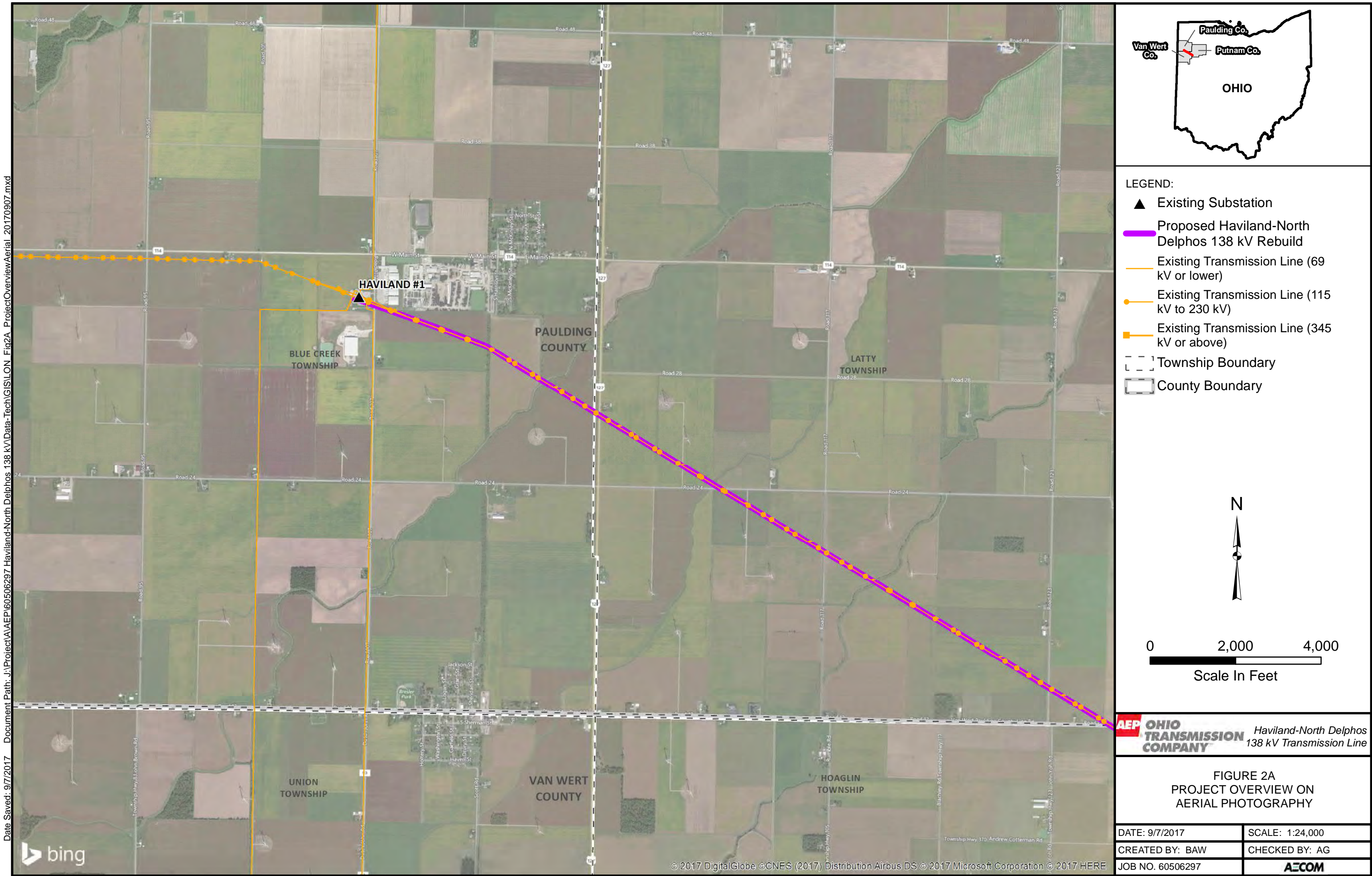
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AEP OHIO TRANSMISSION COMPANY Haviland-North Delphos 138 kV Transmission Line

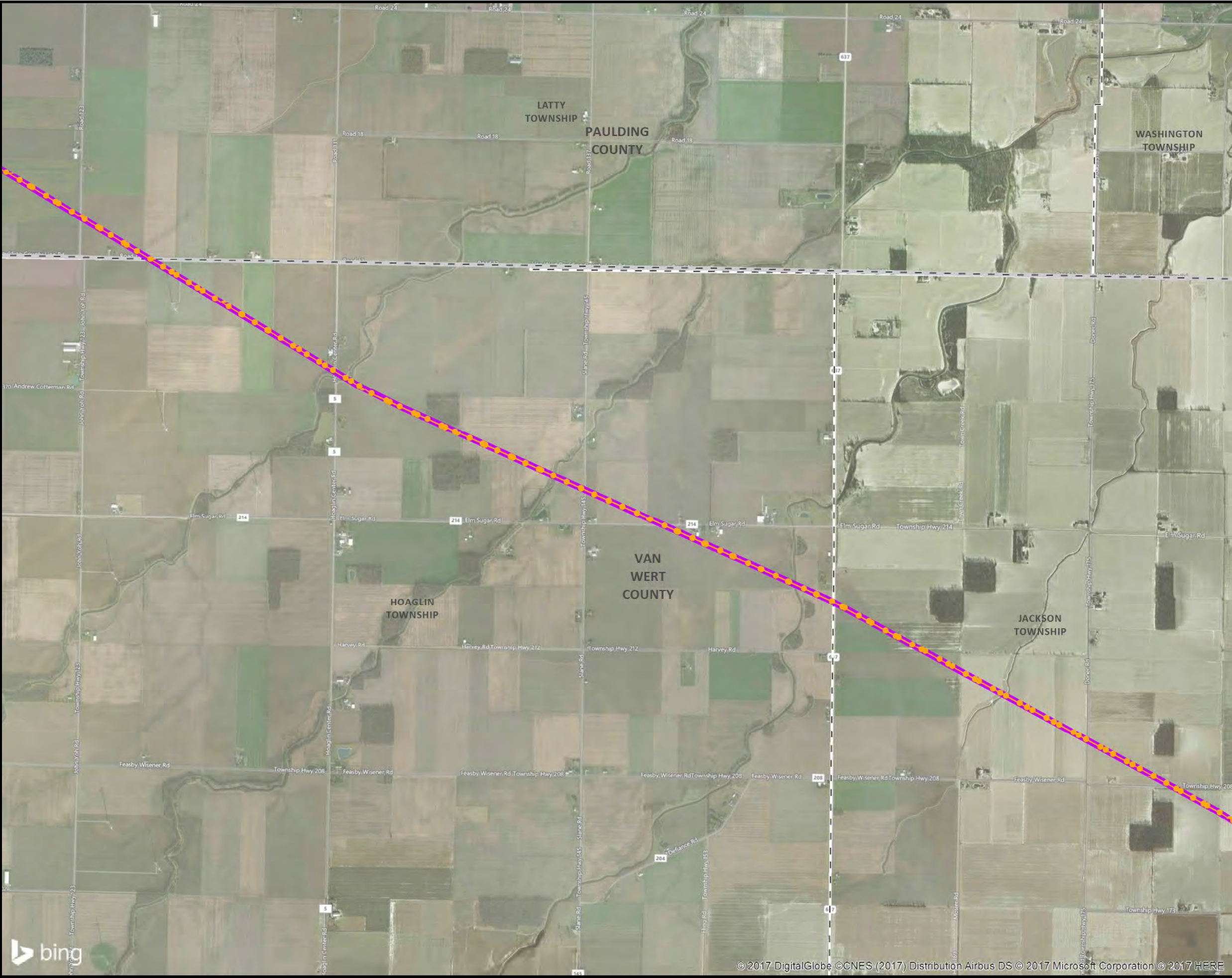
FIGURE 1D
PROJECT OVERVIEW

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LEGEND:

- ▲ Existing Substation
- Proposed Haviland-North Delphos 138 kV Rebuild
- Existing Transmission Line (69 kV or lower)
- Existing Transmission Line (115 kV to 230 kV)
- Existing Transmission Line (345 kV or above)
- - - Township Boundary
- County Boundary

0 2,000 4,000

Scale In Feet

AEP OHIO TRANSMISSION COMPANY *Haviland-North Delphos 138 kV Transmission Line*

FIGURE 2B
PROJECT OVERVIEW ON
AERIAL PHOTOGRAPHY

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Van Wert Co. Paulding Co. Putnam Co. OHIO

LEGEND:

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- Existing Transmission Line (115 kV to 230 kV)
- Existing Transmission Line (345 kV or above)
- Township Boundary
- County Boundary

N

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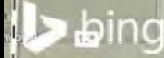
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AEP OHIO TRANSMISSION COMPANY

Haviland-North Delphos 138 kV Transmission Line

FIGURE 2C
PROJECT OVERVIEW ON
AERIAL PHOTOGRAPHY

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OHIO

LEGEND:

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- Existing Transmission Line (115 kV to 230 kV)
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- - - Township Boundary
- ▭ County Boundary

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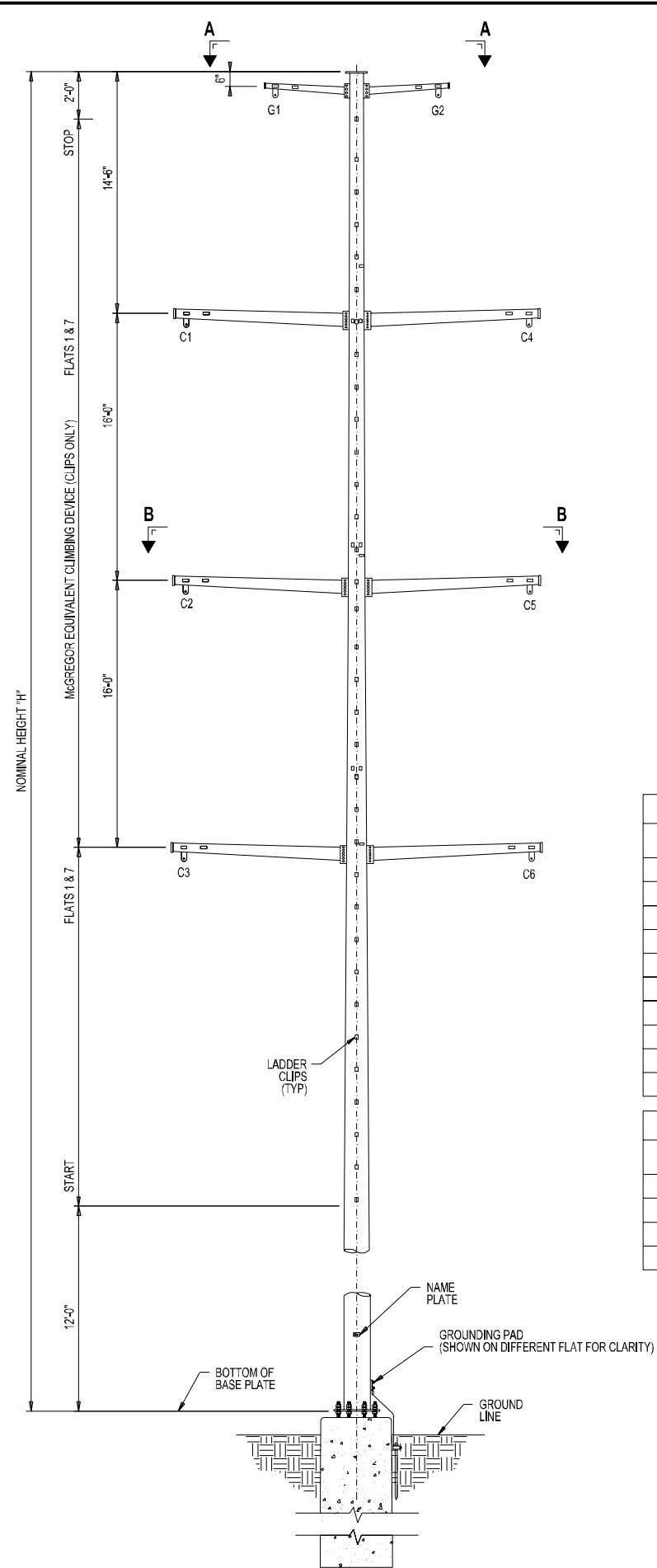
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AEP OHIO TRANSMISSION COMPANY *Haviland-North Delphos 138 kV Transmission Line*

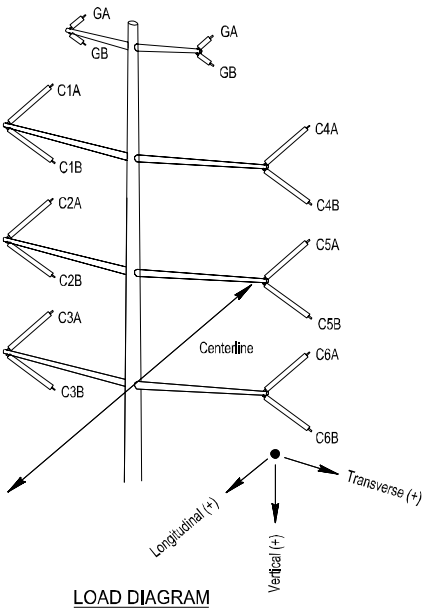
FIGURE 2D
PROJECT OVERVIEW ON
AERIAL PHOTOGRAPHY

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JOB NO. 60506297	AECOM



DAVIT ARM INFORMATION				
ARM	LENGTH "AL" (FT)	RISE "AR" (FT)	WIRE ATTACHMENT	POLE STANDARD DETAIL
G1, G2	4'-6"	TBD	G.W. ATTACHMENT DETAIL	01D5-1213
C1, C2, C3, C4, C5, C6	9'-9"	TBD	CONDUCTOR ATTACHMENT DETAIL	01D5-1213

TBD - to be determined by Vendor



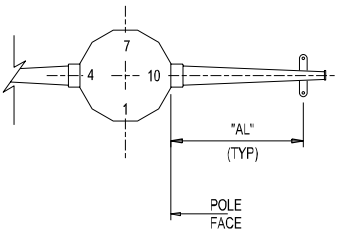
POLE ATTACHMENTS FURNISHED BY VENDOR				
ITEM	POLE STANDARD DETAIL	LOCATION	REFERENCE POINT	ORIENTATION
POLE CAP	01D4-1186 SHT 1 (DETAIL 'A')	0.0'	TOP OF POLE	AS NOTED
HAND HOLD (TOP)	01D0-1158	0.25'	TOP OF POLE	FLATS 6, 12
HAND HOLD (OTHER)	01D0-1158	2.0'	ABOVE G.O. OF DAVIT ARM BRACKET	FLATS 6, 12
BAIL STEPS	01D0-1158	4.0'	BELLOW HAND HOLD	FLATS 6, 12
LADDER CLIPS	01D0-1159	AS NOTED	AS NOTED	AS NOTED
GROUND LUG	01D4-1183	1.0'	END OF G.W. ARM	AS NOTED
GROUNDING PAD	01D4-1185	1.5'	ABOVE GROUND LINE, BASEPLATE, OR AS NOTED	FLATS 1, 7
NAME PLATE	01D4-1353	5.0'	ABOVE GROUND LINE	FLAT 1
ANCHOR BOLT ASS'Y.	01D1-1166	AS NOTED	BASE PLATE	
STEEL POLE NOTES	01D3-1179			

POLE ATTACHMENTS FURNISHED BY AEP				
ITEM	POLE STANDARD DETAIL	LOCATION	REFERENCE POINT	ORIENTATION
AERIAL PATROL SIGN	70A0-1153	0.5'	TOP OF POLE	FLATS 1, 7
DANGER SIGN	70A0-1154	11.0'	ABOVE GROUND LINE	FLATS 1, 7
McGREGOR LADDER	01D0-1159 01D0-1160 01D0-1161	AS NOTED	AS NOTED	FLATS 1, 7

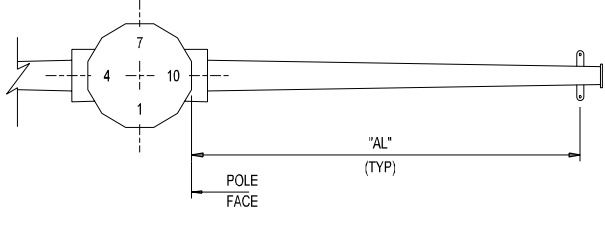
- NOTES:
- THIS STRUCTURE IS INTENDED TO BE USED FOR A LINE ANGLE RANGE OF 0° TO 12°. THIS RANGE MAY OR MAY NOT BE VALID AND WILL DEPEND ON SIDESWING CLEARANCE CHECKS WHERE INFLUENCING FACTORS INCLUDE WIND SPAN, WEIGHT SPAN, AND LINE ANGLE.
 - REFER TO DRAWING 01D5-1227 FOR STRUCTURE CLEARANCES. STRUCTURE IS NOT DESIGNED FOR ENERGIZED MAINTENANCE.
 - STRUCTURE SHALL MEET DEFLECTION CRITERIA FOR ONE OR BOTH CIRCUITS INSTALLED.
 - DAVIT ARMS SHALL BE DESIGNED TO SUPPORT THE OSHA ANCHORAGE POINT LOADING CONDITION OF 5000 POUNDS ON ANY ONE CONDUCTOR ARM OR 5000 POUNDS ON ANY ONE GROUND WIRE ARM, WHICHEVER RESULTS IN THE LARGEST MOMENT IN THE STRUCTURE SHAFT, IN CONJUNCTION WITH THE DEFLECTION LOADING CASE SPECIFIED IN THE DRAWING LOAD TABLES.

				DEAD-END STRUCTURE: 0° - 12° DEAD END																					
AEP HEAVY LOADING				ULTIMATE LOAD (KIPS)																					
NO.	DESCRIPTION	WIND (PSF)	ICE (IN.)		G1A	G1B	G2A	G2B	C1A	C1B	C2A	C2B	C3A	C3B	C4A	C4B	C5A	C5B	C6A	C6B	STRUCTURE WIND PRESSURE (PSF)	ALLOWABLE DEFLECTION CRITERIA (% OF POLE HEIGHT)			
1	INTACT NESC RULE 250B, INCL. O.L.F. 0° F	4.0	0.5	V	1.4	1.4	1.4	1.4	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	10	10			
				T	2.1	2.1	2.1	2.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	10		
				L	12.4	-12.4	12.4	-12.4	19.0	-19.0	19.0	-19.0	19.0	-19.0	19.0	-19.0	19.0	-19.0	19.0	-19.0	19.0	-19.0	10		
2	INTACT NESC RULE 250C, INCL. O.L.F. 60° F	20.7	NONE	V	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	21	10			
				T	1.3	1.3	1.3	1.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	10		
				L	5.6	-5.6	5.6	-5.6	9.7	-9.7	9.7	-9.7	9.7	-9.7	9.7	-9.7	9.7	-9.7	9.7	-9.7	9.7	-9.7	10		
3	INTACT NESC RULE 250D, INCL. O.L.F. 15° F	4.0	1.0	V	1.9	1.9	1.9	1.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	7	10			
				T	1.7	1.7	1.7	1.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	10		
				L	10.7	-10.7	10.7	-10.7	15.8	-15.8	15.8	-15.8	15.8	-15.8	15.8	-15.8	15.8	-15.8	15.8	-15.8	15.8	-15.8	10		
4	INTACT HIGH WIND 60° F	25.0	NONE	V	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	31	10			
				T	1.5	1.5	1.5	1.5	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	10			
				L	6.3	-6.3	6.3	-6.3	10.9	-10.9	10.9	-10.9	10.9	-10.9	10.9	-10.9	10.9	-10.9	10.9	-10.9	10.9	-10.9	10		
5	INTACT WIND & ICE 0° F	6.25	1.0	V	1.9	1.9	1.9	1.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	10	10			
				T	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	10			
				L	11.3	-11.3	11.3	-11.3	16.7	-16.7	16.7	-16.7	16.7	-16.7	16.7	-16.7	16.7	-16.7	16.7	-16.7	16.7	-16.7	10		
6	INTACT HEAVY ICE 0° F	NONE	1.25	V	2.5	2.5	2.5	2.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	0	10			
				T	1.4	1.4	1.4	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	10		
				L	12.9	-12.9	12.9	-12.9	18.8	-18.8	18.8	-18.8	18.8	-18.8	18.8	-18.8	18.8	-18.8	18.8	-18.8	18.8	-18.8	10		
7	FULL DEAD-END NESC, INCL. O.L.F. 0° F	4.0	0.5	V	1.4	0.0	1.4	0.0	2.6	0.0	2.6	0.0	2.6	0.0	2.6	0.0	2.6	0.0	2.6	0.0	10	10			
				T	2.1	0.0	2.1	0.0	3.1	0.0	3.1	0.0	3.1	0.0	3.1	0.0	3.1	0.0	3.1	0.0	3.1	0.0	10		
				L	12.4	0.0	12.4	0.0	19.0	0.0	19.0	0.0	19.0	0.0	19.0	0.0	19.0	0.0	19.0	0.0	19.0	0.0	10		
8	FULL DEAD-END NESC RULE 250C, INCL. O.L.F. 60° F	20.7	NONE	V	0.5	0.0	0.5	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	21	10			
				T	1.3	0.0	1.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	10		
				L	5.6	0.0	5.6	0.0	9.7	0.0	9.7	0.0	9.7	0.0	9.7	0.0	9.7	0.0	9.7	0.0	9.7	0.0	10		
9	FULL DEAD-END NESC RULE 250D, INCL. O.L.F. 15° F	4.0	1.0	V	1.9	0.0	1.9	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	7	10			
				T	1.7	0.0	1.7	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	2.3	0.0	10		
				L	10.7	0.0	10.7	0.0	15.8	0.0	15.8	0.0	15.8	0.0	15.8	0.0	15.8	0.0	15.8	0.0	15.8	0.0	10		
10	FULL DEAD-END HIGH WIND 60° F	25.0	NONE	V	0.5	0.0	0.5	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	31	10			
				T	1.5	0.0	1.5	0.0	2.7	0.0	2.7	0.0	2.7	0.0	2.7	0.0	2.7	0.0	2.7	0.0	2.7	0.0	10		
				L	6.3	0.0	6.3	0.0	10.9	0.0	10.9	0.0	10.9	0.0	10.9	0.0	10.9	0.0	10.9	0.0	10.9	0.0	10		
11	FULL DEAD-END WIND & ICE 0° F	6.25	1.0	V	1.9	0.0	1.9	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	10	10			
				T	2.0	0.0	2.0	0.0	2.8	0.0	2.8	0.0	2.8	0.0	2.8	0.0	2.8	0.0	2.8	0.0	2.8	0.0	10		
				L	11.3	0.0	11.3	0.0	16.7	0.0	16.7	0.0	16.7	0.0	16.7	0.0	16.7	0.0	16.7	0.0	16.7	0.0	10		
12	FULL DEAD-END HEAVY ICE 0° F	NONE	1.25	V	2.5	0.0	2.5	0.0	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0	0	10			
				T	1.4	0.0	1.4	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	10		
				L	12.9	0.0	12.9	0.0	18.8	0.0	18.8	0.0	18.8	0.0	18.8	0.0	18.8	0.0	18.8	0.0	18.8	0.0	10		
13	MAINTAINENCE 30° F	1.0	NONE	V	2.2	2.2	2.2	2.2	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	2	NONE			
				T	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	NONE		
				L	3.1	-3.1	3.1	-3.1	5.8	-5.8	5.8	-5.8	5.8	-5.8	5.8	-5.8	5.8	-5.8	5.8	-5.8	5.8	-5.8	NONE		
14	DEFLECTION 60° F	1.0	NONE	V	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2	2			
				T	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	2		
				L	2.9	-2.9	2.9	-2.9	5.5	-5.5	5.5	-5.5	5.5	-5.5	5.5	-5.5	5.5	-5.5	5.5	-5.5	5.5	-5.5	2		

WIRE		NESC TENSION (LBS)	RULING SPAN (FT)	VERTICAL SPAN (FT)	WIND SPAN (FT)	LINE ANGLE
G	1 - 0.646 IN. DIA. 48-FIBER OPGW	7,500 PER WIRE	1,100	700	575	0° - 12°
	1 - 0.646 IN. DIA. 48-FIBER OPGW	7,500 PER WIRE	1,100	700	575	
C	1 - 1033.5 KCMIL 54/7 ACSR CURLEW	11,500 PER WIRE	1,100	700	575	0° - 12°
	1 - 1033.5 KCMIL 54/7 ACSR CURLEW	11,500 PER WIRE	1,100	700	575	



SECTION "A-A"
GROUNDWIRE ARM



SECTION "B-B"
CONDUCTOR ARM

FOR REFERENCE ONLY

ISSUED FOR
QUOTE

REV	REVISION DESCRIPTION	DATE	BY	REV	REVISION DESCRIPTION	DATE	BY
0	ISSUED FOR QUOTE	05/02/2017	NKV				

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AEP AMERICAN ELECTRIC POWER

138KV SINGLE POLE STEEL DEADEND STRUCTURE
DEADEND INSULATOR ASSEMBLY
DOUBLE CIRCUIT, ANCHOR BOLT FOUNDATION
LINE ANGLE 0° - 12°

BURNS & MCDONNELL

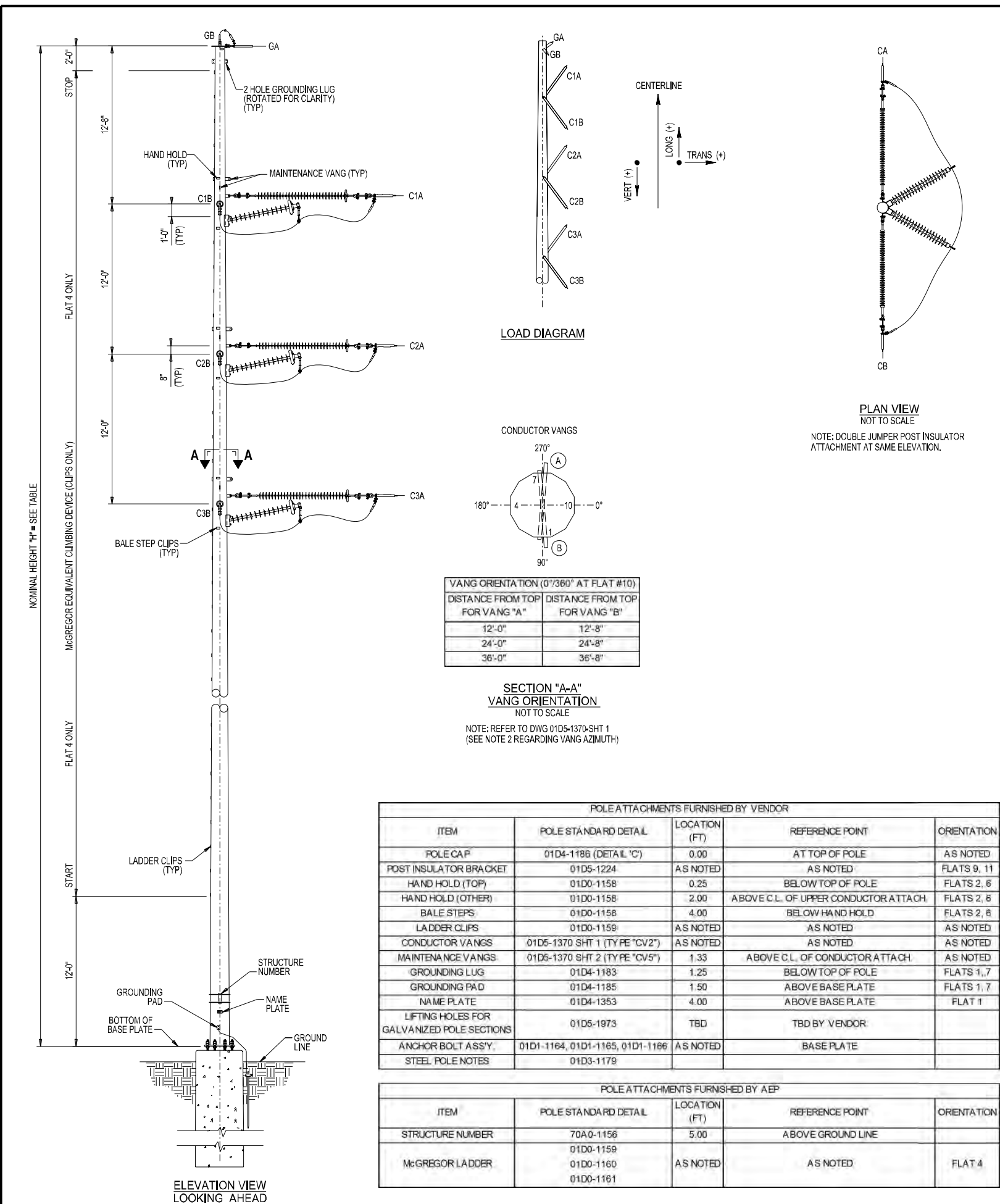
ENGR: NKV 04/18/2017
DRAWN: SSB 04/18/2017
CHECKED: MK 04/18/2017

APPROVED:
LINE: OH-122
DWG: 502-2638

SCALE: NONE
EQUIP: TLN380:OH122
SHEET: 3A
REV 0



May 3 2017



				STRAIN STRUCTURE: 0° - 5° STRAIN DEAD END																		
AEP HEAVY LOADING				ULTIMATE LOAD (KIPS)																		
NO.	DESCRIPTION	WIND (PSF)	ICE (IN.)		GA		GB		C1A		C1B		C2A		C2B		C3A		C3B		STRUCTURE WIND PRESSURE (PSF)	ALLOWABLE DEFLECTION CRITERIA (% OF POLE HEIGHT)
1	INTACT NESC RULE 250B, INCL. O.L.F., 0° F	4.0	0.5	V T L	0.6 0.6 7.1		0.5 0.6 -7.1		1.6 1.0 14.1		0.8 1.0 -14.1		1.6 1.0 14.1		0.8 1.0 -14.1		1.6 1.0 14.1		0.8 1.0 -14.1		10	10
2	INTACT NESC RULE 250C, INCL. O.L.F., 60° F	20.7	NONE	V T L	0.3 0.4 3.0		0.2 0.4 -3.0		0.6 0.7 6.0		0.4 0.7 -6.0		0.6 0.7 6.0		0.4 0.7 -6.0		0.6 0.7 6.0		0.4 0.7 -6.0		21	10
3	INTACT NESC RULE 250D, INCL. O.L.F., 15° F	4.0	1.0	V T L	1.1 0.5 5.7		0.6 0.5 -5.7		1.7 0.7 10.2		0.9 0.7 -10.2		1.7 0.7 10.2		0.9 0.7 -10.2		1.7 0.7 10.2		0.9 0.7 -10.2		7	10
4	INTACT HIGH WIND 60° F	25.0	NONE	V T L	0.3 0.5 3.3		0.2 0.5 -3.3		0.6 0.9 6.7		0.4 0.9 -6.7		0.6 0.9 6.7		0.4 0.9 -6.7		0.6 0.9 6.7		0.4 0.9 -6.7		31	10
5	INTACT WIND & ICE 0° F	6.25	1.0	V T L	1.1 0.6 6.1		0.6 0.6 -6.1		1.7 0.9 11.0		0.9 0.9 -11.0		1.7 0.9 11.0		0.9 0.9 -11.0		1.7 0.9 11.0		0.9 0.9 -11.0		10	10
6	INTACT HEAVY ICE 0° F	NONE	1.25	V T L	1.5 0.3 6.8		0.8 0.3 -6.8		2.2 0.6 12.0		1.1 0.6 -12.0		2.2 0.6 12.0		1.1 0.6 -12.0		2.2 0.6 12.0		1.1 0.6 -12.0		0	10
7	BROKEN GW 0° F ANY ONE WIRE	12.25	NONE	V T L	0.3 0.3 3.0		0.0 0.0 0.0		0.6 0.6 6.9		0.4 0.6 -6.9		0.6 0.6 6.9		0.4 0.6 -6.9		0.6 0.6 6.9		0.4 0.6 -6.9		17	10
8	BROKEN SINGLE COND. 0° F ANY ONE WIRE	12.25	NONE	V T L	0.3 0.3 3.0		0.2 0.3 -3.0		0.6 0.6 6.9		0.0 0.0 0.0		0.6 0.6 6.9		0.4 0.6 -6.9		0.6 0.6 6.9		0.4 0.6 -6.9		17	10
9	UNBALANCED ICE W/ WIND ONE SPAN BARE OTHER ICE 0° F	6.25	1.0/NONE	V T L	1.1 0.6 6.1		0.2 0.2 -2.5		1.7 0.9 11.0		0.4 0.4 -6.2		1.7 0.9 11.0		0.4 0.4 -6.2		1.7 0.9 11.0		0.4 0.4 -6.2		10	10
10	UNBALANCED ICE ONE SPAN BARE OTHER ICE 0° F	NONE	1.25/NONE	V T L	1.5 0.3 6.8		0.2 0.1 -2.3		2.2 0.6 12.0		0.4 0.3 -5.9		2.2 0.6 12.0		0.4 0.3 -5.9		2.2 0.6 12.0		0.4 0.3 -5.9		0	10
11	MAINTENANCE 30° F	1.0	NONE	V T L	1.5 0.1 2.0		1.1 0.1 -2.0		2.8 0.3 4.6		1.8 0.3 -4.6		2.8 0.3 4.6		1.8 0.3 -4.6		2.8 0.3 4.6		1.8 0.3 -4.6		2	NONE
12	DEFLECTION 60° F	1.0	NONE	V T L	0.3 0.1 1.6		0.2 0.1 -1.6		0.6 0.2 3.8		0.4 0.2 -3.8		0.6 0.2 3.8		0.4 0.2 -3.8		0.6 0.2 3.8		0.4 0.2 -3.8		2	1.5

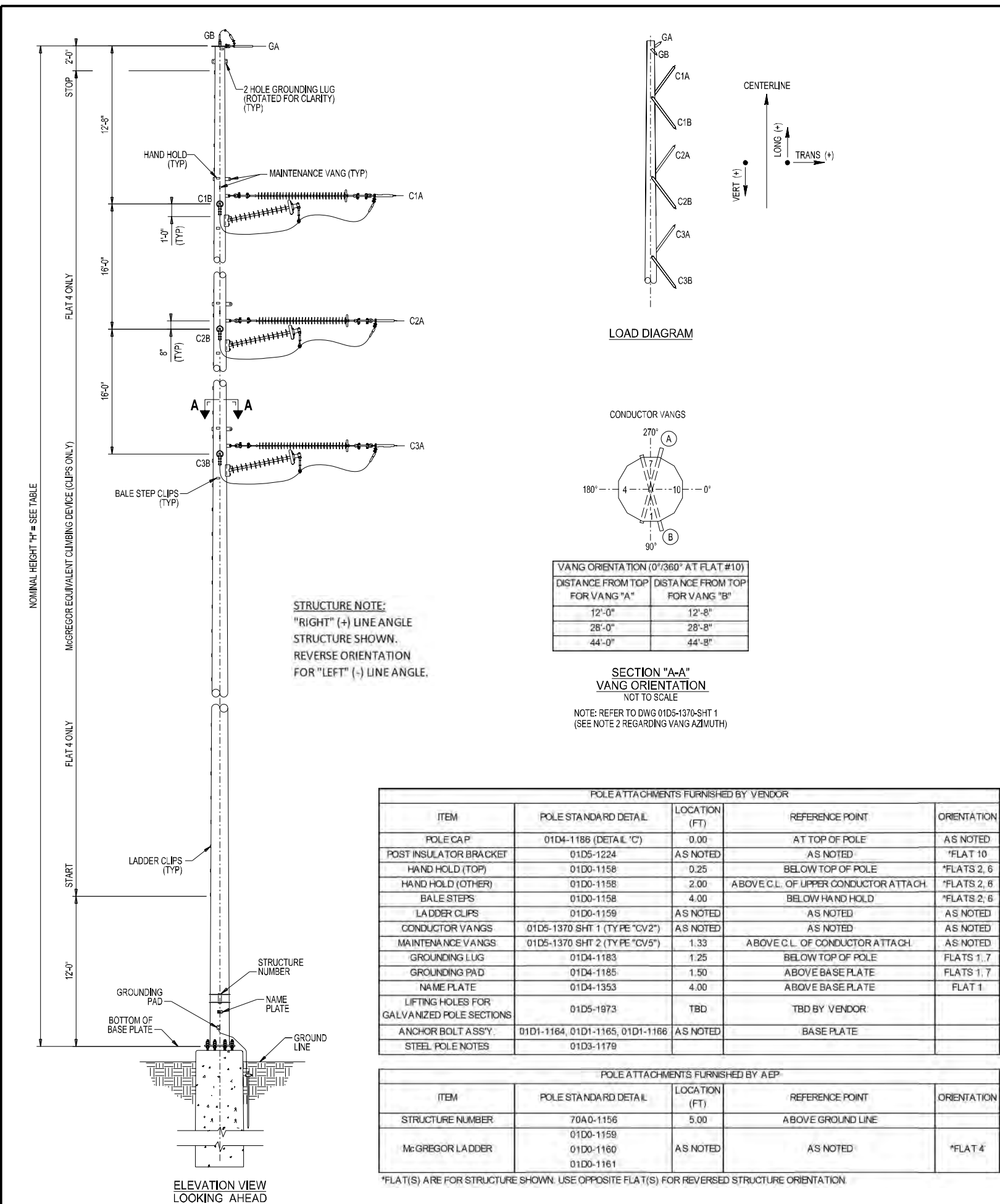
WIRE		NESC TENSION (LBS)	RULING SPAN (FT)	VERTICAL SPAN (FT)	WIND SPAN (FT)	LINE ANGLE
G	1 - 0.646 IN. DIA. 48-FIBER OPGW	4,300 PER WIRE	350	400	200	0° - 5°
	1 - 0.646 IN. DIA. 48-FIBER OPGW	4,300 PER WIRE	350	200	200	
C	1 - 1033.5 KCMIL 54/7 ACSR CURLEW	8,500 PER WIRE	350	400	200	0° - 5°
	1 - 1033.5 KCMIL 54/7 ACSR CURLEW	8,500 PER WIRE	350	200	200	

- NOTES:
- THIS STRUCTURE IS INTENDED TO BE USED FOR A LINE ANGLE RANGE OF 0° TO 5°.
 - TRUE VANG AZIMUTH SHALL BE PER LINE ANGLE PROVIDED IN ENGINEER OPTION COLUMN ON POLE ATTACHMENT/ORIENTATION SHEET.
 - DEFLECTION LOADS INCLUDE 500LB MAN + EQUIPMENT WEIGHT AT ALL WIRE ATTACHMENTS NOTED.
 - STRUCTURE NOT DESIGNED FOR ENERGIZED MAINTENANCE.
 - STRUCTURE NOT DESIGNED FOR ONE-SIDE-ONLY LOADING.

FOR REFERENCE ONLY

ISSUED FOR QUOTE

REV	REVISION DESCRIPTION	DATE	BY	REV	REVISION DESCRIPTION	DATE	BY	NOTES	138KV SINGLE POLE STEEL STRAIN STRUCTURE DEADEND INSULATOR ASSEMBLY SINGLE CIRCUIT, ANCHOR BOLTED FOUNDATION LINE ANGLE 0° - 5°	BURNS & MCDONNELL	ENGR: NKV 04/18/2017 DRAWN: SSB 04/18/2017 CHECKED: MK 04/18/2017	APPROVED: LINE: OH-122 DWG: 502-2638	SCALE: NONE	EQUIP: TLN380;OH122 SHEET: 3B REV 0
0	ISSUED FOR QUOTE	05/02/2017	NKV					THIS DRAWING IS THE PROPERTY OF AMERICAN ELECTRIC POWER AND LOANED UPON CONDITION THAT IT IS NOT COPIED OR REPRODUCED, IN WHOLE OR IN PART, OR USED FOR FURNISHING INFORMATION TO ANY PERSON WITHOUT THE WRITTEN CONSENT OF AMERICAN ELECTRIC POWER, OR FOR ANY PURPOSE DETRIMENTAL TO THEIR INTEREST, AND IS TO BE RETURNED UPON REQUEST.						



				DEAD-END STRUCTURE: 5° - 18° DEAD END																		
AEP HEAVY LOADING				ULTIMATE LOAD (KIPS)																		
NO.	DESCRIPTION	WIND (PSF)	ICE (IN.)		GA		GB		C1A		C1B		C2A		C2B		C3A		C3B		STRUCTURE WIND PRESSURE (PSF)	ALLOWABLE DEFLECTION CRITERIA (% OF POLE HEIGHT)
1	INTACT NESC RULE 250B, INCL. O.L.F. 0° F	4.0	0.5	V	0.7		0.7		1.3		1.3		1.3		1.3		1.3		1.3		10	10
				T	2.4		2.4		3.6		3.6		3.6		3.6		3.6					
				L	12.4		-12.4		19.0		-19.0		19.0		-19.0		19.0		-19.0			
2	INTACT NESC RULE 250C, INCL. O.L.F. 60° F	20.7	NONE	V	0.3		0.3		0.5		0.5		0.5		0.5		0.5		0.5		21	10
				T	1.3		1.3		2.1		2.1		2.1		2.1		2.1		2.1			
				L	5.6		-5.6		8.5		-8.8		8.5		-8.8		8.5		-8.8			
3	INTACT NESC RULE 250D, INCL. O.L.F. 15° F	4.0	1.0	V	0.9		0.9		1.4		1.4		1.4		1.4		1.4		1.4		7	10
				T	1.7		1.8		2.5		2.6		2.5		2.6		2.5		2.6			
				L	9.0		-9.4		13.6		-14.2		13.6		-14.2		13.6		-14.2			
4	INTACT HIGH WIND 60° F	25.0	NONE	V	0.3		0.3		0.5		0.5		0.5		0.5		0.5		0.5		31	10
				T	1.4		1.4		2.4		2.4		2.4		2.4		2.4		2.4			
				L	6.0		-6.1		9.4		-9.8		9.4		-9.8		9.4		-9.8			
5	INTACT WIND & ICE 0° F	6.25	1.0	V	0.9		0.9		1.4		1.4		1.4		1.4		1.4		1.4		10	10
				T	2.0		2.1		2.9		3.0		2.9		3.0		2.9		3.0			
				L	9.6		-10.0		14.6		-15.1		14.6		-15.1		14.6		-15.1			
6	INTACT HEAVY ICE 0° F	NONE	1.25	V	1.2		1.2		1.8		1.8		1.8		1.8		1.8		1.8		0	10
				T	1.7		1.8		2.5		2.6		2.5		2.6		2.5		2.6			
				L	10.4		-10.9		15.9		-16.6		15.9		-16.6		15.9		-16.6			
7	FULL DEAD-END NESC, INCL. O.L.F. 0° F	4.0	0.5	V	0.0		0.7		0.0		1.3		0.0		1.3		0.0		1.3		10	10
				T	0.0		2.4		0.0		3.6		0.0		3.6		0.0		3.6			
				L	0.0		-12.4		0.0		-19.0		0.0		-19.0		0.0		-19.0			
8	FULL DEAD-END NESC RULE 250C, INCL. O.L.F. 60° F	20.7	NONE	V	0.0		0.3		0.0		0.5		0.0		0.5		0.0		0.5		21	10
				T	0.0		1.3		0.0		2.1		0.0		2.1		0.0		2.1			
				L	0.0		-5.6		0.0		-8.8		0.0		-8.8		0.0		-8.8			
9	FULL DEAD-END NESC RULE 250D, INCL. O.L.F. 15° F	4.0	1.0	V	0.0		0.9		0.0		1.4		0.0		1.4		0.0		1.4		7	10
				T	0.0		1.8		0.0		2.6		0.0		2.6		0.0		2.6			
				L	0.0		-9.4		0.0		-14.2		0.0		-14.2		0.0		-14.2			
10	FULL DEAD-END HIGH WIND 60° F	25.0	NONE	V	0.0		0.3		0.0		0.5		0.0		0.5		0.0		0.5		31	10
				T	0.0		1.4		0.0		2.4		0.0		2.4		0.0		2.4			
				L	0.0		-6.1		0.0		-9.8		0.0		-9.8		0.0		-9.8			
11	FULL DEAD-END WIND & ICE 0° F	6.25	1.0	V	0.0		0.9		0.0		1.4		0.0		1.4		0.0		1.4		10	10
				T	0.0		2.1		0.0		3.0		0.0		3.0		0.0		3.0			
				L	0.0		-10.0		0.0		-15.1		0.0		-15.1		0.0		-15.1			
12	FULL DEAD-END HEAVY ICE 0° F	NONE	1.25	V	0.0		1.2		0.0		1.8		0.0		1.8		0.0		1.8		0	10
				T	0.0		1.8		0.0		2.6		0.0		2.6		0.0		2.6			
				L	0.0		-10.9		0.0		-16.6		0.0		-16.6		0.0		-16.6			
13	MAINTAINENCE 30° F	1.0	NONE	V	1.4		1.4		2.4		2.4		2.4		2.4		2.4		2.4		2	NONE
				T	0.8		0.7		1.1		1.1		1.1		1.1		1.1		1.1			
				L	4.9		-4.4		6.8		-6.5		6.8		-6.5		6.8		-6.5			
14	DEFLECTION 60° F	1.0	NONE	V	0.3		0.3		0.5		0.5		0.5		0.5		0.5		0.5		2	2
				T	0.7		0.7		1.0		1.0		1.0		1.0		1.0		1.0			
				L	4.2		-3.8		5.6		-5.6		5.6		-5.6		5.6		-5.6			

WIRE		NESC TENSION (LBS)	RULING SPAN (FT)	VERTICAL SPAN (FT)	WIND SPAN (FT)	LINE ANGLE
G	1 - 0.646 IN. DIA. 48-FIBER OPGW	7,500 PER WIRE	500	325	325	5° - 18°
	1 - 0.646 IN. DIA. 48-FIBER OPGW	7,500 PER WIRE	600	325	325	
C	1 - 1033.5 KCMIL 54/7 ACSR CURLEW	11,500 PER WIRE	500	325	325	5° - 18°
	1 - 1033.5 KCMIL 54/7 ACSR CURLEW	11,500 PER WIRE	600	325	325	

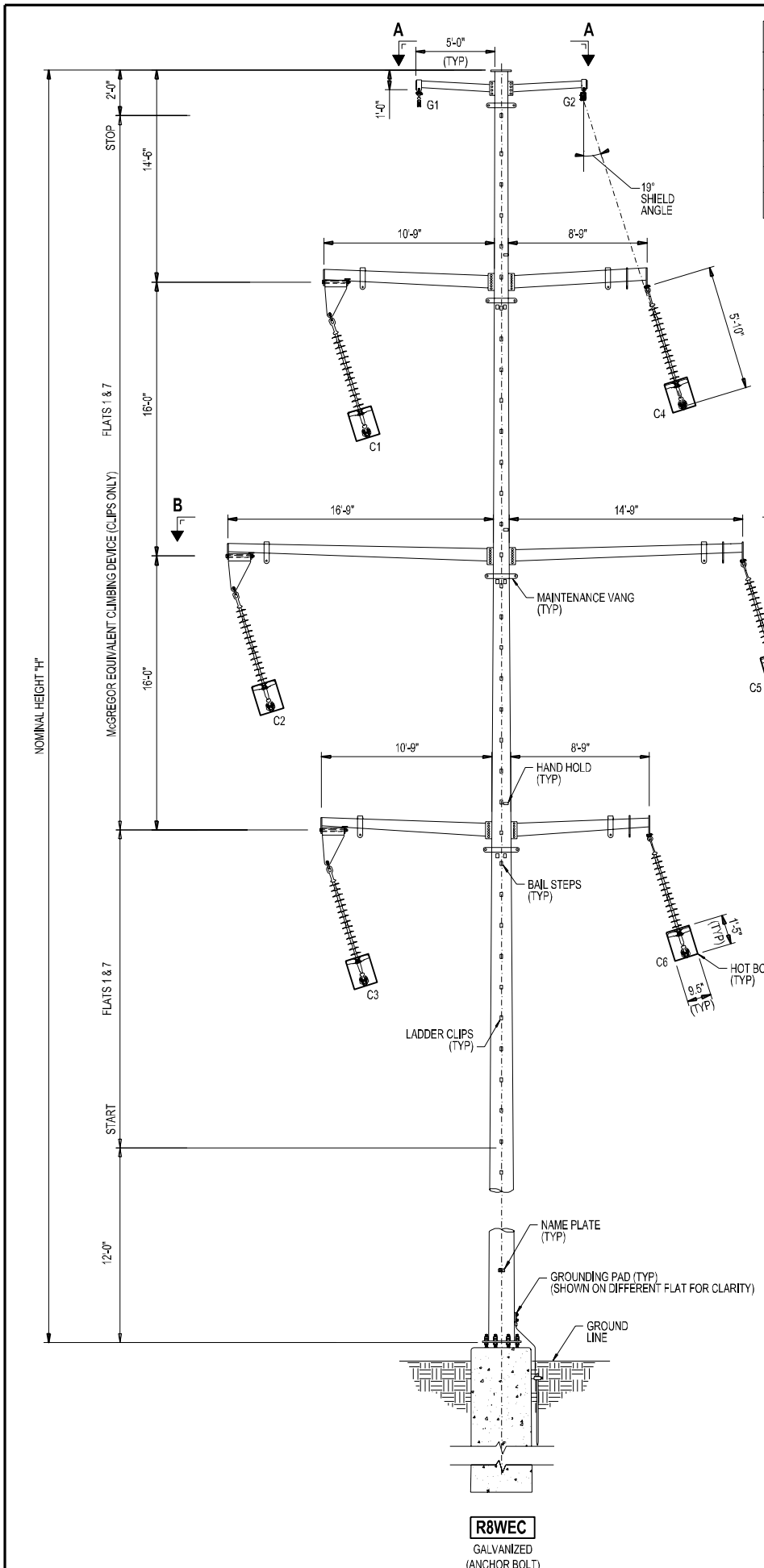
- NOTES:
- THIS STRUCTURE IS INTENDED TO BE USED FOR A LINE ANGLE RANGE OF 5° TO 18°.
 - TRUE VANG AZIMUTH SHALL BE PER LINE ANGLE PROVIDED IN ENGINEER OPTION COLUMN ON POLE ATTACHMENT/ORIENTATION SHEET.
 - DEFLECTION LOADS INCLUDE 500LB MAN + EQUIPMENT WEIGHT AT ALL WIRE ATTACHMENTS NOTED.
 - STRUCTURE NOT DESIGNED FOR ENERGIZED MAINTENANCE.



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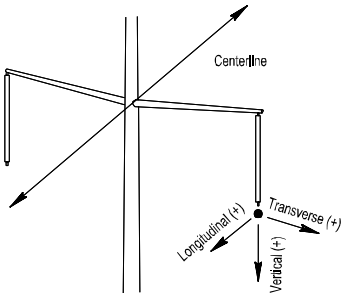
ISSUED FOR QUOTE

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0	ISSUED FOR QUOTE	05/02/2017	NKV													DRAWN: SSB 04/18/2017	LINE: OH-122	EQUIP: TLN380;OH122	
																CHECKED: MK 04/18/2017	DWG: 502-2638	SHEET: 3C	REV 0

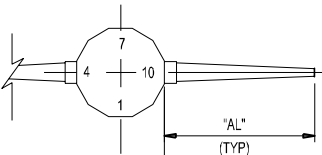


DAVIT ARM INFORMATION				
ARM	LENGTH "AL" (FT)	RISE "AR" (FT)	WIRE ATTACHMENT	POLE STANDARD DETAIL
G1, G2	5'-0"	TBD	OPGW ATTACHMENT DETAIL	01D5-1216-SHT.2
C1, C3	10'-9"	TBD	CONDUCTOR ATTACHMENT DETAIL	01D5-1216-SHT.1
C2	16'-9"	TBD	CONDUCTOR ATTACHMENT DETAIL	01D5-1216-SHT.1
C4, C6	8'-9"	TBD	CONDUCTOR ATTACHMENT DETAIL	01D5-1216-SHT.1
C5	14'-9"	TBD	CONDUCTOR ATTACHMENT DETAIL	01D5-1216-SHT.1

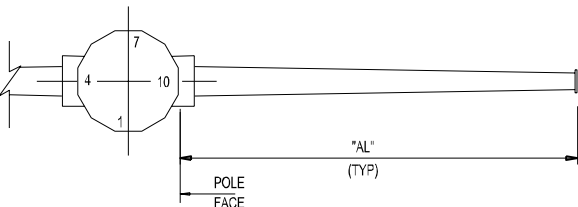
"TBD" - to be determined by Vendor



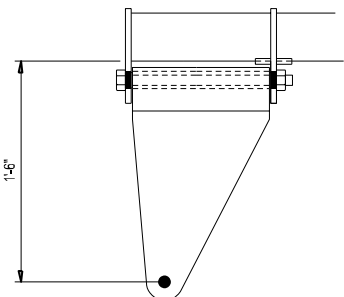
LOAD DIAGRAM



SECTION "A-A"
GROUNDWIRE ARM



SECTION "B-B"
CONDUCTOR ARM



1'-6" FLEXIBLE HANGER

CONDUCTOR CLEARANCE INFORMATION			
INSULATOR LENGTH: "IL"=	5'-10"	LIMITING SIDESWING ANGLES	
		FIXED α	ACTIVE β
FLEXIBLE HANGER LENGTH: "HL"=	1'-6"	48"	62"
"EPL"=	0'-3"	24"	44"
CLEARANCE REQ'D. TO ARM & STRUCTURE=	4'-0"	4'-0"	3'-0"

NOTE: REFER TO DRAWING 01D5-1216-SHT. 1 AND 01D5-1227

NOTES:

- This structure is intended to be used for a line angle range of 2° to 10°. This range may or may not be valid and will depend on sideswing clearance checks where influencing factors include wind span, weight span, and line angle.
- Refer to drawing 01D5-1227 for structure clearances.
- Structure not designed for energized maintenance.
- Both groundwire arms shall be the same (design, geometry, etc.).

SUSPENSION STRUCTURE: R8WEC

AEP HEAVY LOADING				ULTIMATE LOAD (KIPS)														STRUCTURE WIND PRESSURE (PSF)	ALLOWABLE DEFLECTION CRITERIA (% OF POLE HEIGHT)
NO.	DESCRIPTION	WIND (PSF)	ICE (IN.)		G1		G2		C1		C2		C3		C4		C5		
1	INTACT NESC, INCL. O.L.F. 0° F	4.0	0.5	V T L	2.90 4.50 0.00		2.90 4.50 0.00		6.10 6.90 0.00		6.10 6.90 0.00		6.10 6.90 0.00		6.10 6.90 0.00		6.10 6.90 0.00	10	10
2	INTACT HIGH WIND 60° F	25.0	NONE	V T L	0.90 3.10 0.00		0.90 3.10 0.00		2.50 5.80 0.00		2.50 5.80 0.00		2.50 5.80 0.00		2.50 5.80 0.00		2.50 5.80 0.00	31	10
3	INTACT WIND & ICE 0° F	6.25	1.0	V T L	4.00 4.00 0.00		4.00 4.00 0.00		6.70 5.80 0.00		6.70 5.80 0.00		6.70 5.80 0.00		6.70 5.80 0.00		6.70 5.80 0.00	10	10
4	INTACT HEAVY ICE 0° F	NONE	1.25	V T L	5.30 2.60 0.00		5.30 2.60 0.00		8.30 4.00 0.00		8.30 4.00 0.00		8.30 4.00 0.00		8.30 4.00 0.00		8.30 4.00 0.00	0	10
5	BROKEN GW 0° F ANY ONE WIRE	12.25	NONE	V T L	0.50 1.00 6.40		0.90 2.00 0.00		2.50 3.70 0.00		2.50 3.70 0.00		2.50 3.70 0.00		2.50 3.70 0.00		2.50 3.70 0.00	17	10
6	BROKEN COND. 0° F ANY ONE PHASE	12.25	NONE	V T L	0.90 2.00 0.00		0.90 2.00 0.00		1.30 1.70 9.30		2.50 3.70 0.00		2.50 3.70 0.00		2.50 3.70 0.00		2.50 3.70 0.00	17	10
7	UNBALANCED ICE ONE SPAN BARE OTHER ICE 0° F	6.25	0.5/BARE	V T L	1.40 1.50 2.10		1.40 1.50 2.10		3.30 2.40 2.80		3.30 2.40 2.80		3.30 2.40 2.80		3.30 2.40 2.80		3.30 2.40 2.80	10	10
8	DEFLECTION 60° F	1.0	NONE	V T L	0.90 0.90 0.00		0.90 0.90 0.00		2.50 1.70 0.00		2.50 1.70 0.00		2.50 1.70 0.00		2.50 1.70 0.00		2.50 1.70 0.00	2	1.5
9	MAINTENANCE 30° F	1.0	NONE	V T L	3.40 1.00 0.00		3.40 1.00 0.00		9.60 1.80 0.00		9.60 1.80 0.00		9.60 1.80 0.00		9.60 1.80 0.00		9.60 1.80 0.00	2	NONE

WIRE		NESC TENSION (LBS)	RULING SPAN (FT)	VERTICAL SPAN (FT)	WIND SPAN (FT)	LINE ANGLE
G	1- 0.646IN 48-FIBER OPGW	9,400 PER WIRE	1,200	1,500	1,250	2° - 10°
C	1- 1234 KCMIL ACSR/TW 54/7 YUKON	15,400 PER WIRE	1,200	1,500	1,250	2° - 10°

POLE ATTACHMENTS FURNISHED BY VENDOR

ITEM	POLE STANDARD DETAIL	LOCATION	REFERENCE POINT	ORIENTATION
POLE CAP	01D4-1186 SHT 1 (DETAIL 'A')	0.0'	TOP OF POLE	AS NOTED
MAINTENANCE VANGS	01D5-1370 SHT 2 (TYPE "CV5")	0.5'	BELOW DAVIT ARM BRACKET	FLATS 4, 10
HAND HOLD (TOP)	01D0-1158	0.25'	TOP OF POLE	FLATS 6, 12
HAND HOLD (OTHER)	01D0-1158	2.0'	ABOVE ϕ OF DAVIT ARM BRACKET	FLATS 6, 12
BAIL STEPS	01D0-1158	4.0'	BELOW HAND HOLD	FLATS 6, 12
LADDER CLIPS	01D0-1159	AS NOTED	AS NOTED	AS NOTED
GROUND LUG	01D4-1183	1.0'	END OF G.W. ARM	AS NOTED
GROUNDING PAD	01D4-1185	1.5'	ABOVE GROUND LINE, BASEPLATE, OR AS NOTED	FLATS 1, 7
NAME PLATE	01D4-1353	5.0'	ABOVE GROUND LINE	FLAT 1
ANCHOR BOLT ASSY.	01D1-1164	AS NOTED	BASE PLATE	
STEEL POLE NOTES	01D3-1179			

POLE ATTACHMENTS FURNISHED BY AEP

ITEM	POLE STANDARD DETAIL	LOCATION	REFERENCE POINT	ORIENTATION
AERIAL PATROL SIGN	70A0-1153	0.5'	TOP OF POLE	FLATS 1, 7
DANGER SIGN	70A0-1154	11.0'	ABOVE GROUND LINE	FLATS 1, 7
McGREGOR LADDER	01D0-1159 01D0-1160 01D0-1161	AS NOTED	AS NOTED	FLATS 1, 7



May 3 2017

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0	ISSUED FOR QUOTE	05/02/17	KMK				

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AMERICAN ELECTRIC POWER

138KV SINGLE POLE STEEL TANGENT - STRUCTURE NAME: R8WEC
SUSPENSION INSULATOR ASSEMBLY
DOUBLE CIRCUIT, ANCHOR BOLT FOUNDATION
LINE ANGLE 2°-10°

BURNS & MCDONNELL
OR 0211-1157

ENGR: KMK 01/13/2016
DRAWN: SIC 01/13/2016
CHECKED: MWE 01/18/2016

APPROVED: J. XXXX
LINE: VARIOUS
DWG: 502-2708

EQUIP: VARIOUS
SHEET: 3F
REV 0

SCALE: NONE

LETTER OF NOTIFICATION FOR HAVILAND-NORTH DELPHOS 138 KV TRANSMISSION LINE PROJECT

September 27, 2017

Appendix A Socioeconomic, Land Use, and Agricultural District
Review Report

HAVILAND-NORTH DELPHOS 138 KV TRANSMISSION LINE PROJECT, PAULDING, VAN WERT, AND PUTNAM COUNTIES, OHIO

SOCIOECONOMIC, LAND USE, AND AGRICULTURAL DISTRICT REVIEW REPORT

Prepared for:

American Electric Power Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 45230



Prepared by:



525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60506297

September 2017

TABLE OF CONTENTS

1.0	PROJECT DESCRIPTION.....	1
2.0	GENERAL LAND USE DESCRIPTION	1
3.0	POPULATION DENSITY ESTIMATE	2
4.0	AGRICULTURAL DISTRICT LAND	2
5.0	CONCLUSION	2

FIGURES (follow text)

Number

FIGURES 1A-1H LAND USE MAP

1.0 PROJECT DESCRIPTION

This document presents the socioeconomic, land use, and agricultural district review conducted by AECOM for American Electric Power Ohio Transmission Company's (AEP Ohio Transco) proposed Haviland-North Delphos 138 kV Transmission Line Project (Project). AEP Ohio Transco is proposing to rebuild approximately 17 miles of the existing Haviland-North Delphos 138 kV transmission line in Paulding, Van Wert, and Putnam Counties, Ohio.

As part of the Ohio Power Siting Board (OPSB) Letter of Notification (LON) requirements, AEP Ohio Transco is required to assess and report the socioeconomic, land use, and agricultural district characteristics potentially affected by the Project, as stated in Ohio Administrative Code (OAC) Rule 4906-6-05(B)(10)(a) and (b). These rules state:

(10) The applicant shall describe the social and ecological impacts of the project.

- (a) Provide brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.*
- (b) Provide the acreage and a general description of all agricultural land and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.*

AEP Ohio Transco retained AECOM to conduct a desktop review of socioeconomic, land use, and agricultural district land characteristics. A study corridor was established within 1,000 feet of each side of the line to be rebuilt, resulting in a 2,000-foot wide study corridor. In conjunction with ecological field surveys for the Project, AECOM noted land uses crossed by the Project. This report will be used to assist AEP Ohio Transco's efforts to avoid or minimize impacts to socioeconomic characteristics and land uses potentially present in the study area during construction activities.

2.0 GENERAL LAND USE DESCRIPTION

Land use within the study area is shown on Figures 1A through 1H. Current land use characteristics were obtained through review of aerial photography taken in 2013; the United States Geological Survey (USGS) 7.5-minute topographic map of Latty (1974), Ottoville (1973), Scott (1983), and Wetsel (1972) Ohio quadrangles; parcel GIS files of the Project area; and a field reconnaissance conducted in November 2016.

The Project vicinity is a rural area. The primary land uses within the 2,000-foot wide study corridor include agricultural land and residences. Transportation and utility corridors are also present. Wind turbines are located on agricultural land within the study area.

The 2,000-foot wide study corridor crosses part of Paulding, Van Wert, and Putnam Counties. Land use trends in the area suggest very little conversion of woodlots, farmland, and other open land. Minimal growth is expected in the immediate Project vicinity.

3.0 POPULATION DENSITY ESTIMATE

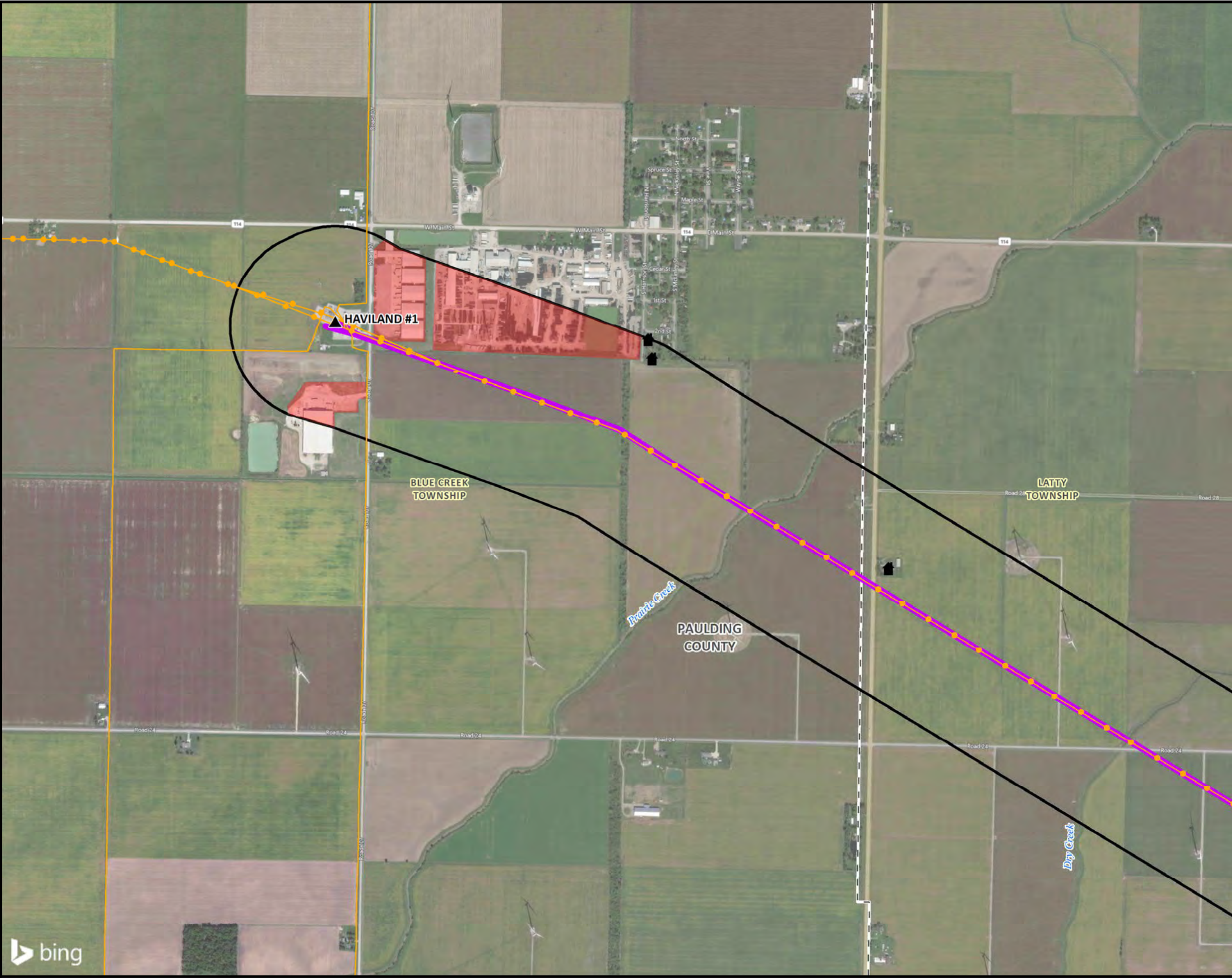
Population density estimates for land within the 2,000-foot wide study corridor were calculated by direct estimation based on study corridor size, number of residences identified in the corridor, and the average number of persons per household within the census tracts of the project study corridor. Approximately 97 homes were identified within the 4,216-acre study corridor along the proposed 17-mile Haviland-North Delphos 138 kV line. According to the 2010 U.S. Census, the study corridor falls along four census tracts with a household size range of 2.57 to 2.69 residents per household. Based on the number of homes identified along the study corridor, the total estimated population along the route is approximately 255. This equates to a population density of 0.06 person per acre.

4.0 AGRICULTURAL DISTRICT LAND

The Project vicinity is primarily rural with some rolling hills. Most agricultural land in the project vicinity is row crops, although some pasture land or hay fields were observed. Based on information provided by the Putnam County Auditors' offices, four agricultural district land parcels were identified within 1,000 feet of the Project, as shown on Figures 1F through 1H. All of these parcels are crossed by the centerline. Based on information provided by the Paulding County Auditors' offices, two agricultural district land parcels were identified within 1,000 feet of the Project, as shown on Figure 1B. Both of these parcels are crossed by the centerline. AECOM contacted Van Wert County and was not able to obtain Agricultural District Land information for Van Wert County. As a rebuild project within existing right-of-way, impacts to agricultural land uses, including agricultural district land, are expected to be minimal and limited to the small footprint of the poles within agricultural land. Access roads necessary to construct the Project may temporarily impact agricultural uses. AEP Ohio Transco will work with property owners to compensate for temporary impacts to agricultural land.

5.0 CONCLUSION

The Project is not expected to significantly impact current socioeconomic characteristics, land use, or agricultural district land in the vicinity. The Project is not expected to negatively impact any future land use plans for the area.



Paulding Co.
Van Wert Co.
Putnam Co.
OHIO

LEGEND:

- ▲ Existing Substation
- Proposed Haviland-North Delphos 138 kV Rebuild
- 2,000-foot Study Corridor
- Existing Transmission Line (69 kV or lower)
- Existing Transmission Line (115 kV to 230 kV)
- House/Residence
- Commercial or Industrial Development
- Township Boundary
- County Boundary

N

0 1,200 2,400

Scale In Feet

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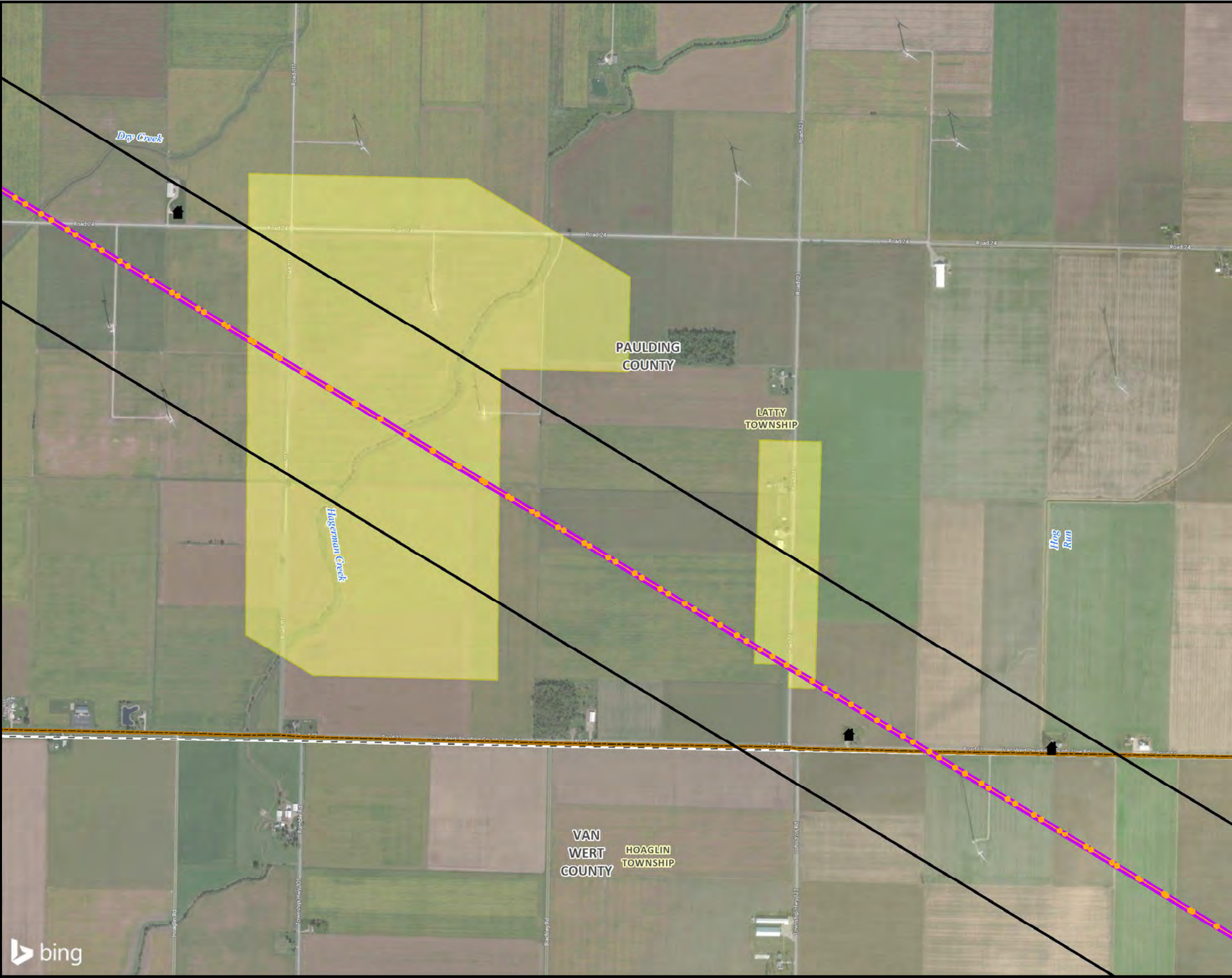
AEP OHIO TRANSMISSION COMPANY

Haviland-North Delphos 138 kV Transmission Line

FIGURE 1A
LAND USE MAP

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CREATED BY: BAW	CHECKED BY: AG
JOB NO. 60506297	AECOM

Date Saved: 9/26/2017 Document Path: J:\Project\VA\AEP\60506297 Haviland-North Delphos 138 kV\Data-Tech\GIS\ON Socioeconomic Fig1A LandUse 20170907.mxd



Paulding Co.
Van Wert Co.
Putnam Co.
OHIO

LEGEND:

- Proposed Haviland-North Delphos 138 kV Rebuild
- 2,000-foot Study Corridor
- Existing Transmission Line (115 kV to 230 kV)
- House/Residence
- Agricultural District Land
- Township Boundary
- County Boundary

N

0 1,200 2,400

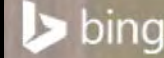
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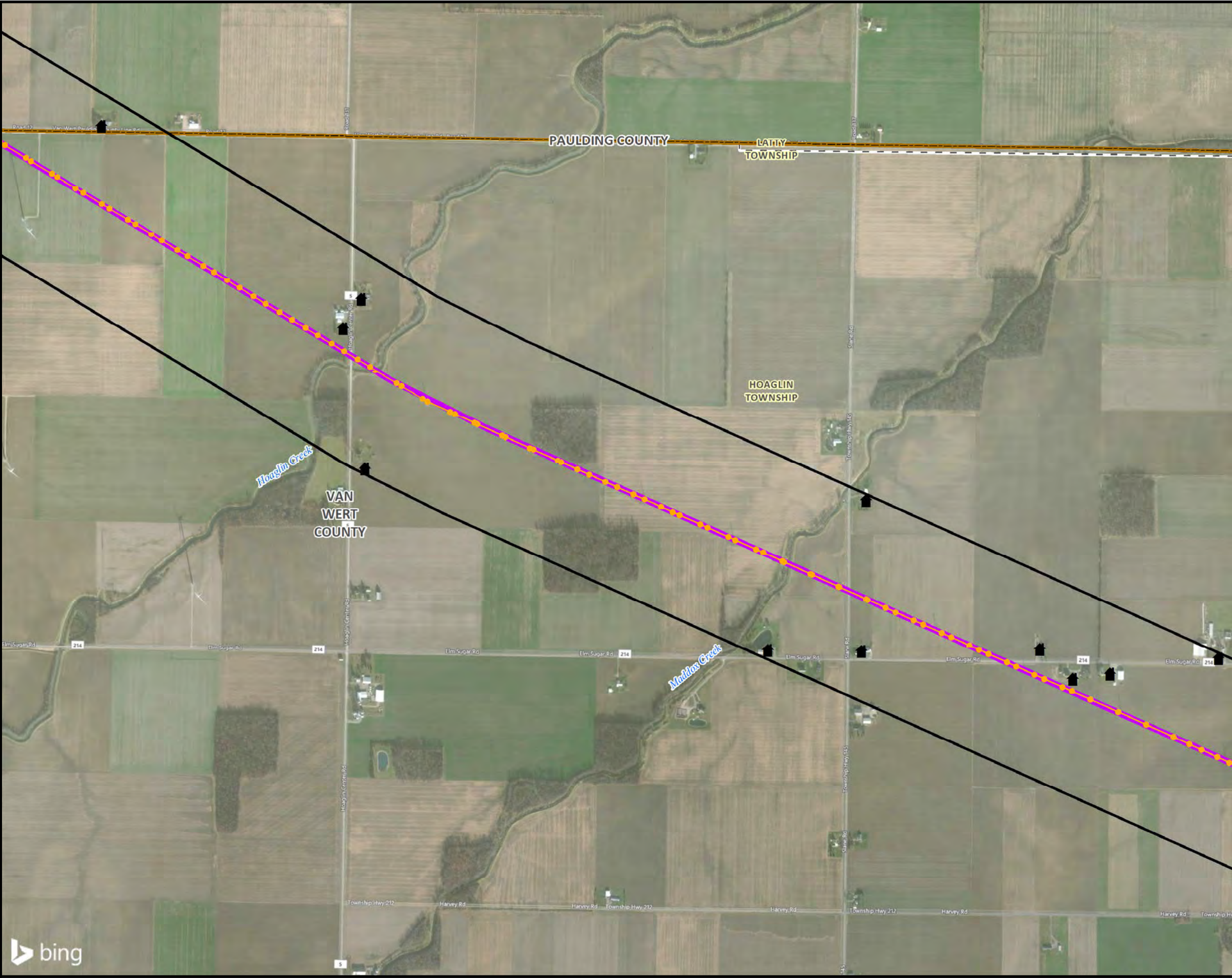
AEP OHIO TRANSMISSION COMPANY Haviland-North Delphos 138 kV Transmission Line

FIGURE 1B
LAND USE MAP

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CREATED BY: BAW	CHECKED BY: AG
JOB NO. 60506297	AECOM



Date Saved: 9/26/2017 Document Path: J:\Project\VA\AEP\60506297 Haviland-North Delphos 138 kV Data-Tech\GIS\ON Socioeconomic Fig1A LandUse 20170907.mxd



Paulding Co.
Van Wert Co.
Putnam Co.
OHIO

LEGEND:

- Proposed Haviland-North Delphos 138 kV Rebuild
- 2,000-foot Study Corridor
- Existing Transmission Line (115 kV to 230 kV)
- House/Residence
- Township Boundary
- County Boundary

N

0 1,200 2,400

Scale In Feet

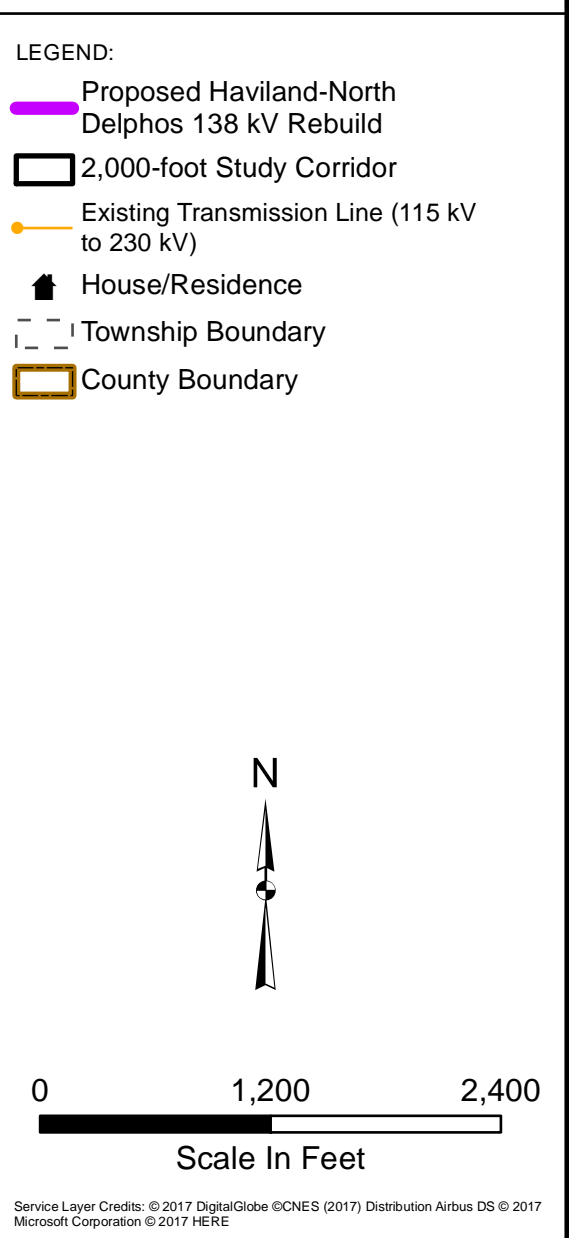
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AEP OHIO TRANSMISSION COMPANY

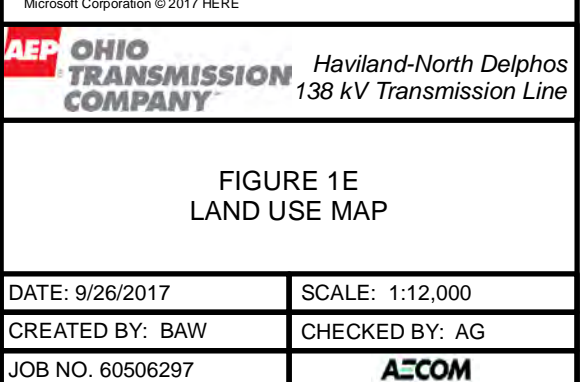
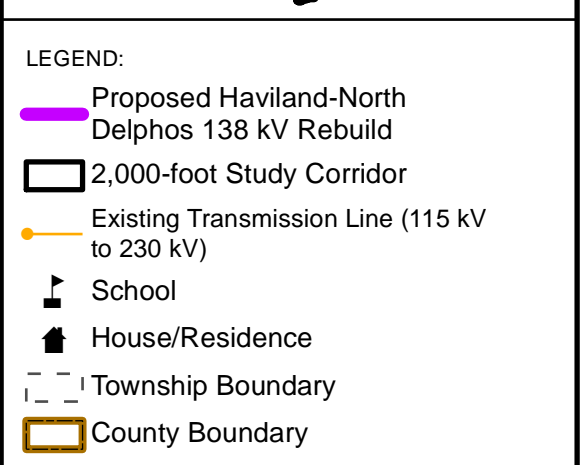
Haviland-North Delphos 138 kV Transmission Line

FIGURE 1C
LAND USE MAP

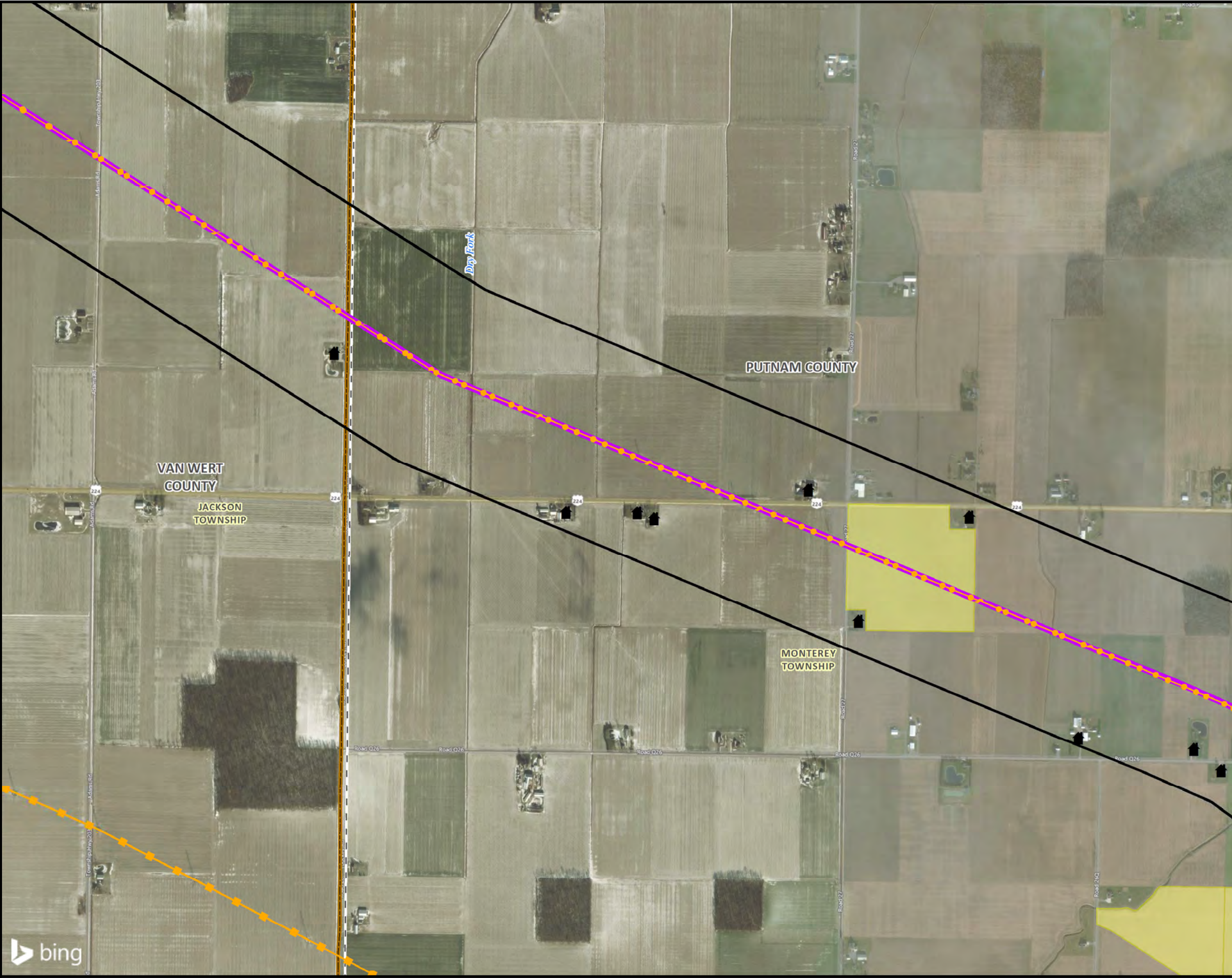
DATE: 9/26/2017	SCALE: 1:12,000
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JOB NO. 60506297	AECOM



<p>FIGURE 1D</p> <p>LAND USE MAP</p>	
DATE: 9/26/2017	SCALE: 1:12,000
CREATED BY: BAW	CHECKED BY: AG
JOB NO. 60506297	AECOM



Date Saved: 9/26/2017 Document Path: J:\Project\AA\EP\60506297 Haviland-North Delphos 138 kV\Data-Tech\GIS\ON Socioeconomic Fig1A LandUse 20170907.mxd



LEGEND:

- Proposed Haviland-North Delphos 138 kV Rebuild
- 2,000-foot Study Corridor
- Existing Transmission Line (115 kV to 230 kV)
- Existing Transmission Line (345 kV or above)
- House/Residence
- Agricultural District Land
- Township Boundary
- County Boundary

0 1,200 2,400

Scale In Feet

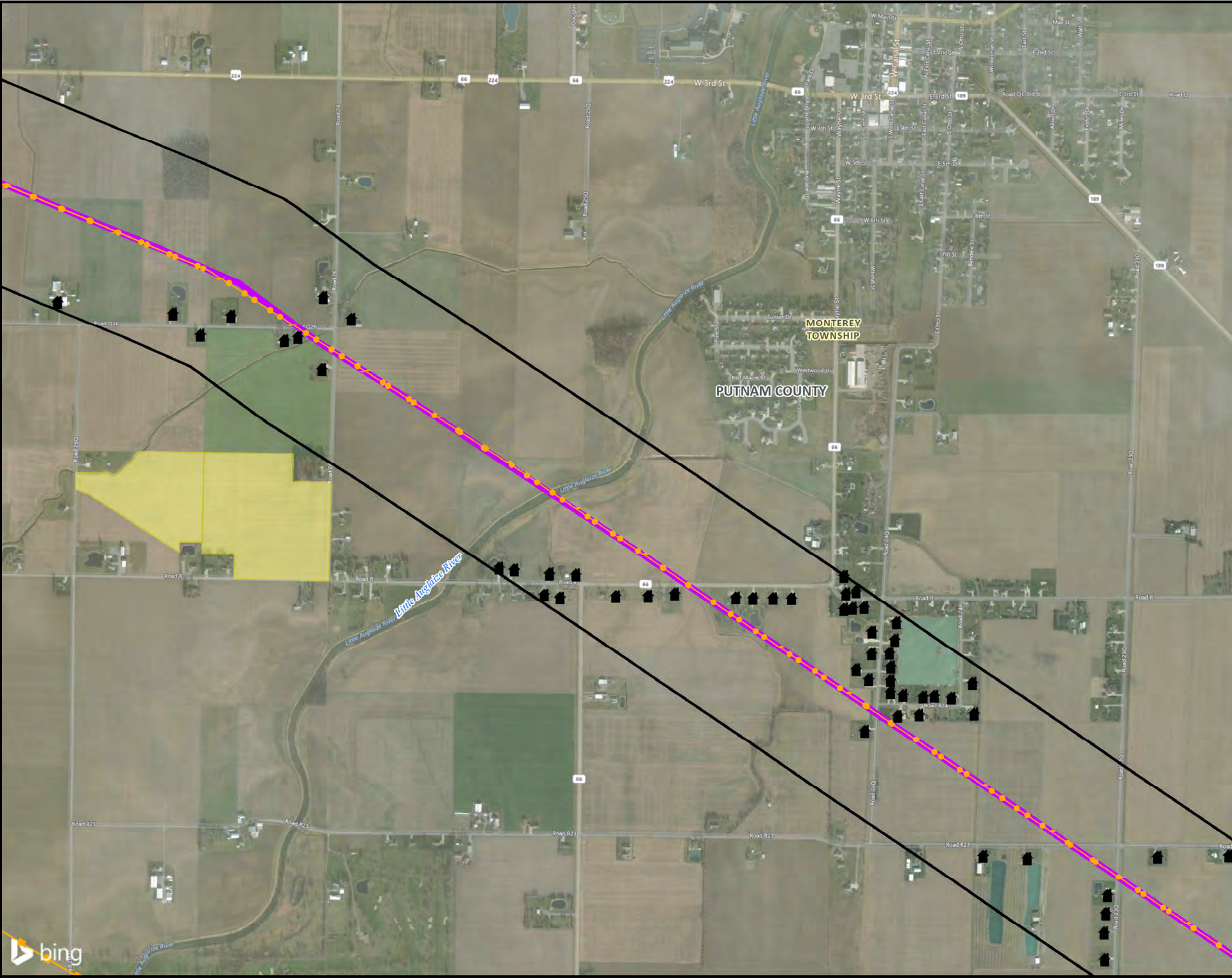
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AEP OHIO TRANSMISSION COMPANY Haviland-North Delphos 138 kV Transmission Line

FIGURE 1F
LAND USE MAP

DATE: 9/26/2017	SCALE: 1:12,000
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JOB NO. 60506297	AECOM

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Paulding Co.
Van Wert Co.
Putnam Co.
OHIO

LEGEND:

- Proposed Haviland-North Delphos 138 kV Rebuild
- 2,000-foot Study Corridor
- Existing Transmission Line (115 kV to 230 kV)
- Existing Transmission Line (345 kV or above)
- House/Residence
- Agricultural District Land
- Township Boundary
- County Boundary

N

0 1,200 2,400

Scale In Feet

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AEP OHIO TRANSMISSION COMPANY Haviland-North Delphos 138 kV Transmission Line

FIGURE 1G
LAND USE MAP

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in

Case No(s). 17-1953-EL-BLN

Summary: Letter of Notification electronically filed by Ms. Christen M. Blend on behalf of AEP Ohio Transmission Power Company, Inc.