Construction Notice for Bolton Station 138 kV Line Extension Project

PUCO Case No. 16-1777-EL-BNR

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

Submitted by:
AEP Ohio Transmission Company, Inc.

December 13, 2016

CONSTRUCTION NOTICE FOR BOLTON STATION 138 KV LINE EXTENSION PROJECT

December 13, 2016

Construction Notice

Bolton Station 138 kV Line Extension Project

4906-6-05

AEP Ohio Transmission Company, Inc. ("AEP Ohio Transco") requests accelerated review of this Construction Notice ("CN") pursuant to Ohio Administrative Code Section 4906-6-05.

4906-6-5(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 Construction Notice.

AEP Ohio Transco is proposing the Bolton Station 138 kV Line Extension Project (the "Project"), located north of the intersection of Holt Road and Big Run South Road near the Grove City area in Jackson Township in Franklin County, Ohio. The Project consists of constructing an electric transmission line extension within new right-of-way (the "ROW"). The new electric transmission line is approximately 0.16 miles long and will tap into the nearby Beatty-Wilson 138 kV transmission line. The ROW is located on property owned by AEP Ohio Transco and South-Western City School District. Figure 1.1 in Appendix A shows the location of the Project. Figures 1.2 and 1.3 in Appendix A show the existing AEP Ohio Transco 138 kV transmission line location, and the ROW.

The Project meets the requirements for a CN because it is within the types of projects defined by 4906-1-01 Appendix A Application Requirement Matrix For Electric Power Transmission Lines. This item states:

> *(1) New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:*
>
> *(a) Line(s) not greater than 0.2 miles in length.*

B(2) Statement of Need

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

AEP Ohio Transco proposes to construct the Project to energize the proposed Bolton distribution substation from the existing Beatty-Wilson 138 kV transmission line located along the eastern edge of the Project.

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 1.1, 1.2, and 1.4 in Appendix A show the location of the Project in relation to other existing AEP Ohio transmission lines. There is an existing 138 kV transmission line located along the eastern edge of the Project.

B(4) Alternatives Considered

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

The location of the Project requires the use of property owned by one adjacent landowner. Due to the proximity of the existing 138 kV transmission line and ROW to the location of the new Bolton distribution substation, the proposed location of the Project impacts the fewest number of adjacent landowners. No significant alternatives were studied as part of the Project.

B(5) Public Information Program

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

The Project will be located fully on the Property. AEP Ohio Transco has not developed a public information program but has worked closely with the owners of the Property during the development of the Project and the ROW acquisition process. Within seven days of filing this CN, AEP Ohio Transco will issue a public notice in a newspaper of general circulation in the Project area, which complies with the requirements of O.A.C. Section 4906-6-08(A)(1-6). A copy of the CN will be sent to applicable public officials concurrently with submittal to OPSB.

B(6) Construction Schedule

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

Construction is planned to start in October 2017. The in-service date of the Project is expected to be in November 2017.

B(7) Area Map

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

Figure 1.1 included in Appendix A identifies the location of the Project on the USGS quadrangle map with coverage of the Project area. Figure 1.2 in Appendix A is an aerial map of the Project. To visit the Project from Columbus, take I-70 West to I-270 South to Georgesville Road. Take exit 5 to Holt Road. The Project is located along Holt Road between its intersection with Stranton Park Drive and Southwest Boulevard.

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.

AEP Ohio Transco will obtain the ROW from the owner of the applicable portion of the Property (South-Western City School District). No other property easements, options, or land use agreements are necessary to construct the Project or operate the transmission line.

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 involves the installation of approximately 820 feet (0.16 miles) of one 138 kv double circuit electric transmission line and five (5) steel structures standing at approximately 85 to 100 feet in height. The Project will utilize 1033, 500 kcmil 54/7 ACSR (Curlew) conductors, along with 2- 7#8 alumoweld shield wires. All dead-ends will utilize pier foundations with anchor cages.

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. The discussion shall include:

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

No occupied residences or institutions are located within 100 feet of the Project.

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

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

No occupied residences or institutions are located within 100 feet of the Project.

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

The estimated capital cost of the project.

The 2017 capital cost estimate for the Project is $1,000,000.

B(10) Social and Economic Impacts

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

B(10)(a) Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The Project is located within Grove City in Jackson Township in Franklin County, Ohio. Figure 1.3 in Appendix A shows USDA land use categories for the Project area. Terrestrial habitat mapping in Appendix C (Figure 3) shows that the Project area has been developed and maintained as a fenced old field area in the western portion of the Project area and as a manicured mowed lawn within the eastern portion of the Project area. Additionally, one palustrine emergent wetland is present within the Project, but this wetland will not be impacted by construction activities associated with the Project.

There are currently 143 residences and one park, Windward Farm Park, within 1,000 feet of the centerline of the proposed Project. There are no cemeteries, wildlife management areas, or nature preserve lands within 1,000 feet of the centerline of the proposed Project.

Four schools have been identified to the south of the Project. Three of these schools are located within the South-Western City School District property: Holt Crossing Intermediate School, Central Crossing High School, and South-Western Career Academy. A fourth school, an elementary school, has been identified to the west of Holt Road on the South-Western City School District property. No churches have been identified within the vicinity of the Project.

Additionally, the Bolton Field Airport is located approximately 0.85 miles west of the Project (see Figure 1.1, Figure 1.2, and Figure 1.3 in 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.

The Project is not located within registered agricultural district lands, based on coordination with the Franklin County Auditor's Office. Additionally, the Project does not contain other agricultural row crop land (see Figure 1.3 in Appendix A and Figure 3 in Appendix C).

B(10)(c) Archaeological and Cultural Resources

Provide a description of the applicant's investigation concerning the presence or absence of significant archeological 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.

In March and November of 2016, AEP Ohio Transco's consultant completed Phase I archaeological investigations for the Project (see Appendix B). The field investigations were conducted in the footprint of the planned construction activity. No buildings or structures older than 50 years are being taken or directly impacted. Some of the Project area has been extensively disturbed.

The literature review that was conducted for the Project identified 41 archaeological sites within a one-mile radius of the proposed Project area. None of these sites were found to be within or immediately adjacent to the study area of the Project. Most of these sites are associated with larger surveys to the east of the Project. The Project area has not been the subject of any previous surveys. Two previously recorded architectural resources are located in the vicinity of the Project, but neither is within the Project area or within a direct line-of-sight to the Project.

The field investigations involved subsurface testing and visual inspection. There were no cultural resources identified within the Project area during the systematic Phase I investigations. Additionally, there are no buildings older than 50 years old involved within the Project area. No further work is considered to be necessary for the Project. For more information, see the Phase I Archaeological Survey Report included in Appendix B.

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. AEP Ohio Transco will implement and maintain best management practices as outlined in the project-specific Storm Water Pollution Prevention Plan ("SWPPP") to minimize erosion and control sediment to protect surface water quality during storm events. Since none of the poles will be installed in any streams or wetlands, and no tree clearing will be required in forested wetlands (see Appendix C), the Project will not require a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers or Pre-Construction Notification to the U.S. Army Corps of Engineers. Additionally, no structures or proposed access roads are located within a 100-year floodplain area. Therefore, no floodplain permitting is expected to be required for the Project. There are no other known local, state or federal requirements that must be met prior to commencement of the Project.

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

Provide a description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, 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.

The United States Fish and Wildlife Service ("USFWS") *Federally Listed Species by Ohio Counties October 2015* (available at www.fws.gov/midwest/ohio/pdf/OhioTEListByCountyOct2015.pdf) was reviewed to determine the threatened and endangered species currently known to occur in Franklin County. This USFWS publication listed the following threatened or endangered species as occurring in Franklin County: Indiana bat (*Myotis sodalis*; federally listed endangered), northern long-eared bat (*Myotis septentrionalis;* federally listed threatened), Scioto madtom (*Noturus trautmani;* federally listed endangered), clubshell (*Pleurobema clava*; federally listed endangered), northern riffleshell (*Epioblasma torulosa rangiana*; federally listed endangered), rayed bean (*Villosa fabalis*; federally listed endangered), snuffbox (*Epioblasma triquetra*; federally listed endangered), and rabbitsfoot (*Quadrula cylindrica*; federally listed threatened). As part of the ecological study completed for the Project, a coordination letter was submitted to the USFWS Ohio Ecological Services Field Office seeking an environmental review of the Project for potential impacts to threatened or endangered species. The April 15, 2016 response letter from USFWS (see Appendix C) indicated that the proposed Project is within the range of the Indiana bat and northern long-eared bat in Ohio but that if tree clearing takes between October 1 and March 31, they do not anticipate the Project having any adverse effects to these species or any other federally listed endangered, threatened, proposed, or candidate species.

Several state-listed threatened species, endangered species, and species of concern are listed by the Ohio Department of Natural Resources ("ODNR") (http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/species%20and% 20habitats/statelisted%20species/franklin.pdf) as occurring, or potentially occurring in Franklin County. The Indiana bat, northern long-eared bat, and other state-listed species listed as occurring in Franklin County are addressed in detail in the Ecological Features Inventory Report included in Appendix C.

Coordination letters were submitted via email to the ODNR Division of Wildlife ("DOW") Ohio Natural Heritage Program ("ONHP") and the ODNR Office of Real Estate in March 2016, seeking a review of the proposed Project for potential impacts on state-listed and federally–listed threatened or endangered species. Correspondence received from ODNR's DOW/OHNP and the ODNR Office of Real Estate were received in March and April 14, 2016, respectively (see Appendix C). In these letters, they indicated that the proposed Project area, and a one-mile radius around it, does not contain any known occurrences of state-listed species, federally-listed species, or rare species.

The response letter from the ODNR Office of Real Estate indicated that the Project is within the range of the Indiana bat (state and federally endangered). The ODNR indicated that, if suitable Indiana bat habitat is present within the Project area, they recommend that trees be conserved and any tree clearing that is

unavoidable should occur only from October 1 through March 31. AEP Ohio Transco intends to complete tree clearing activities within the proposed Project area between October 1, 2016 and March 31, 2017. The response letter from the ODNR Office of Real Estate also indicated that the Project is within the range of the upland sandpiper (*Bartramia longicauda*; state endangered). The upland sandpiper is a state-listed endangered bird that nests in native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program. The ODNR Office of Real Estate indicted that, if this type of habitat is to be impacted by the Project, construction should be avoided in this habitat during the April 15 to July 31 nesting season for this species. If this type of habitat will not be impacted, then they indicated the Project is not likely to impact this species. As outlined in the Ecological Features Inventory Report included in Appendix C, suitable nesting habitat for the upland sandpiper was not identified within the Project area. Additionally, the response letter from the ODNR Office of Real Estate indicated that the Project is within the range of several listed mussel and fish species; however, since no in-water work is proposed, the Project is not likely to impact these species.

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.

Correspondence received from ODNR's DOW/OHNP and the ODNR Office of Real Estate (see Appendix C) indicated that they are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, or other protected natural areas within a one-mile radius of the Project area. Correspondence received from the USFWS (see Appendix C) indicated that there are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the Project area.

The Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") was consulted to identify any floodplains/flood hazard areas that have been mapped for the proposed Project area. Specifically, map number 39049C0313K mapped the area of the proposed Project. Based on this map, the Project area is not within mapped FEMA floodplains (Figure 2, Appendix C). No floodplain permits will be required for this Project.

A review of the National Wetlands Inventory (NWI) database indicated that no wetlands were identified within the proposed Project area (See Appendix C). Locations of NWI-mapped wetlands in the vicinity of the Project are shown on Figure 2 in Appendix E. Wetland and stream delineation field surveys were completed by AEP Ohio Transco's consultant in March 2016. The results of the wetland and stream delineations are presented in the Ecological Features Inventory Report included in Appendix C. One palustrine emergent wetland totaling approximately 0.1 acres in size was identified within the Project area. The location of this delineated wetland is shown on Figure 2 in Appendix C. The ORAM score for the

palustrine emergent wetland was 21, indicating the wetland was classified as a Category 1 wetland. Data forms and representative photographs of the wetland are provided in the Ecological Features Inventory Report in Appendix C. This emergent wetland is within the proposed new transmission line ROW; however, it is assumed that the wetland can be avoided and/or crossed with timber mats and, therefore, no permanent or temporary impacts to any wetlands are anticipated by construction of the Project. No streams or open water features were identified within the Project area; therefore, no permanent or temporary impacts to the stream channels are anticipated.

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.

Appendix A Project Maps

Figures 1.1, 1.2, 1.3, and 1.4

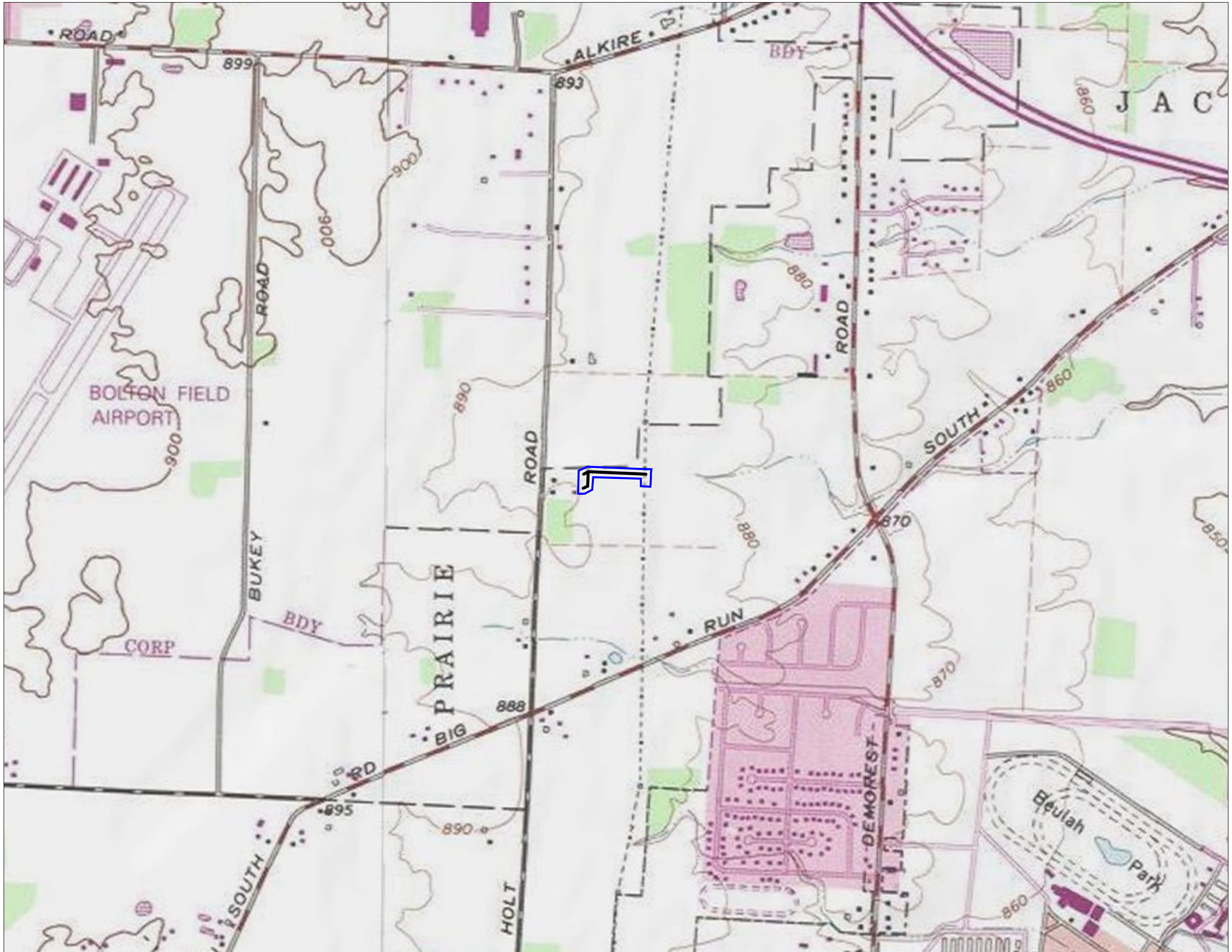

Figure No.
1.1

Title
Project Location Map

Client/Project
AEP Ohio Transmission Company, Inc.
Bolton Station
138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by HDB on 2016-11-23
Technical Review by MP on 2016-11-23
Independent Review by DJG on 2016-11-29

0 500 1,000 Feet
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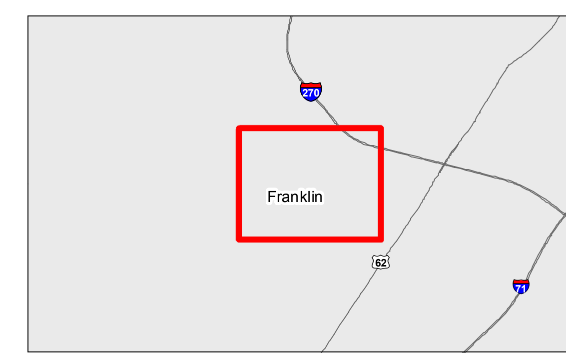
N

Legend
- Proposed 138 kV Transmission Line
- Project Area



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP, NADS
3. Background: USGS 7.5' Topographic Quadrangles-Commerce Point (OH, 1966), Galloway (OH, 1979), Harrisburg (OH, 1974) and Southwest Columbus (OH, 1979)

Stantec

V:\1937\Active\193704274\03_data\gis_cad\gis\mxds\LON\Figure1_1_Project_Location_BoltonStation_AEP.mxd Revised: 2016-11-29 By: hbellone

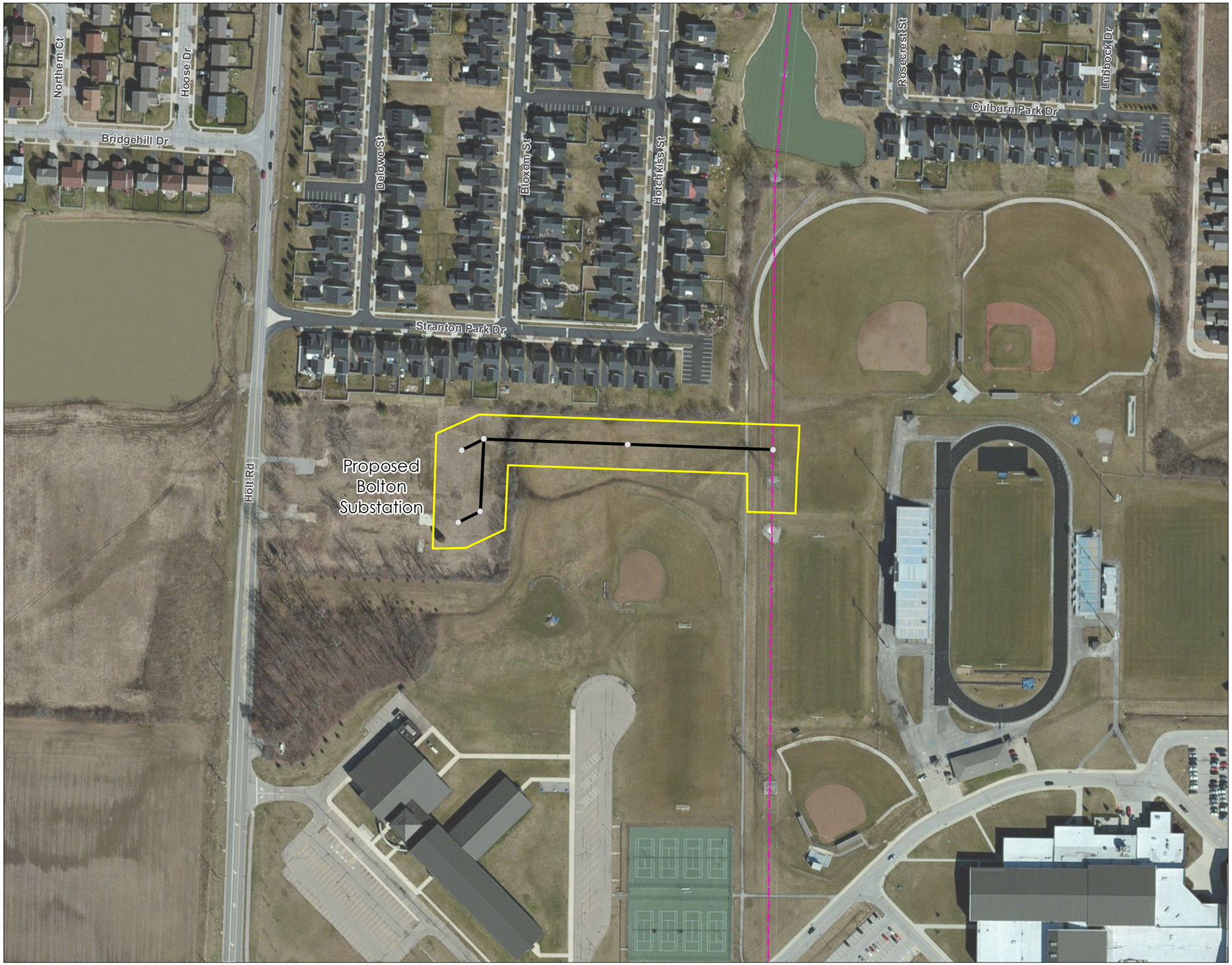


Figure No.
1.2

Title
Project Layout Map

Client/Project
AEP Ohio Transmission Company, Inc.
Bolton Station
138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by HDB on 2016-11-23
Technical Review by MP on 2016-11-23
Independent Review by DJG on 2016-11-29

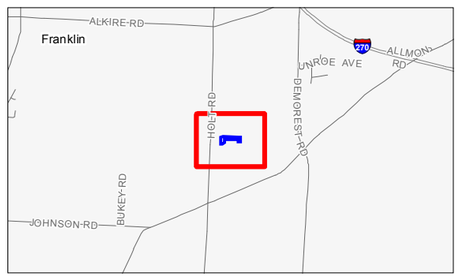
0 100 200 Feet

1:2,400 (At original document size of 11x17)

N

Legend

- Proposed Structure
- Proposed 138 kV Transmission Line
- Project Area
- Existing 138 kV Transmission Line



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP, NADS, FEMA, USGS, USFWS
3. Orthophotography: 2015 ESRI World Imagery

Stantec

Figure No.
1.3

Title
Land Use Map

Client/Project
AEP Ohio Transmission Company, Inc.
Bolton Station
138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by HDB on 2016-11-23
Technical Review by MP on 2016-11-23
Independent Review by DJG on 2016-11-29

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

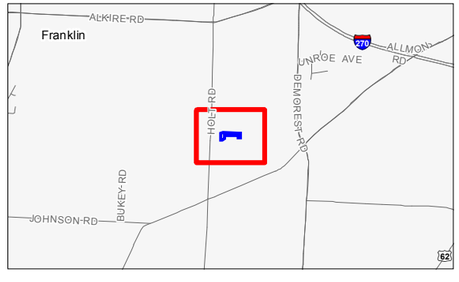
Legend

- Proposed Structure
- Proposed 138 kV Transmission Line
- Project Area
- Existing 138 kV Transmission Line
- Residence
- School
- Cemetery*
- Church*

Land Use

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Deciduous Forest
- Cultivated Crops

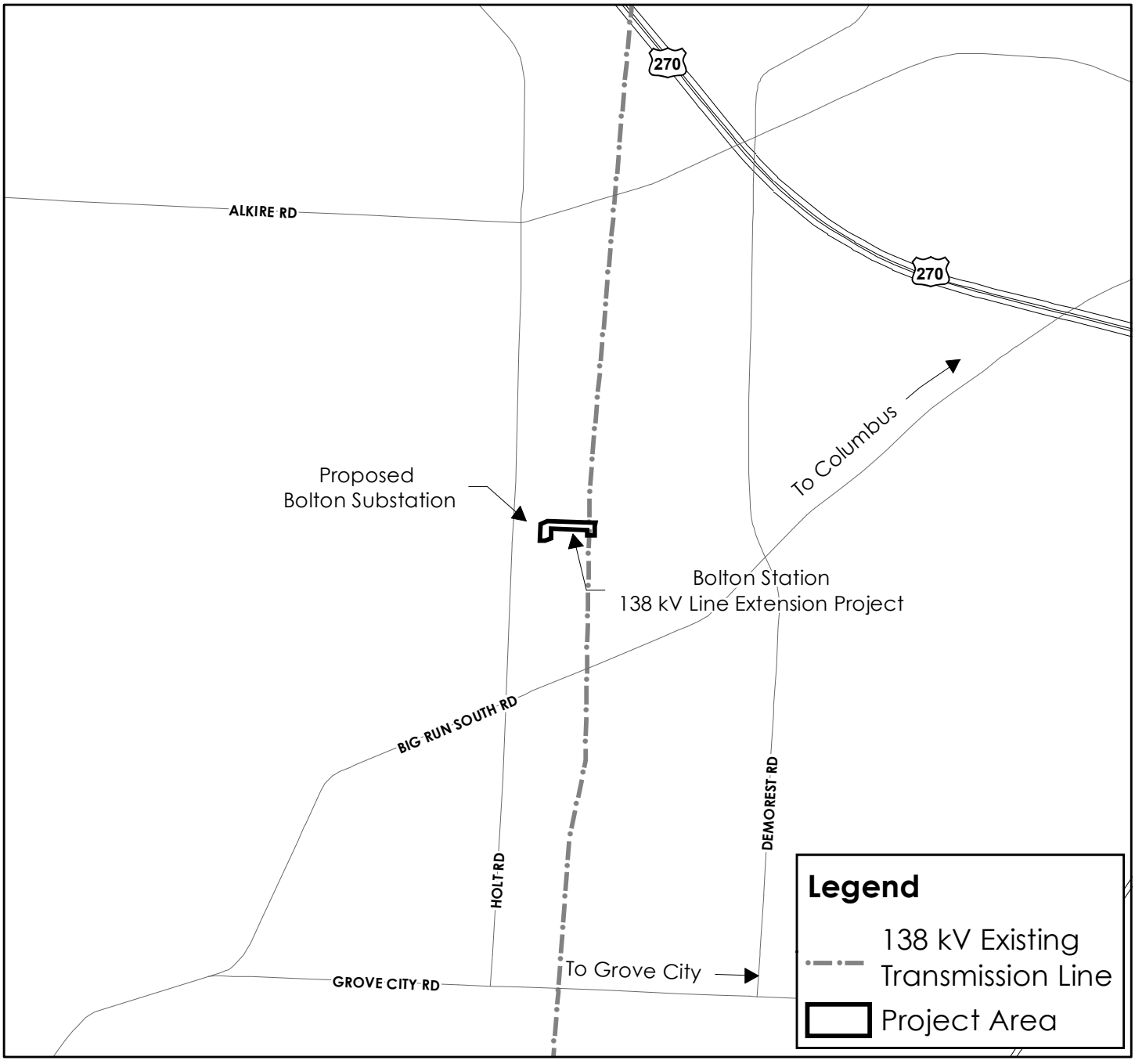
*No feature within map extents.



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP, NADS, USGS
3. Orthophotography: 2015 ESRI World Imagery

Stantec

Figure 1.4 - Concept Map



Appendix B Phase I Archaeological Investigations

Phase I Cultural Resources Investigations for the Bolton Station 138kV Extension Project in Jackson Township, Franklin County, Ohio

Ryan J. Weller

November 30, 2016

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Columbus, OH 43212
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Phase I Cultural Resources Investigations for the Bolton Station 138kV Extension Project in Jackson Township, Franklin County, Ohio

By

Ryan J. Weller

Submitted By:

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Prepared For:

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Lead Agency:

Ohio Power Siting Board

Ryan J. Weller, P.I.

November 30, 2016

W-2093

Abstract

In November of 2016, Weller & Associates, Inc. conducted a Phase I Cultural Resources Investigations for the Bolton Station 138kV Extension Project in Jackson Township, Franklin County, Ohio. This work was conducted Stantec Consulting, Inc. for submittal to American Electric Power and the Ohio Power Siting Board. The cultural resource management work involved in this project involved an archaeological survey and a limited architectural survey. These investigations did not result in the identification of any cultural resources.

The electric line extension will be approximately 213 m (700 ft) long and is located on the east side of Holt Road approximately 0.75 miles south of Alkire Road. It extends a short distance that connects the proposed Bolton Station to an existing 138kV electric line. This is an area that is a mixture of residential housing and urban developments. Some of the area has been extensively disturbed from former construction activities affected by an immediately adjacent modern housing development and sports facility. The project area consists of a grass covered lots, which are both manicured and left fallow.

The literature review that was conducted for this project identified 41 archaeological sites within the study area. None of these are situated within or immediately adjacent to the project area as most are associated with larger surveys to the east of the project. The western part of the project area has been the subject of previous investigations (Nelson and Schaefer 2016); they encountered disturbances and no cultural resources. Only two previously recorded architectural resources are within the study area, but are not within a direct line-of-sight to the project.

The fieldwork for this project was conducted on November 29, 2016. The investigations did not result in the identification of archaeological sites. In addition, no architectural resources 50 years or older are within a direct line-of-sight of the project. It is the opinion of Weller that no historic properties will be affected by the project. No further work is recommended for this undertaking.

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Introduction

In November of 2016, Weller & Associates, Inc. conducted a Phase I Cultural Resources Investigations for the Bolton Station 138kV Extension Project in Jackson Township, Franklin County, Ohio (Figures 1-3). This work was conducted Stantec Consulting, Inc. for submittal to American Electric Power (AEP) and the Ohio Power Siting Board (OPSB). These investigations were conducted to identify any sites or properties and to evaluate them in a manner that is reflective of Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]). This report summarizes the results of the archaeological fieldwork and an intensive literature review. The report format and design is similar to that established in *Archaeology Guidelines* (Ohio State Historic Preservation Office [SHPO] 1994).

The electric line extension will be approximately 213 m (700 ft) long and is located on the east side of Holt Road approximately 0.75 miles south of Alkire Road. It extends a short distance that connects the proposed Bolton Station to an existing 138kV electric line. The project has a corridor that is 30.5 m (100 ft) wide. The purpose of the project is to connect the new Bolton Station to the electric grid.

The fieldwork for this project was conducted on November 29, 2016. Chad Porter completed the literature review on November 29, 2016. Craig Schaefer and Brittany Vance completed the field investigations. Ryan Weller served as the Principal Investigator, Project Manager, and completed the compilation of this report. The figures were completed by Alex Thomas.

Environmental Setting

Climate

Franklin County, not unlike all of Ohio, has a continental climate, with hot and humid summers and cold winters. About 97 cm (38 in) of precipitation fall annually on the county with the average monthly precipitation about 8 cm (3.2 in). January, February and October are the driest months, while July is the wettest month for Franklin County (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1980).

Physiography, Relief, and Drainage

Franklin County is located within several physiographic regions such as the Columbus Lowland region of Ohio, Galion Glaciated Low Plateau to the east, and the Darby Plain, which is found on the western portion of the county. The Columbus Lowland region includes the project area and relative lowlands that are surrounded in all directions by higher terrain and land that gently slopes towards the Scioto River (Brockman 1998). Hellbranch Run, a tributary of Darby Creek, which drains into the Scioto River, drains the project area.

Geology

Franklin County is comprised of late Wisconsinan-age till. The soils are predominately clayey with a higher concentration of lime. Below the till are lacustrine deposits that cap Paleozoic-aged rocks. The eastern portion of the county contains some shales and loess deposits. The underlying bedrock of the project area can be of either Mississippian- or Devonian-age material as it is at the interface of these two formations Brockman 1998; USDA, SCS 1980).

Soils

The project area is within the Crosby-Kokomo association, which are common to upland glacial till plains. This association generally consists of deep, nearly level and gently sloping, somewhat poorly drained and very poorly drained soils mainly in medium textured and moderately fine textured glacial till. There are two specific soils involved in this area (Table 1). There is nothing remarkable or unique pertaining to the soils that are present within the project area. These soils reflect flat to very gently undulating conditions (United States Department of Agriculture, Soils Conservation Service (USDA, SCS) 1980 (2016)].

Table 1. Soils in the Project.

Soil Symbol	Soil Name	% Slope	Location
CrA,CrB	Crosby silt loam	0-2,2-6	Upland Till Plains slight rises
Ko	Kokomo silty clay loam	-0-	Upland Till Plains low areas

Flora

There is great floral diversity in Ohio. This diversity is relative to the soils and the terrain that generally includes the till plain, lake plain, terminal glacial margins, and unglaciated plateau (Forsyth 1970). Three major glacial advances, including the Kansan, Illinoisan, and Wisconsinan, have affected the landscape of Ohio. The effects of the Wisconsin glaciation are most pronounced and have affected more than half of the state (Pavey et al. 1999).

Southwestern Ohio from about Cincinnati to Bellefontaine east to the Scioto River historically contained a very diverse floral landscape. This is an area where moraines from three glacial episodes are prevalent (Pavey et al. 1999). Forests in this area include elm-ash swamp, beech, oak-sugar maple, mixed mesophytic, prairie grasslands, mixed oak, and bottomland hardwoods (Core 1966; Gordon 1966, 1969). These forest types are intermingled with prairies being limited to the northern limits of this area mostly in Clark and Madison Counties.

Generally, beech forests are the most common variety through Ohio and could be found in all regions. Oak and hickory forests dominated the southeastern Ohio terrain and were found with patchy frequency across most of northern Ohio. Areas that were formerly open prairies and grasslands are in glacial areas, but are still patchy. These are

in the west central part of the state. Oak and sugar maple forests occur predominantly along the glacial terminal moraine. Elm-ash swamp forests are prevalent in glaciated areas including the northern and western parts of Ohio (Gordon 1966; Pavey et al. 1999).

The project is located at the boundary of a mixed oak forestation and mixed mesophytic forest regime (Gordon 1966).

Fauna

The upland forest zone offered a diversity of mammals to the prehistoric diet. This food source consisted of white-tailed deer, black bear, Eastern cottontail rabbit, opossum, a variety of squirrels, as well as other less economically important mammals. Several avian species were a part of the upland prehistoric diet as well (i.e. wild turkey, quail, ruffed grouse, passenger pigeon, etc.). The lowland zone offered significant species as well. Raccoon, beaver, and muskrat were a few of the mammals, while wood duck and wild goose were the economically important birds. Fishes and shellfish were also an integral part of the prehistoric diet. Ohio muskellunge, yellow perch, white crappie, long nose gar, channel catfish, pike, and sturgeon were several of the fish, whereas, the Ohio naiad mollusc, butterfly's shell, long solid, common bullhead, knob rockshell, and cod shell were the major varieties of shellfish. Reptiles and amphibians, such as several varieties of snakes, frogs, and turtles, were also part of the prehistoric diet (Trautman 1981; Lafferty 1979; Mahr 1949).

Cultural Setting

The first inhabitants of Ohio were probably unable to enter this land until the ice sheets of the Wisconsin glacier melted around 14,000 B.C. Paleoindian sites are considered rare due to the age of the sites and the effects of land altering activities such as erosion. Such sites were mostly used temporarily and thus lack the accumulation of human occupational deposits that would have been created by frequent visitation. Paleoindian artifact assemblages are characteristic of transient hunter-gatherer foraging activity and subsistence patterns. In Ohio, major Paleoindian sites have been documented along large river systems and near flint outcrops in the Unglaciated Plateau (Cunningham 1973). Otherwise, Paleoindian sites in the glaciated portions of Ohio are encountered infrequently and are usually represented by isolated finds or open air scatters.

The Paleoindian period is characterized by tool kits and gear utilized in hunting Late Pleistocene megafauna and other herding animals including but not limited to short-faced bear, barren ground caribou, flat-headed peccary, bison, mastodon, giant beaver (Bamforth 1988; Brose 1994; McDonald 1994). Groups have been depicted as being mobile and nomadic (Tankersley 1989); artifacts include projectile points, multi-purpose unifacial tools, burins, gravers, and spokeshaves (Tankersley 1994). The most diagnostic artifacts associated with this period are fluted points that exhibit a groove or channel positioned at the base to facilitate hafting. The projectiles dating from the late Paleoindian period generally lack this trait; however, the lance form of the blade is retained and is often distinctive from the following Early Archaic period (Justice 1987).

The Archaic period has been broken down into three sub-categories, including the Early, Middle, and Late Archaic. During the Early Archaic period (ca. 10,000-8000 B.P.), the environment was becoming increasingly arid as indicated by the canopy (Shane 1987). This period of dryness allowed for the exploitation of areas that were previously inaccessible or undesirable. The Early Archaic period does not diverge greatly from the Paleoindian regarding the type of settlement. Societies still appear to be largely mobile with reliance on herding animals (Fitting 1963). For these reasons, Early Archaic artifacts can be encountered in nearly all settings throughout Ohio. Tool diversity increased at this time including hafted knives that are often re-sharpened by the process of beveling the utilized blade edge and intense basal grinding (Justice 1987). There is a basic transition from lance-shaped points to those with blades that are triangular. Notching becomes a common hafting trait. Another characteristic trait occurring almost exclusively in the Early and Middle Archaic periods is basal bifurcation and large blade serrations. Tool forms begin to vary more and may be a reflection of differential resource exploitation. Finished tools from this period can include bifacial knives, points, drills/perforators, utilized flakes, and scrapers.

The Middle Archaic period (8000-6000 B.P.) is poorly known or understood in archaeological contexts within Ohio. Some (e.g., Justice 1987) regard small bifurcate points as being indicative of this period. Ground stone artifacts become more prevalent at this time. Other hafted bifaces exhibit large side notches with squared bases, but this same trait can extend back to the Paleoindian period. The climate at this time is much like that of the modern era. Middle Archaic period subsistence tended to be associated with small patch foraging that involved a consistent need for mobility with a shift towards stream valleys (Stafford 1994). Sites encountered from this time period throughout most of Ohio tend to be lithic scatters or isolated finds. The initial appearance of regional traits may be apparent at this time.

The Late Archaic period in Ohio (ca 6000-3000 B.P.) diverges from the previous periods in many ways. Preferred locations within a regional setting appear to have been repeatedly occupied. The more intensive and repeated occupations often resulted in the creation of greater social and material culture complexity. The environment at this time is warmer and drier. Most elevated landforms in northeastern Ohio have yielded Archaic artifacts (Prufer and Long 1986: 7), and the same can be stated for the remainder of Ohio.

Various artifacts are diagnostic of the Late Archaic period. Often, burial goods provide evidence that there was some long-distance movement of materials, while lithic materials used in utilitarian assemblages are often from a local chert outcrop. There is increased variation in projectile point styles that may reflect regionalism. Slate was often used in the production of ornamental artifacts. Ground and polished stone artifacts reached a high level of development. This is evident in such artifacts as grooved axes, celts, bannerstones, and other slate artifacts.

It is during the Terminal Archaic period (ca 3500-2500 B.P.) that extensive and deep burials are encountered. Cultural regionalism within Ohio is evident in the presence

of Crab Orchard (southwest), Glacial Kame (northern), and Meadowood (central to Northeastern). Along the Ohio River, intensive occupations have been placed within the Riverton phase. Pottery makes its first appearance during the Terminal Late Archaic.

The Early Woodland period (ca 3000-2100 B.P.) in Ohio is often associated with the Adena culture and the early mound builders (Dragoo 1976). Early and comparably simple geometric earthworks first appear with mounds more spread across the landscape. Pottery at this time is thick and tempered with grit, grog, or limestone; however, it becomes noticeably thinner towards the end of the period. There is increased emphasis on gathered plant resources, including maygrass, chenopodium, sunflower, and squash. Habitation sites have been documented that include structural evidence. Houses that were constructed during this period were circular, having a diameter of up to 18.3 m (Webb and Baby 1963) and often with paired posts (Cramer 1989). Artifacts dating from this period include leaf-shaped blades with parallel to lobate hafting elements, drilled slate pieces, ground stone, thick pottery, and increased use of copper. Early Woodland artifacts can be recovered from every region of Ohio.

The Middle Woodland period (ca 2200-1600 B.P.) is often considered to be equivalent with the Hopewell culture. The largest earthworks in Ohio date from this period. There is dramatic increase in the appearance of exotic materials that appear most often in association with earthworks and burials. Artifacts representative of this period include thinner, grit-tempered pottery, dart-sized projectile points (Lowe Flared, Steuben, Snyders, and Chesser) [Justice 1987], exotic materials (mica, obsidian, and marine shell, etc.). The points are often thin, bifacially beveled, and have flat cross sections. There seems to have been a marked increase in the population as well as increased levels of social organization. Middle Woodland sites seem to reflect a seasonal exploitation of the environment. There is a notable increase in the amount of Eastern Agricultural Complex plant cultigens, including chenopodium, knotweed, sumpweed, and little barley. This seasonal exploitation may have followed a scheduled resource extraction year in which the populations moved camp several times per year, stopping at known resource extraction loci. Middle Woodland land use appears to center on the regions surrounding earthworks (Dancey 1992; Pacheco 1996); however, there is evidence of repeated occupation away from earthworks (Weller 2005a). Household structures at this time vary with many of them being squares with rounded corners (Weller 2005a). Exotic goods are often attributed to funerary activities associated with mounds and earthworks. Utilitarian items are more frequently encountered outside of funerary/ritual contexts. The artifact most diagnostic of this period is the bladelet, a prismatic and thin razor-like tool, and bladelet cores. Middle Woodland remains are more commonly recovered from central Ohio south and lacking from most areas in the northern and southeastern part of the state.

The Late Woodland period (ca A.D. 400-900) is distinct from the previous period in several ways. There appears to be a population increase and a more noticeable aggregation of groups into formative villages. The villages are often positioned along large streams, on terraces, and were likely seasonally occupied (Cowan 1987). This increased sedentism was due in part to a greater reliance on horticultural garden plots, much more so than in the preceding Middle Woodland period. The early Late Woodland

groups were growing a wide variety of crop plants that are collectively referred to as the Eastern Agricultural Complex. These crops included maygrass, sunflower, and domesticated forms of goosefoot and sumpweed. This starch and protein diet was supplemented with wild plants and animals. Circa A.D. 800 to 1000, populations adopted maize agriculture, and around this same time, shell-tempered ceramics appear. Other technological innovations and changes during this period included the bow and arrow and changes in ceramic vessel forms.

The Late Prehistoric period (ca A.D. 1000-1550) is distinctive from former periods. The Cole complex (ca A.D. 1000-1300) has been identified in central and south central Ohio. Sites that have been used to define the Cole complex include the W.S. Cole (33DL11), Ufferman (33DL12), and Decco (33DL28) sites along the Olentangy; the Zencor Village site, located along the Scioto River in southern Franklin County; and the Voss Mound site (33FR52), located along the Big Darby Creek in southwestern Franklin County. It has been suggested that this cultural manifestation developed out of the local Middle Woodland cultures and may have lasted to be contemporaneous with the Late Prehistoric period (Barkes 1982; Baby and Potter 1965; Potter 1966). Cole is a poorly defined cultural complex as its attributes are a piecemeal collection gathered from various sites. Some have suggested that it may be associated with the Fort Ancient period (Pratt and Bush 1981). Artifacts recovered from sites considered as Cole include plain and cordmarked pottery, triangular points, Raccoon Notched points, chipped slate discs, rectangular gorgets, and chipped stone celts. The vessels often have a globular form with highly variable attributes and rim treatment. There have been few structures encountered from this period, but those that have are typically rounded or circular (Pratt and Bush 1981; Weller 2005b).

Monongahela phase sites date to the Late Prehistoric to Contact period in eastern Ohio. Monongahela sites are typically located on high bottomlands near major streams, on saddles between hills, and on hilltops, sometimes a considerable distance from water sources. Most of these sites possessed an oval palisade, which surrounded circular house patterns. Burials of adults are usually flexed and burial goods are typically ornamental. A large variety of stone and bone tools are found associated with Monongahela sites. Monongahela pottery typically is plain or cordmarked with a rounded base and a gradually in-sloping shoulder area. Few Euro-American trade items have been found at Monongahela sites (Drooker 1997).

Protohistoric to Settlement

By the mid-1600s, French explorers traveled through the Ohio country as trappers, traders, and missionaries. They kept journals about their encounters and details of their travels. These journals are often the only resource historians have regarding the early occupants of seventeenth century Ohio. The earliest village encountered by the explorers in 1652 was a Tionontati village located along the banks of Lake Erie and the Maumee River. Around 1670, it is known that three Shawnee villages were located along the confluence of the Ohio River and. the Little Miami River. Because of the Iroquois Wars, which continued from 1641-1701, explorers did not spend much time in the Ohio

region, and little else is known about the natives of Ohio during the 1600s. Although the Native American tribes of Ohio may have been affected by the outcome of the Iroquois Wars, no battles occurred in Ohio (Tanner 1987).

French explorers traveled extensively through the Ohio region from 1720-1761. During these expeditions, the locations of many Native American villages were documented. In 1751, a Delaware village known as Maguck existed near present-day Chillicothe. In 1758, a Shawnee town known as 'Lower Shawnee 2' existed at the same location. The French also documented the locations of trading posts and forts, which were typically established along the banks of Lake Erie or the Ohio River (Tanner 1987).

While the French were establishing a claim to the Ohio country, many Native Americans were also entering new claims to the region. The Shawnee were being forced out of Pennsylvania because of English settlement along the eastern coast. The Shawnee created a new headquarters at Shawnee Town, which was located at the mouth of the Scioto River. This headquarters served as a way to pull together many of the tribes which had been dispersed because of the Iroquois Wars (Tanner 1987).

Warfare was bound to break out as the British also began to stake claims in the Ohio region by the mid-1700s. The French and Indian War (1754-1760) affected many Ohio Native Americans; however, no battles were recorded in Ohio (Tanner 1987). Although the French and Indian War ended in 1760, the Native Americans continued to fight against the British explorers. In 1764, Colonel Henry Bouquet led a British troop from Fort Pitt, Pennsylvania to near Zanesville, Ohio.

In 1763, the Seven Years' War fought between France and Britain, also known as the French and Indian War ended with The Treaty of Paris. In this Peace of Paris, the French ceded their claims in the entire Ohio region to the British. When the American Revolution ended with the Second Treaty of Paris in 1783, the Americans gained the entire Ohio region from the British; however, they designated Ohio as Indian Territory. Native Americans were not to move south of the Ohio River but Americans were encouraged to head west into the newly acquired land to occupy and govern it (Tanner 1987).

By 1783, Native Americans had established fairly distinct boundaries throughout Ohio. The Shawnee tribes generally occupied southwest Ohio, while the Delaware tribes stayed in the eastern half of the state. Wyandot tribes were located in north-central Ohio, and Ottawa tribes were restricted to northeast Ohio. There was also a small band of Mingo tribes in eastern Ohio along the Ohio River, and there was a band of Mississauga tribes in northeastern Ohio along Lake Erie. The Shawnee people had several villages within Ross County along the Scioto River (Tanner 1987). Although warfare between tribes continued, it was not as intense as it had been in previous years. Conflicts were contained because boundaries and provisions had been created by earlier treaties.

In 1795, the Treaty of Greenville was signed as a result of the American forces defeat of the Native American forces at the Battle of Fallen Timbers. This allocated the

northern portion of Ohio to the Native Americans, while the southern portion was opened for Euro-American settlement. Although most of the battles which led up to this treaty did not occur in Ohio, the outcome resulted in dramatic fluctuations in the Ohio region. The Greenville Treaty line was established, confining all Ohio Native Americans to northern Ohio, west of the Tuscarawas River (Tanner 1987).

Ohio Native Americans were again involved with the Americans and the British in the War of 1812. Unlike the previous wars, many battles were fought in the Ohio country during the War of 1812. By 1815, peace treaties began to be established between the Americans, British, and Native Americans. The Native Americans lost more and more of their territory in Ohio. By 1830, the Shawnee, Ottawa, Wyandot, and Seneca were the only tribes remaining in Ohio. These tribes were contained on reservations in northwest Ohio. By the middle 1800s, the last of the Ohio Native Americans signed treaties and were removed from the Ohio region.

Franklin County History

Lucas Sullivant was the first American to survey Franklin County and was the first settler to build a cabin in August 1797 in what would become Franklinton, later the state capitol of Columbus. Sullivant laid out the town of Franklinton that same year. Much of Central Ohio was part of the U.S. Military Lands which also included the Refugee Tract. The state legislature organized Franklin County on April 30, 1803, although its borders changed many times until 1857. The county's name honors Benjamin Franklin. Most of the early settlers of Franklin County were from Pennsylvania, Virginia, and New England. Immigrants in the late 1800s and early 1900s were mostly Germans, Italians, and Russians (Lee 1892; Martin 1858; Rickey 1983; Vesey 1901).

Early settlers of Franklin County settled in rich bottomlands of the Scioto and Olentangy Rivers, the Big Darby, Walnut, Big Walnut, and Alum Creeks. Most of the earliest settlers were farmers producing corn, wheat, cattle, and hogs. Agriculture remained a major source of income for the county until 1930 when urban expansion began. Today, with Columbus engulfing most of the county, little land is agricultural (Dodds 1952; Lee 1892; Martin 1858; Moore 1930; Rickey 1983).

During the late eighteenth century and early nineteenth century, trade with the Native Americans was an important source of income. The town of Worthington was platted and settled by 1803 and Dublin in 1818. In 1811, Worthington had a woolen mill. By 1815, several gristmills, sawmills, and distilleries were scattered along the rivers and streams throughout Franklin County. The work on the National Road (today US 40), which passes through Franklin County, came to completion in 1834. The Ohio Canal that passed through the southern portion of the county also operated in the 1830s. In 1850, the Columbus and Xenia Railroad was the first railroad to pass through the county. All of these modes of transportation improved the economy of the region and stimulated the development of businesses and industries during the late 1800s and early 1900s. The improved transportation and economy led to population increases and as a result, new

communities developed as the old ones expanded. Between 1830 and 1880, the following communities grew up in Franklin County: Groveport, Grove City, New Albany, Reynoldsburg, Hilliard, Gahanna, and Lockbourne (Ohio History Central 2005; Dodds 1952; Lee 1892; Martin 1858; Moore 1930; Rickey 1983; Vesey 1901).

Various businesses and industries developed in the different communities of Franklin County during the late 1800s. Columbus was the center of the economic development. After becoming the state capital in 1812, state political agencies also located in the city. Quarries were an important early industry for the county. In 1880, a sandstone quarry opened near Blacklick followed by the Marble Cliff quarries in Norwich Township. The twentieth century has seen the continued development and expansion of Columbus and surrounding urban areas. Suburbs dominate the landscape and the construction of freeways such as I-70, I-71, I-270, I-670, US 33, SR 161, SR 315, and SR 104 has eased the flow of transportation to and from the capitol further stimulating their growth (Ohio History Central 2005; Dodds 1952; Moore 1930; Rickey 1983; Vesey 1901).

Jackson Township History

After the Battle of New Orleans ended in January of 1815, General Andrew Jackson was a national hero. Mere months later, the people of Franklin County, in partitioning Franklin Township, decided to honor the general by naming the new township of fertile farmland after him (Taylor 1909). This township is located in the southwestern corner of Franklin County inside Pleasant Township and west of the Scioto River.

This organization took place just ten years after the first settler came to Jackson Township, a man named Hugh Grant. Grant was initially from Maryland, moved to Pittsburgh, married, and in 1804, the Grant family moved to Ross County. Soon after, Grant purchased 450 acres in what was to become Jackson Township. Without knowing the proper location of his parcel, he set out to settle his property in 1805 and ended up squatting along the Scioto River for which he was killed. His widow had the 450-acre plot located and lived there until 1836 (Moore 1930, Taylor 1909, and Vesey 1901). A vast list of other early settlers can be found in any of the formal histories of the area.

The early industry was typical of the region. Mills and farms, general stores and blacksmiths as well as a drain tile factory and a wagon factory had emerged by the middle point of the century (Moore 1930 and Vesey 1901). The first school was developed the year of township organization. However, the first post office did not appear until W. F. Breck laid out Grove City in the summer of 1852. Mr. Breck was the first postmaster of Jackson Township, holding the office until 1857. The Scioto Chapel was the first church erected in 1812 with several other churches of equally several denominations raising formal worship sites in the late 1850s and into the 1860s. Dr. Joseph Bullen arrived in 1852 and worked as the township's first physician until his death in 1878 (Caldwell 1872, Taylor 1909, Moore 1930, and Vesey 1901).

The Township grew slowly, partially because of a lack of decent roadways. This was true until several good turnpikes arrived and facilitated easier travel and stimulated trade. Cottage Mille Pike, Franklin Pike, Harrisburg Pike, and Jackson Pike were these early roads (Moore 1930, and Vesey 1901). Business transportation also grew with the addition of the Baltimore & Ohio Railroad. Another step of the unhurried growth was the move of the Columbus Driving Park Association from Columbus to Grove City after the turn of the 20th Century. This park provided horse and dog races which bolstered the local economy despite making a "change in its tone" (Moore 1930).

Eventually, with the development of modern roadways and particularly I-71, Jackson Township began to grow more rapidly. Farming is still a productive venture in much of the township; however, this mode of existence is quickly giving way to multiple unit housing developments, industry, and commerce. This area is contained within the urban sprawl of Columbus, as Columbus pushes ever closer to the Pickaway County line.

Research Design

The purpose of a Phase I survey is to locate and identify cultural resources that will be affected by the planned development. This includes archaeological deposits as well as architectural properties that are older than 50 years. Once these resources are identified and sampled, they are evaluated for their eligibility or potential eligibility to the NRHP. These investigations are directed to answer or address the following questions:

1) Did the literature review reveal anything that suggests the project area had been previously surveyed, and what is the relationship of previously recorded properties to the project area?
2) Are cultural resources likely to be encountered in the project area?

Archaeological Field Methods

The survey conducted within the project area was generally limited to subsurface testing methods and visual inspection. Surface collection was not possible due to the ground cover.

Shovel test unit excavation. Shovel test units were placed at 15-m intervals where adequate surface visibility was lacking. These measure 50 cm on a side and are excavated to 5 cm below the topsoil/subsoil interface. Individual shovel test units are documented regarding their depth, content and color (Munsell). Wherever sites are encountered, Munsell color readings are taken per shovel test unit. All of the undisturbed soil matrices from shovel test units are screened using .6 cm hardware mesh. When sites are identified, additional shovel test units will be excavated at 7.5 m intervals extending on grid and in the four cardinal directions from the positive locations.

Visual inspection. Locations where cultural resources were not expected, such as disturbed areas and wet areas were walked over and visually inspected. Rodent-

exposed areas were inspected for cultural materials. This method was used to verify the absence or likelihood of any cultural resources being located in these areas. This method was also utilized to document the general terrain and the surrounding area.

The application of the resulting field survey methods was documented in field notes, field maps, and project plan maps.

Curation

No artifacts 50 years of age or older were recovered during the investigations. Notes and maps affiliated with this project will be maintained at Weller & Associates, Inc. files.

Literature Review

The literature review study area is defined as a 1.6 km (1.0 mile) radius from the boundaries of the project (Figure 2 and 3). In conducting the literature review, the following resources were consulted at SHPO, at the Columbus Metropolitan Library, at the State Library of Ohio, and from various online resources:

1) *An Archaeological Atlas of Ohio* (Mills 1914);
2) SHPO United States Geological Survey (USGS) 7.5' series topographic maps;
3) Ohio Archaeological Inventory (OAI) files;
4) Ohio Historic Inventory (OHI) files;
5) National Register of Historic Places (NRHP) files;
6) SHPO consensus Determinations of Eligibility (DOE) files;
7) SHPO CRM/contract archaeology files; and
8) Franklin County atlases, histories, historic USGS 15'series topographic map(s), and current USGS 7.5' series topographic map(s).

A review of *An Archaeological Atlas of Ohio* (Mills 1914) was conducted. The *Atlas* did not indicate any resources situated within or adjacent to the project area.

A review of the SHPO topographic maps indicated that there are 41 sites located in the study area. None of these sites are located within or immediately adjacent to the project area (Table 2). All but one of these sites are associated with prehistoric period activity; the remaining site consists of a historic period scatter.

Table 2. Previously Recorded OAIs Located in the Study Radius.

Site # (33…)	Site Type	Temporal Association	In or Adjacent to Project
FR0887	Lithic scatter	Late Archaic	NO
FR0888	Lithic scatter	Late Archaic	NO

Table 2. Previously Recorded OAIs Located in the Study Radius.			
Site # (33…)	**Site Type**	**Temporal Association**	**In or Adjacent to Project**
FR0889	Lithic scatter	Unassigned Archaic	NO
FR0890	Lithic scatter	Unassigned Prehistoric	NO
FR0891	Lithic scatter	Early Archaic	NO
FR0892	Lithic scatter	Unassigned Prehistoric	NO
FR0893	Lithic scatter	Unassigned Prehistoric	NO
FR0894	Lithic scatter	Unassigned Prehistoric	NO
FR0895	Lithic scatter	Paleo, Early Archaic, Middle Woodland	NO
FR0896	Lithic scatter	Late Woodland	NO
FR0897	Lithic scatter	Unassigned Prehistoric	NO
FR0898	Lithic scatter	Unassigned Prehistoric	NO
FR0899	Lithic scatter	Unassigned Prehistoric	NO
FR0900	Lithic scatter	Unassigned Prehistoric	NO
FR0901	Lithic scatter	Early Archaic, Late Archaic, Early Woodland	NO
FR0902	Lithic scatter	Unassigned Prehistoric	NO
FR0903	Lithic scatter	Unassigned Prehistoric	NO
FR0904	Lithic scatter	Unassigned Prehistoric	NO
FR0905	Lithic scatter	Unassigned Prehistoric	NO
FR0906	Lithic scatter	Unassigned Prehistoric	NO
FR0907	Lithic scatter	Unassigned Prehistoric	NO
FR0908	Lithic scatter	Unassigned Prehistoric	NO
FR0909	Lithic scatter	Unassigned Prehistoric	NO
FR0910	Lithic scatter	Unassigned Prehistoric	NO
FR0911	Lithic scatter	Unassigned Prehistoric	NO
FR0912	Lithic scatter	Unassigned Prehistoric	NO
FR0913	Lithic scatter	Unassigned Prehistoric	NO
FR0914	Lithic scatter	Unassigned Prehistoric	NO
FR0915	Lithic scatter	Unassigned Prehistoric	NO
FR0920	Lithic scatter	Unassigned Prehistoric	NO
FR0922	Lithic scatter	Unassigned Prehistoric	NO
FR0923	Lithic scatter	Unassigned Prehistoric	NO
FR0924	Lithic scatter	Late Woodland	NO
FR2170	Lithic scatter	Middle Archaic	NO
FR2171	Lithic scatter	Unassigned Prehistoric	NO
FR2172	Lithic scatter	Unassigned Prehistoric	NO
FR2173	Lithic scatter	Unassigned Prehistoric	NO
FR2175	Lithic scatter	Unassigned Prehistoric	NO
FR2177	Historic scatter	Unassigned Prehistoric	NO
FR2350	Lithic scatter	Unassigned Prehistoric	NO
FR2351	Lithic scatter	Unassigned Prehistoric	NO

The Ohio Historic Inventory (OHI) files indicated that there are two previously recorded OHI resources in the study area. These include OHI FRA0192226 (Charles Koogler Farm) and FRA0866528 (Egelhoff Residence). Neither of these are within or near the project area, however, the Charles Koogler Farm was confirmed to be demolished as it was at the location of the high school campus to the south of the project.

A review of the NRHP files and determination of eligibility files indicated that there are no resources within or adjacent the project area. There are no such resources located in the study area.

There have been six CRM surveys conducted within the study area, none of which incorporated any aspects of the current project (Nelson and Schaefer 2016; Aument 1991; Duerksen et all. 2000; Weller 2003; Wagner 2012; Aument and Gibbs 1991). Four of the surveys conducted were Phase I level reconnaissance surveys. Aument and Gibbs (1991) conducted a Phase III data recovery on sites 33FR895 and 33FR901. Neither of these are within or near the current project area. Nelson and Shaefer (2016) completed a Phase I survey in this area in the spring of 2016. This survey accounts for the western part of the current project area and did not result in the identification of any cultural materials.

Cartographic/atlas resources were reviewed for the project area. According to the *Atlas of Franklin County, Ohio* (Lake 1875) the property was owned by Elisa White. The USGS *1900 West Columbus 15 Minute Series (Topographic)* map indicates no buildings within the project area (Figure 4). There are no residences indicated in the vicinity of the project area.

Evaluation of Research Questions 1 and 2

There were two questions presented in the research design that will be addressed at this point. These are:

1) Did the literature review reveal anything that suggests the project area had been previously surveyed?
2) Are cultural resources likely to be identified in the project area?

The project area has not been the subject of any previous investigations. There are several CRM surveys conducted within the study area. Mills (1914) did not identify sites in the immediate vicinity. Given the location of the project area and the presence of sites in the neighboring and similar terrain, it seems plausible that archaeological deposits might be present if there are intact soils. The western part of the project was previously investigated and there were no cultural materials identified. Similar findings are expected from this project.

Fieldwork Results

The field investigations for this project were conducted on November 29, 2016 (Figures 5-9). The weather was amiable for the completion of the fieldwork, temperatures were in the mid-50s Fahrenheit. The project area includes an approximately 213 m (700 ft) long corridor that is 30.5 m (100 ft) wide. There were two factors that inhibited the sampling during the investigation including inundated conditions and significant disturbance in portions of the project area. The field investigations involved the excavation of shovel probes as the area was found to be severely disturbed. These investigations did not result in the identification of any cultural materials.

The project area is located on the East side of Holt Road approximately 0.75 miles South of Alkire Road in Jackson Township, Franklin County. Flat terrain dominates the project area as it appears to have been altered/graded for drainage purposes and to be able to mow it. The subject area is a small, narrow corridor that is bordered by a housing development to the north. Much of the disturbances appear to be affiliated with construction activity from the abutting housing development as well as grading for the school property. Grove City High School compound is located to the east of the project area. The existing electric line corridor that is being 'tapped' to Bolton Station runs in a north-south manner through the athletic area. The ground surface is overgrown with mixed grasses and with portions contain standing water.

Some shovel probes revealed disturbance of mixed topsoil and subsoil with aberrant gravel content (Figure 5); gravels are atypical of the soils in this area. The testing did not identify any intact topsoil/subsoil situations. The topsoil in this area is typically dark grayish brown (10YR4/2) silt loam with an underlying subsoil that is a dark yellowish brown (10YR4/6) silty clay loam; however, the soils that were identified are mottled strong brown (7.5YR4/4) clay loam and dark grayish brown (10YR4/2) silt loam and lack strata (Figure 9). There were two transects excavated in the project area with each being 7.5 m (25 ft) on either side of the centerline. The testing identified areas with standing water or disturbance; there were 16 shovel probes excavated during these investigations (Figure 5). This is not uncommon considering the two soil types in the project area that are classified as somewhat poorly drained to poorly drained. All the testing proved negative for cultural material and no sites were identified.

APE Definition and NRHP Determination

The APE is a term that must be applied on an individual project basis. The nature of the project or undertaking is considered in determining the APE. This may include areas that are off the property or outside of the actual project's boundaries to account for possible visual impacts. When construction is limited to underground activity, the APE may be contained within the footprint of the project area. The APE for this project includes the footprint of the project and a limited area surrounding it.

The undertaking includes the construction/installation of a small tap line from the proposed Bolton Station to an existing electric line. The project corridor is about 213 m (700 ft) long and is nearly surrounded by modern developments. The construction of this tap line is not considered to have an effect on any historic properties.

The surroundings include several modern developments. A high school campus is located directly to the south and east (including the ballfields), to the west is the Bolton Field Airport, and to the north is all modern residential developments. Upon verification in the field, it was found that no architectural resources that are 50 years of age or older are located within a direct line-of-sight of the project. The undertaking is considered to have no affect on historic properties as it has: 1) a limited area of potential effect; 2) the

construction activity is consistent with the surroundings; 3) there are no historic properties within what is regarded as being the area of potential effect (Figure 2).

Recommendations

In November of 2016, Weller & Associates, Inc. conducted a Phase I Cultural Resources Investigations for the Bolton Station 138kV Extension Project in Jackson Township, Franklin County, Ohio. These investigations involved visual inspection and subsurface methods of investigation. Some of the area has been extensively disturbed in places from former construction activities related to abutting, modern developments. These investigations did not result in the identification of archaeological sites. It is the opinion of Weller that no historic properties will be affected by the project. No further work is recommended for this undertaking.

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Figures

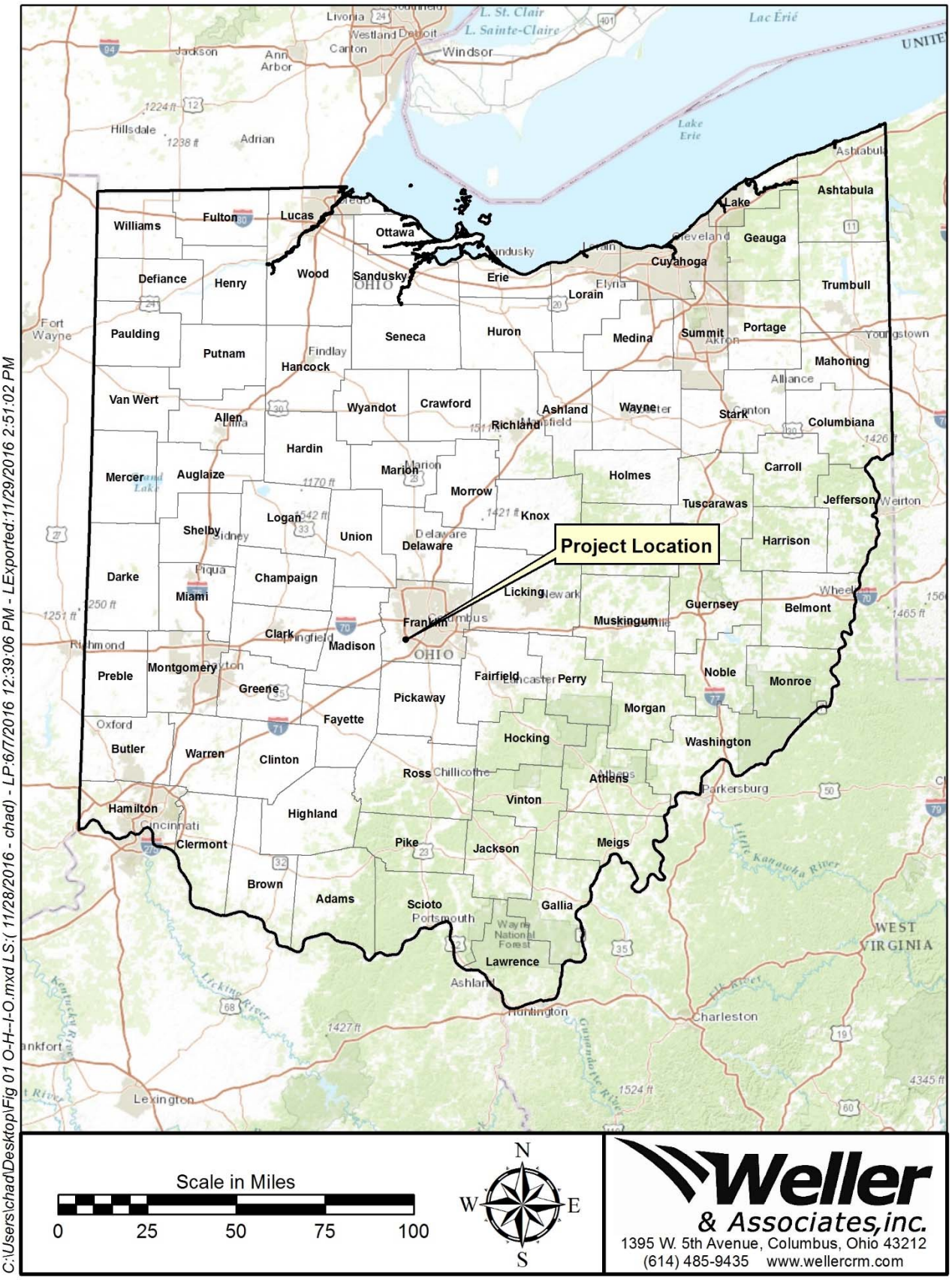

Figure 1. Political map of Ohio showing the approximate location of the project.

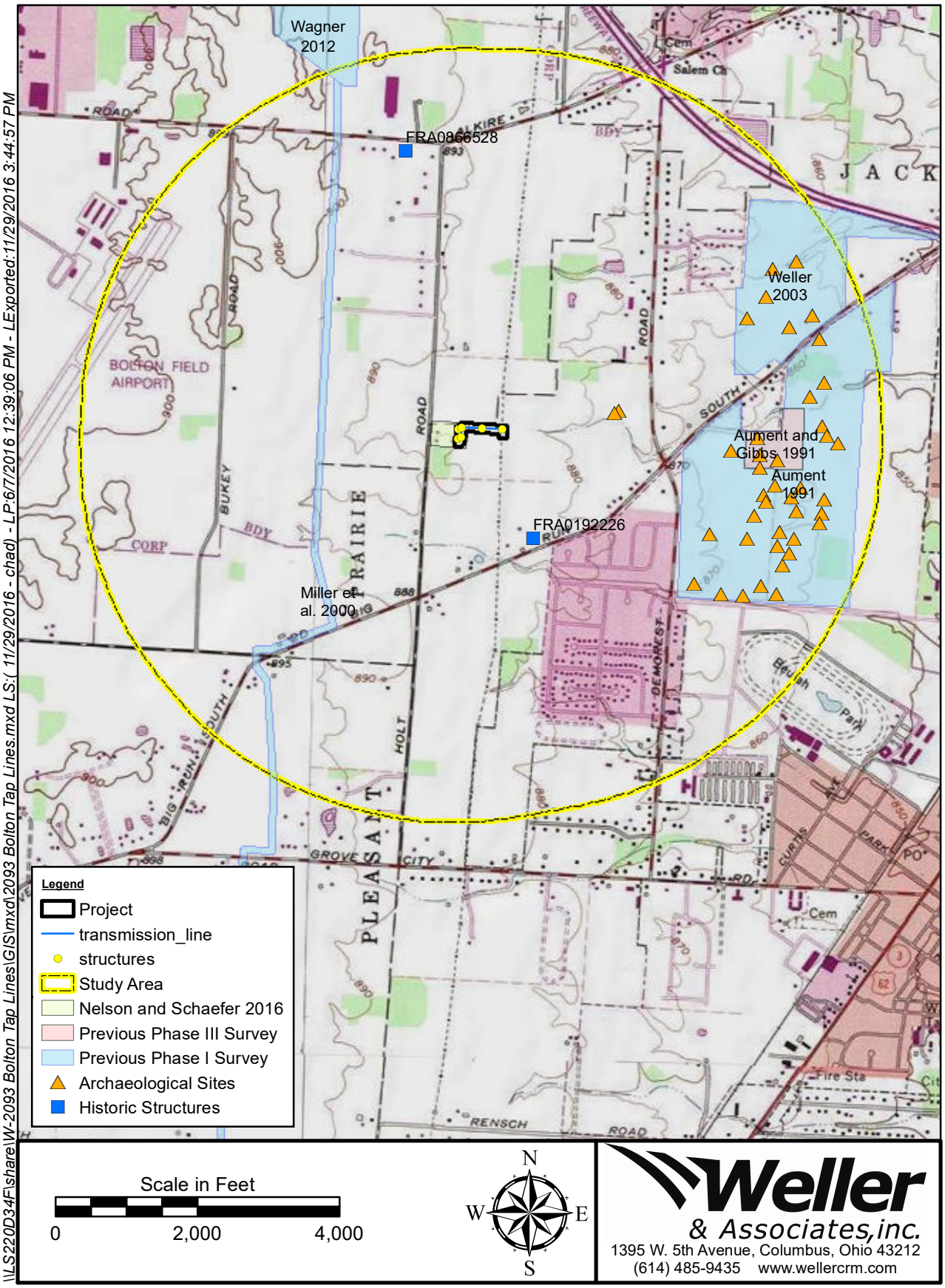

Figure 2. Portion of the USGS *1995 South Columbus, Ohio 7.5 Minute Series (Topographic)* map indicating the location of the project.

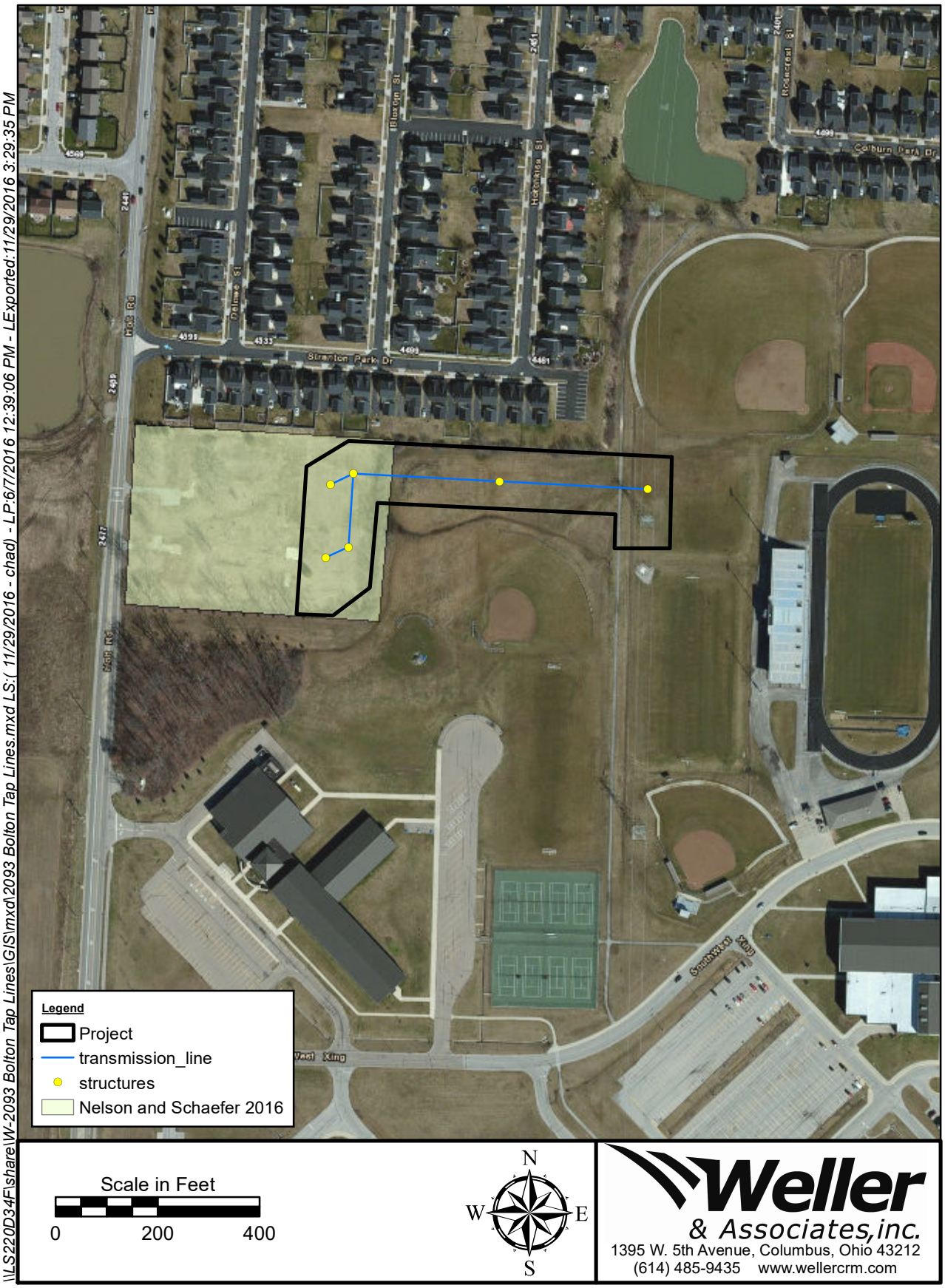

Figure 3. Aerial map indicaitng the location of the project.

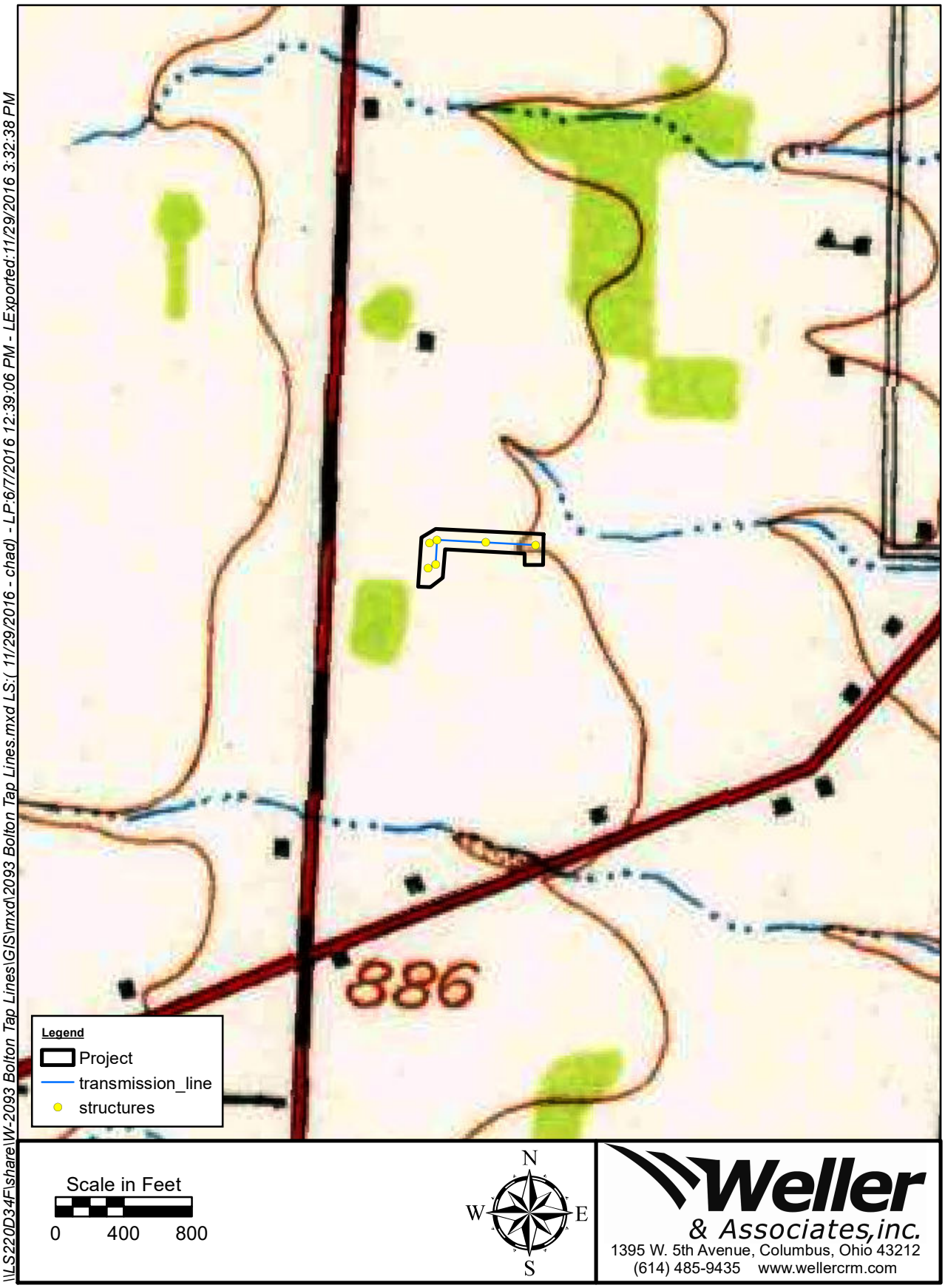

Figure 4. Portion of the USGS *1923 West Columbus, Ohio 15 Minute Series (Topographic)* map indicating the approximate location of the project.

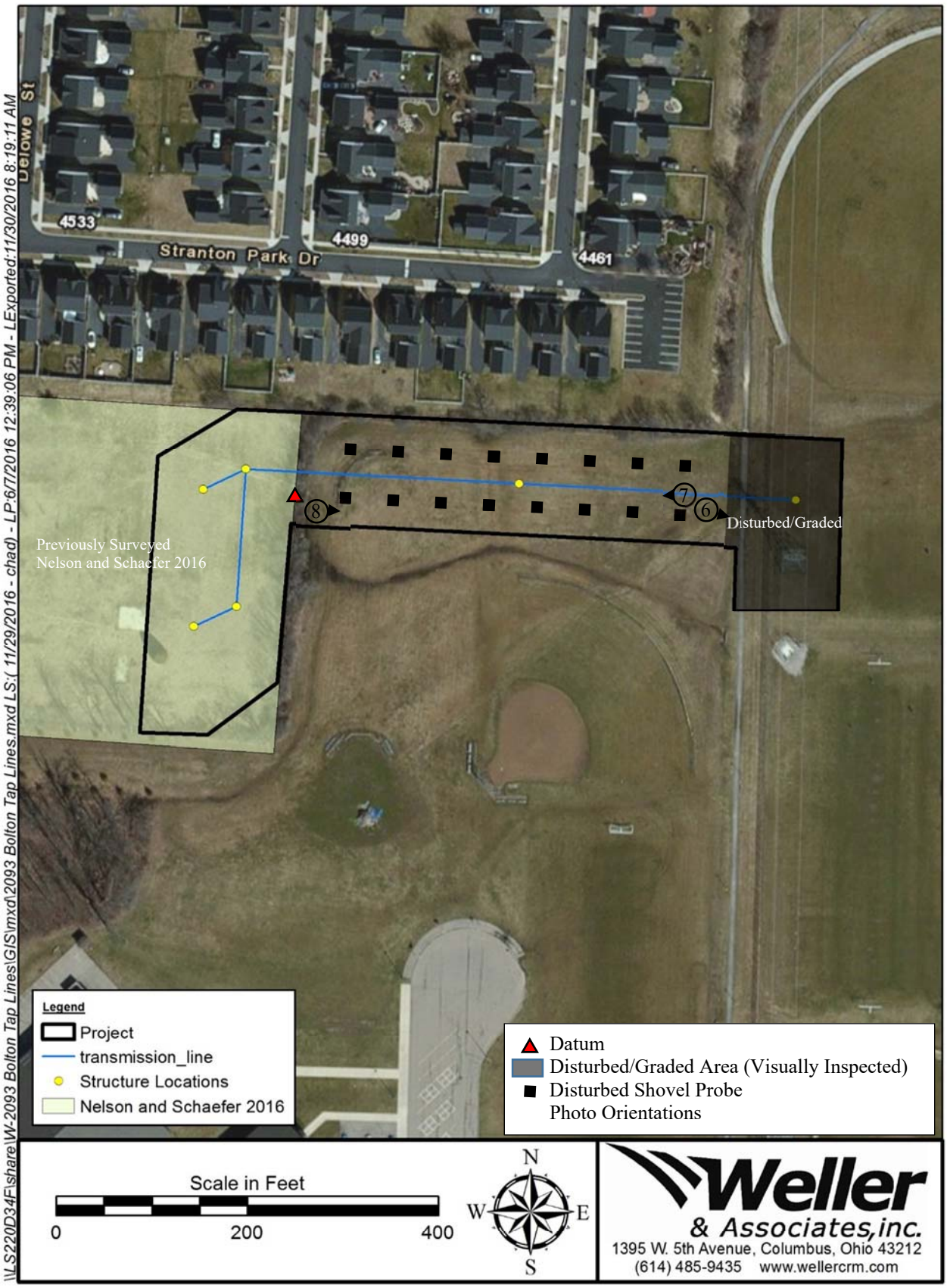

Figure 5. Fieldwork map indicating the results of testing and photo orientations.

Figure 6. View of the disturbed eastern portion of the project.

Figure 7. View of the shovel probed eastern portion of the project.

Figure 8. View of the shovel probed western portion of the project.

Figure 9. A typical disturbed shovel probe from the project.

Phase I Cultural Resources Investigations for the Proposed 1.6 ha (4 ac) Bolton Station, Jackson Township, Franklin County, Ohio

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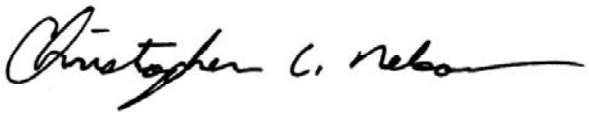

Christopher Nelson, P.I.

March 4, 2016

W-1901

i. Abstract

In March of 2016, Weller & Associates, Inc. conducted a Phase I cultural resource management investigation for the proposed Bolton Station located in Jackson Township, Franklin County, Ohio. This work was conducted under contract with American Electric Power for submittal to the Ohio Power Siting Board. The cultural resource management work involved in this project involved an archaeological survey and a limited architectural survey.

The station will be constructed on an approximate 1.6 ha (4 ac) parcel located on the east side of Holt Road approximately 0.75 miles south of Alkire Road. Some of the area has been extensively disturbed from former construction and demolition activities related to two former houses and their associated outbuildings that once stood on the property. The parcel consists of a grass covered lot, which has become fallow since disuse of the lot as residential property.

The literature review that was conducted for this project identified 41 archaeological sites within the study area. None of these are situated within or immediately adjacent to the project area as most are associated with larger surveys to the east of the project. The project area has not been the subject of any previous surveys. Only two previously recorded architectural resources are within the study area, but are not within a direct line-of-sight to the project.

The fieldwork for this project was conducted on March 2, 2016. The investigations did not result in the identification of archaeological sites. In addition, no architectural resources 50 years or older are within a direct line-of-sight of the project. It is the opinion of Weller that no historic properties will be affected by the project. No further work is recommended for this undertaking.

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Introduction

In March of 2016, Weller & Associates, Inc. (Weller) conducted a Phase I cultural resource management investigation for the proposed Bolton Station located in Jackson Township, Franklin County, Ohio (Figures 1-3). This work was conducted under contract with American Electric Power (AEP) for submittal to the Ohio Power Siting Board (OPSB). These investigations were conducted to identify any sites or properties and to evaluate them in a manner that is reflective of Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]). This report summarizes the results of the archaeological fieldwork and an intensive literature review. The report format and design is similar to that established in *Archaeology Guidelines* (Ohio State Historic Preservation Office [SHPO] 1994).

The station will be constructed on an approximate 1.6 ha (4 ac) parcel located on the east side of Holt Road approximately 0.75 miles south of Alkire Road. Some of the area has been extensively disturbed from former construction and demolition activities related to two former houses and their associated outbuildings that once stood on the property. The parcel consists of a grass covered lot, which has become fallow since disuse of the lot as residential property.

The fieldwork for this project was conducted on March 2, 2016. Christopher Nelson completed the literature review on March 2, 2016. Nelson, Craig Schaefer, Brittany Vance, and Matt Sanders completed the field investigations. Nelson served as the Principal Investigator.

Environmental Setting

Climate

Franklin County, not unlike all of Ohio, has a continental climate, with hot and humid summers and cold winters. About 97 cm (38 in) of precipitation fall annually on the county with the average monthly precipitation about 8 cm (3.2 in). January, February and October are the driest months, while July is the wettest month for Franklin County (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1980).

Physiography, Relief, and Drainage

Franklin County is located within several physiographic regions such as the Columbus Lowland region of Ohio, Galion Glaciated Low Plateau to the east, and the Darby Plain, which is found on the western portion of the county. The Columbus Lowland region includes the project area and relative lowlands that are surrounded in all directions by higher terrain and land that gently slopes towards the Scioto River (Brockman 1998). Hellbranch Run, a tributary of Darby Creek, which drains into the Scioto River, drains the project area.

Geology

Franklin County is comprised of late Wisconsinan-age till. The soils are predominately clayey with a higher concentration of lime. Below the till are lacustrine deposits that cap Paleozoic-aged rocks. The eastern portion of the county contains some shales and loess deposits. The underlying bedrock of the project area can be of either Mississippian- or Devonian-age material as it is at the interface of these two formations Brockman 1998; USDA, SCS 1980).

Soils

The project area is within the Crosby-Kokomo association, which are common to upland glacial till plains. This association generally consists of deep, nearly level and gently sloping, somewhat poorly drained and very poorly drained soils mainly in medium textured and moderately fine textured glacial till. There are two specific soils involved in this area (Table 1). There is nothing remarkable or unique pertaining to the soils that are present within the project area. These soils reflect flat to very gently undulating conditions (United States Department of Agriculture, Soils Conservation Service (USDA, SCS) 1980 (2015)].

Table 1. Soils in the Project.

Soil Symbol	Soil Name	% Slope	Location
CrA	Crosby silt loam	0-2	Upland Till Plains slight rises
Ko	Kokomo silty clay loam	-0-	Upland Till Plains low areas

Flora

There is great floral diversity in Ohio. This diversity is relative to the soils and the terrain that generally includes the till plain, lake plain, terminal glacial margins, and unglaciated plateau (Forsyth 1970). Three major glacial advances, including the Kansan, Illinoisan, and Wisconsinan, have affected the landscape of Ohio. The effects of the Wisconsin glaciation are most pronounced and have affected more than half of the state (Pavey et al. 1999).

Southwestern Ohio from about Cincinnati to Bellefontaine east to the Scioto River historically contained a very diverse floral landscape. This is an area where moraines from three glacial episodes are prevalent (Pavey et al. 1999). Forests in this area include elm-ash swamp, beech, oak-sugar maple, mixed mesophytic, prairie grasslands, mixed oak, and bottomland hardwoods (Core 1966; Gordon 1966, 1969). These forest types are intermingled with prairies being limited to the northern limits of this area mostly in Clark and Madison Counties.

Generally, beech forests are the most common variety through Ohio and could be found in all regions. Oak and hickory forests dominated the southeastern Ohio terrain and were found with patchy frequency across most of northern Ohio. Areas that were formerly open prairies and grasslands are in glacial areas, but are still patchy. These are

in the west central part of the state. Oak and sugar maple forests occur predominantly along the glacial terminal moraine. Elm-ash swamp forests are prevalent in glaciated areas including the northern and western parts of Ohio (Gordon 1966; Pavey et al. 1999).

The project is located at the boundary of a mixed oak forestation and mixed mesophytic forest regime (Gordon 1966).

Fauna

The upland forest zone offered a diversity of mammals to the prehistoric diet. This food source consisted of white-tailed deer, black bear, Eastern cottontail rabbit, opossum, a variety of squirrels, as well as other less economically important mammals. Several avian species were a part of the upland prehistoric diet as well (i.e. wild turkey, quail, ruffed grouse, passenger pigeon, etc.). The lowland zone offered significant species as well. Raccoon, beaver, and muskrat were a few of the mammals, while wood duck and wild goose were the economically important birds. Fishes and shellfish were also an integral part of the prehistoric diet. Ohio muskellunge, yellow perch, white crappie, long nose gar, channel catfish, pike, and sturgeon were several of the fish, whereas, the Ohio naiad mollusc, butterfly's shell, long solid, common bullhead, knob rockshell, and cod shell were the major varieties of shellfish. Reptiles and amphibians, such as several varieties of snakes, frogs, and turtles, were also part of the prehistoric diet (Trautman 1981; Lafferty 1979; Mahr 1949).

Cultural Setting

The first inhabitants of Ohio were probably unable to enter this land until the ice sheets of the Wisconsin glacier melted around 14,000 B.C. Paleoindian sites are considered rare due to the age of the sites and the effects of land altering activities such as erosion. Such sites were mostly used temporarily and thus lack the accumulation of human occupational deposits that would have been created by frequent visitation. Paleoindian artifact assemblages are characteristic of transient hunter-gatherer foraging activity and subsistence patterns. In Ohio, major Paleoindian sites have been documented along large river systems and near flint outcrops in the Unglaciated Plateau (Cunningham 1973). Otherwise, Paleoindian sites in the glaciated portions of Ohio are encountered infrequently and are usually represented by isolated finds or open air scatters.

The Paleoindian period is characterized by tool kits and gear utilized in hunting Late Pleistocene megafauna and other herding animals including but not limited to short-faced bear, barren ground caribou, flat-headed peccary, bison, mastodon, giant beaver (Bamforth 1988; Brose 1994; McDonald 1994). Groups have been depicted as being mobile and nomadic (Tankersley 1989); artifacts include projectile points, multi-purpose unifacial tools, burins, gravers, and spokeshaves (Tankersley 1994). The most diagnostic artifacts associated with this period are fluted points that exhibit a groove or channel positioned at the base to facilitate hafting. The projectiles dating from the late

Paleoindian period generally lack this trait; however, the lance form of the blade is retained and is often distinctive from the following Early Archaic period (Justice 1987).

The Archaic period has been broken down into three sub-categories, including the Early, Middle, and Late Archaic. During the Early Archaic period (ca. 10,000-8000 B.P.), the environment was becoming increasingly arid as indicated by the canopy (Shane 1987). This period of dryness allowed for the exploitation of areas that were previously inaccessible or undesirable. The Early Archaic period does not diverge greatly from the Paleoindian regarding the type of settlement. Societies still appear to be largely mobile with reliance on herding animals (Fitting 1963). For these reasons, Early Archaic artifacts can be encountered in nearly all settings throughout Ohio. Tool diversity increased at this time including hafted knives that are often re-sharpened by the process of beveling the utilized blade edge and intense basal grinding (Justice 1987). There is a basic transition from lance-shaped points to those with blades that are triangular. Notching becomes a common hafting trait. Another characteristic trait occurring almost exclusively in the Early and Middle Archaic periods is basal bifurcation and large blade serrations. Tool forms begin to vary more and may be a reflection of differential resource exploitation. Finished tools from this period can include bifacial knives, points, drills/perforators, utilized flakes, and scrapers.

The Middle Archaic period (8000-6000 B.P.) is poorly known or understood in archaeological contexts within Ohio. Some (e.g., Justice 1987) regard small bifurcate points as being indicative of this period. Ground stone artifacts become more prevalent at this time. Other hafted bifaces exhibit large side notches with squared bases, but this same trait can extend back to the Paleoindian period. The climate at this time is much like that of the modern era. Middle Archaic period subsistence tended to be associated with small patch foraging that involved a consistent need for mobility with a shift towards stream valleys (Stafford 1994). Sites encountered from this time period throughout most of Ohio tend to be lithic scatters or isolated finds. The initial appearance of regional traits may be apparent at this time.

The Late Archaic period in Ohio (ca 6000-3000 B.P.) diverges from the previous periods in many ways. Preferred locations within a regional setting appear to have been repeatedly occupied. The more intensive and repeated occupations often resulted in the creation of greater social and material culture complexity. The environment at this time is warmer and drier. Most elevated landforms in northeastern Ohio have yielded Archaic artifacts (Prufer and Long 1986: 7), and the same can be stated for the remainder of Ohio.

Various artifacts are diagnostic of the Late Archaic period. Often, burial goods provide evidence that there was some long-distance movement of materials, while lithic materials used in utilitarian assemblages are often from a local chert outcrop. There is increased variation in projectile point styles that may reflect regionalism. Slate was often used in the production of ornamental artifacts. Ground and polished stone artifacts reached a high level of development. This is evident in such artifacts as grooved axes, celts, bannerstones, and other slate artifacts.

It is during the Terminal Archaic period (ca 3500-2500 B.P.) that extensive and deep burials are encountered. Cultural regionalism within Ohio is evident in the presence of Crab Orchard (southwest), Glacial Kame (northern), and Meadowood (central to Northeastern). Along the Ohio River, intensive occupations have been placed within the Riverton phase. Pottery makes its first appearance during the Terminal Late Archaic.

The Early Woodland period (ca 3000-2100 B.P.) in Ohio is often associated with the Adena culture and the early mound builders (Dragoo 1976). Early and comparably simple geometric earthworks first appear with mounds more spread across the landscape. Pottery at this time is thick and tempered with grit, grog, or limestone; however, it becomes noticeably thinner towards the end of the period. There is increased emphasis on gathered plant resources, including maygrass, chenopodium, sunflower, and squash. Habitation sites have been documented that include structural evidence. Houses that were constructed during this period were circular, having a diameter of up to 18.3 m (Webb and Baby 1963) and often with paired posts (Cramer 1989). Artifacts dating from this period include leaf-shaped blades with parallel to lobate hafting elements, drilled slate pieces, ground stone, thick pottery, and increased use of copper. Early Woodland artifacts can be recovered from every region of Ohio.

The Middle Woodland period (ca 2200-1600 B.P.) is often considered to be equivalent with the Hopewell culture. The largest earthworks in Ohio date from this period. There is dramatic increase in the appearance of exotic materials that appear most often in association with earthworks and burials. Artifacts representative of this period include thinner, grit-tempered pottery, dart-sized projectile points (Lowe Flared, Steuben, Snyders, and Chesser) [Justice 1987], exotic materials (mica, obsidian, and marine shell, etc.). The points are often thin, bifacially beveled, and have flat cross sections. There seems to have been a marked increase in the population as well as increased levels of social organization. Middle Woodland sites seem to reflect a seasonal exploitation of the environment. There is a notable increase in the amount of Eastern Agricultural Complex plant cultigens, including chenopodium, knotweed, sumpweed, and little barley. This seasonal exploitation may have followed a scheduled resource extraction year in which the populations moved camp several times per year, stopping at known resource extraction loci. Middle Woodland land use appears to center on the regions surrounding earthworks (Dancey 1992; Pacheco 1996); however, there is evidence of repeated occupation away from earthworks (Weller 2005a). Household structures at this time vary with many of them being squares with rounded corners (Weller 2005a). Exotic goods are often attributed to funerary activities associated with mounds and earthworks. Utilitarian items are more frequently encountered outside of funerary/ritual contexts. The artifact most diagnostic of this period is the bladelet, a prismatic and thin razor-like tool, and bladelet cores. Middle Woodland remains are more commonly recovered from central Ohio south and lacking from most areas in the northern and southeastern part of the state.

The Late Woodland period (ca A.D. 400-900) is distinct from the previous period in several ways. There appears to be a population increase and a more noticeable aggregation of groups into formative villages. The villages are often positioned along large streams, on terraces, and were likely seasonally occupied (Cowan 1987). This

increased sedentism was due in part to a greater reliance on horticultural garden plots, much more so than in the preceding Middle Woodland period. The early Late Woodland groups were growing a wide variety of crop plants that are collectively referred to as the Eastern Agricultural Complex. These crops included maygrass, sunflower, and domesticated forms of goosefoot and sumpweed. This starch and protein diet was supplemented with wild plants and animals. Circa A.D. 800 to 1000, populations adopted maize agriculture, and around this same time, shell-tempered ceramics appear. Other technological innovations and changes during this period included the bow and arrow and changes in ceramic vessel forms.

The Late Prehistoric period (ca A.D. 1000-1550) is distinctive from former periods. The Cole complex (ca A.D. 1000-1300) has been identified in central and south central Ohio. Sites that have been used to define the Cole complex include the W.S. Cole (33DL11), Ufferman (33DL12), and Decco (33DL28) sites along the Olentangy; the Zencor Village site, located along the Scioto River in southern Franklin County; and the Voss Mound site (33FR52), located along the Big Darby Creek in southwestern Franklin County. It has been suggested that this cultural manifestation developed out of the local Middle Woodland cultures and may have lasted to be contemporaneous with the Late Prehistoric period (Barkes 1982; Baby and Potter 1965; Potter 1966). Cole is a poorly defined cultural complex as its attributes are a piecemeal collection gathered from various sites. Some have suggested that it may be associated with the Fort Ancient period (Pratt and Bush 1981). Artifacts recovered from sites considered as Cole include plain and cordmarked pottery, triangular points, Raccoon Notched points, chipped slate discs, rectangular gorgets, and chipped stone celts. The vessels often have a globular form with highly variable attributes and rim treatment. There have been few structures encountered from this period, but those that have are typically rounded or circular (Pratt and Bush 1981; Weller 2005b).

Monongahela phase sites date to the Late Prehistoric to Contact period in eastern Ohio. Monongahela sites are typically located on high bottomlands near major streams, on saddles between hills, and on hilltops, sometimes a considerable distance from water sources. Most of these sites possessed an oval palisade, which surrounded circular house patterns. Burials of adults are usually flexed and burial goods are typically ornamental. A large variety of stone and bone tools are found associated with Monongahela sites. Monongahela pottery typically is plain or cordmarked with a rounded base and a gradually in-sloping shoulder area. Few Euro-American trade items have been found at Monongahela sites (Drooker 1997).

Protohistoric to Settlement

By the mid-1600s, French explorers traveled through the Ohio country as trappers, traders, and missionaries. They kept journals about their encounters and details of their travels. These journals are often the only resource historians have regarding the early occupants of seventeenth century Ohio. The earliest village encountered by the explorers in 1652 was a Tionontati village located along the banks of Lake Erie and the Maumee River. Around 1670, it is known that three Shawnee villages were located along

the confluence of the Ohio River and. the Little Miami River. Because of the Iroquois Wars, which continued from 1641-1701, explorers did not spend much time in the Ohio region, and little else is known about the natives of Ohio during the 1600s. Although the Native American tribes of Ohio may have been affected by the outcome of the Iroquois Wars, no battles occurred in Ohio (Tanner 1987).

French explorers traveled extensively through the Ohio region from 1720-1761. During these expeditions, the locations of many Native American villages were documented. In 1751, a Delaware village known as Maguck existed near present-day Chillicothe. In 1758, a Shawnee town known as 'Lower Shawnee 2' existed at the same location. The French also documented the locations of trading posts and forts, which were typically established along the banks of Lake Erie or the Ohio River (Tanner 1987).

While the French were establishing a claim to the Ohio country, many Native Americans were also entering new claims to the region. The Shawnee were being forced out of Pennsylvania because of English settlement along the eastern coast. The Shawnee created a new headquarters at Shawnee Town, which was located at the mouth of the Scioto River. This headquarters served as a way to pull together many of the tribes which had been dispersed because of the Iroquois Wars (Tanner 1987).

Warfare was bound to break out as the British also began to stake claims in the Ohio region by the mid-1700s. The French and Indian War (1754-1760) affected many Ohio Native Americans; however, no battles were recorded in Ohio (Tanner 1987). Although the French and Indian War ended in 1760, the Native Americans continued to fight against the British explorers. In 1764, Colonel Henry Bouquet led a British troop from Fort Pitt, Pennsylvania to near Zanesville, Ohio.

In 1763, the Seven Years' War fought between France and Britain, also known as the French and Indian War ended with The Treaty of Paris. In this Peace of Paris, the French ceded their claims in the entire Ohio region to the British. When the American Revolution ended with the Second Treaty of Paris in 1783, the Americans gained the entire Ohio region from the British; however, they designated Ohio as Indian Territory. Native Americans were not to move south of the Ohio River but Americans were encouraged to head west into the newly acquired land to occupy and govern it (Tanner 1987).

By 1783, Native Americans had established fairly distinct boundaries throughout Ohio. The Shawnee tribes generally occupied southwest Ohio, while the Delaware tribes stayed in the eastern half of the state. Wyandot tribes were located in north-central Ohio, and Ottawa tribes were restricted to northeast Ohio. There was also a small band of Mingo tribes in eastern Ohio along the Ohio River, and there was a band of Mississauga tribes in northeastern Ohio along Lake Erie. The Shawnee people had several villages within Ross County along the Scioto River (Tanner 1987). Although warfare between tribes continued, it was not as intense as it had been in previous years. Conflicts were contained because boundaries and provisions had been created by earlier treaties.

In 1795, the Treaty of Greenville was signed as a result of the American forces defeat of the Native American forces at the Battle of Fallen Timbers. This allocated the northern portion of Ohio to the Native Americans, while the southern portion was opened for Euro-American settlement. Although most of the battles which led up to this treaty did not occur in Ohio, the outcome resulted in dramatic fluctuations in the Ohio region. The Greenville Treaty line was established, confining all Ohio Native Americans to northern Ohio, west of the Tuscarawas River (Tanner 1987).

Ohio Native Americans were again involved with the Americans and the British in the War of 1812. Unlike the previous wars, many battles were fought in the Ohio country during the War of 1812. By 1815, peace treaties began to be established between the Americans, British, and Native Americans. The Native Americans lost more and more of their territory in Ohio. By 1830, the Shawnee, Ottawa, Wyandot, and Seneca were the only tribes remaining in Ohio. These tribes were contained on reservations in northwest Ohio. By the middle 1800s, the last of the Ohio Native Americans signed treaties and were removed from the Ohio region.

Franklin County History

Lucas Sullivant was the first American to survey Franklin County and was the first settler to build a cabin in August 1797 in what would become Franklinton, later the state capitol of Columbus. Sullivant laid out the town of Franklinton that same year. Much of Central Ohio was part of the U.S. Military Lands which also included the Refugee Tract. The state legislature organized Franklin County on April 30, 1803, although its borders changed many times until 1857. The county's name honors Benjamin Franklin. Most of the early settlers of Franklin County were from Pennsylvania, Virginia, and New England. Immigrants in the late 1800s and early 1900s were mostly Germans, Italians, and Russians (Lee 1892; Martin 1858; Rickey 1983; Vesey 1901).

Early settlers of Franklin County settled in rich bottomlands of the Scioto and Olentangy Rivers, the Big Darby, Walnut, Big Walnut, and Alum Creeks. Most of the earliest settlers were farmers producing corn, wheat, cattle, and hogs. Agriculture remained a major source of income for the county until 1930 when urban expansion began. Today, with Columbus engulfing most of the county, little land is agricultural (Dodds 1952; Lee 1892; Martin 1858; Moore 1930; Rickey 1983).

During the late eighteenth century and early nineteenth century, trade with the Native Americans was an important source of income. The town of Worthington was platted and settled by 1803 and Dublin in 1818. In 1811, Worthington had a woolen mill. By 1815, several gristmills, sawmills, and distilleries were scattered along the rivers and streams throughout Franklin County. The work on the National Road (today US 40), which passes through Franklin County, came to completion in 1834. The Ohio Canal that passed through the southern portion of the county also operated in the 1830s. In 1850, the Columbus and Xenia Railroad was the first railroad to pass through the county. All of these modes of transportation improved the economy of the region and stimulated the

development of businesses and industries during the late 1800s and early 1900s. The improved transportation and economy led to population increases and as a result, new communities developed as the old ones expanded. Between 1830 and 1880, the following communities grew up in Franklin County: Groveport, Grove City, New Albany, Reynoldsburg, Hilliard, Gahanna, and Lockbourne (Ohio History Central 2005; Dodds 1952; Lee 1892; Martin 1858; Moore 1930; Rickey 1983; Vesey 1901).

Various businesses and industries developed in the different communities of Franklin County during the late 1800s. Columbus was the center of the economic development. After becoming the state capital in 1812, state political agencies also located in the city. Quarries were an important early industry for the county. In 1880, a sandstone quarry opened near Blacklick followed by the Marble Cliff quarries in Norwich Township. The twentieth century has seen the continued development and expansion of Columbus and surrounding urban areas. Suburbs dominate the landscape and the construction of freeways such as I-70, I-71, I-270, I-670, US 33, SR 161, SR 315, and SR 104 has eased the flow of transportation to and from the capitol further stimulating their growth (Ohio History Central 2005; Dodds 1952; Moore 1930; Rickey 1983; Vesey 1901).

Jackson Township History

After the Battle of New Orleans ended in January of 1815, General Andrew Jackson was a national hero. Mere months later, the people of Franklin County, in partitioning Franklin Township, decided to honor the general by naming the new township of fertile farmland after him (Taylor 1909). This township is located in the southwestern corner of Franklin County inside Pleasant Township and west of the Scioto River.

This organization took place just ten years after the first settler came to Jackson Township, a man named Hugh Grant. Grant was initially from Maryland, moved to Pittsburgh, married, and in 1804, the Grant family moved to Ross County. Soon after, Grant purchased 450 acres in what was to become Jackson Township. Without knowing the proper location of his parcel, he set out to settle his property in 1805 and ended up squatting along the Scioto River for which he was killed. His widow had the 450-acre plot located and lived there until 1836 (Moore 1930, Taylor 1909, and Vesey 1901). A vast list of other early settlers can be found in any of the formal histories of the area.

The early industry was typical of the region. Mills and farms, general stores and blacksmiths as well as a drain tile factory and a wagon factory had emerged by the middle point of the century (Moore 1930 and Vesey 1901). The first school was developed the year of township organization. However, the first post office did not appear until W. F. Breck laid out Grove City in the summer of 1852. Mr. Breck was the first postmaster of Jackson Township, holding the office until 1857. The Scioto Chapel was the first church erected in 1812 with several other churches of equally several denominations raising formal worship sites in the late 1850s and into the 1860s. Dr.

Joseph Bullen arrived in 1852 and worked as the township's first physician until his death in 1878 (Caldwell 1872, Taylor 1909, Moore 1930, and Vesey 1901).

The Township grew slowly, partially because of a lack of decent roadways. This was true until several good turnpikes arrived and facilitated easier travel and stimulated trade. Cottage Mille Pike, Franklin Pike, Harrisburg Pike, and Jackson Pike were these early roads (Moore 1930, and Vesey 1901). Business transportation also grew with the addition of the Baltimore & Ohio Railroad. Another step of the unhurried growth was the move of the Columbus Driving Park Association from Columbus to Grove City after the turn of the 20th Century. This park provided horse and dog races which bolstered the local economy despite making a "change in its tone" (Moore 1930).

Eventually, with the development of modern roadways and particularly I-71, Jackson Township began to grow more rapidly. Farming is still a productive venture in much of the township; however, this mode of existence is quickly giving way to multiple unit housing developments, industry, and commerce. This area is contained within the urban sprawl of Columbus, as Columbus pushes ever closer to the Pickaway County line.

Research Design

The purpose of a Phase I survey is to locate and identify cultural resources that will be affected by the planned development. This includes archaeological deposits as well as architectural properties that are older than 50 years. Once these resources are identified and sampled, they are evaluated for their eligibility or potential eligibility to the NRHP. These investigations are directed to answer or address the following questions:

1) Did the literature review reveal anything that suggests the project area had been previously surveyed, and what is the relationship of previously recorded properties to the project area?
2) Are cultural resources likely to be encountered in the project area?
3) Will the planned undertaking affect any archaeological or architectural properties?
4) Will any NRHP eligible sites or properties be affected by the planned development?

Archaeological Field Methods

The survey conducted within the project area was generally limited to subsurface testing methods and visual inspection. Surface collection was not possible due to the ground cover.

Shovel test unit excavation. Shovel test units were placed at 15-m intervals where adequate surface visibility was lacking. These measure 50 cm on a side and are excavated to 5 cm below the topsoil/subsoil interface. Individual shovel test units are documented regarding their depth, content and color (Munsell). Wherever sites are encountered, Munsell color readings are taken per shovel test unit. All of

the undisturbed soil matrices from shovel test units are screened using .6 cm hardware mesh. When sites are identified, additional shovel test units will be excavated at 7.5 m intervals extending on grid and in the four cardinal directions from the positive locations.

Visual inspection. Locations where cultural resources were not expected, such as disturbed areas and wet areas were walked over and visually inspected. Rodent-exposed areas were inspected for cultural materials. This method was used to verify the absence or likelihood of any cultural resources being located in these areas. This method was also utilized to document the general terrain and the surrounding area.

The application of the resulting field survey methods was documented in field notes, field maps, and project plan maps.

Curation

No artifacts 50 years of age or older were recovered during the investigations. Notes and maps affiliated with this project will be maintained at Weller & Associates, Inc. files.

Literature Review

The literature review study area is defined as a 1.6 km (1.0 mile) radius from the boundaries of the project (Figure 2 and 3). In conducting the literature review, the following resources were consulted at SHPO, at the Columbus Metropolitan Library, at the State Library of Ohio, and from various online resources:

1) *An Archaeological Atlas of Ohio* (Mills 1914);
2) SHPO United States Geological Survey (USGS) 7.5' series topographic maps;
3) Ohio Archaeological Inventory (OAI) files;
4) Ohio Historic Inventory (OHI) files;
5) National Register of Historic Places (NRHP) files;
6) SHPO consensus Determinations of Eligibility (DOE) files;
7) SHPO CRM/contract archaeology files; and
8) Franklin County atlases, histories, historic USGS 15'series topographic map(s), and current USGS 7.5' series topographic map(s).

A review of *An Archaeological Atlas of Ohio* (Mills 1914) was conducted. The *Atlas* did not indicate any resources situated within or adjacent to the project area.

A review of the SHPO topographic maps indicated that there are 41 sites located in the study area. None of these sites are located within or immediately adjacent to the project area (Table 2). All but one of these sites are associated with prehistoric period activity; the remaining site consists of a historic period scatter.

Table 2. Previously Recorded OAIs Located in the Study Radius.			
Site # (33…)	**Site Type**	**Temporal Association**	**In or Adjacent to Project**
FR0887	Lithic scatter	Late Archaic	NO
FR0888	Lithic scatter	Late Archaic	NO
FR0889	Lithic scatter	Unassigned Archaic	NO
FR0890	Lithic scatter	Unassigned Prehistoric	NO
FR0891	Lithic scatter	Early Archaic	NO
FR0892	Lithic scatter	Unassigned Prehistoric	NO
FR0893	Lithic scatter	Unassigned Prehistoric	NO
FR0894	Lithic scatter	Unassigned Prehistoric	NO
FR0895	Lithic scatter	Paleo, Early Archaic, Middle Woodland	NO
FR0896	Lithic scatter	Late Woodland	NO
FR0897	Lithic scatter	Unassigned Prehistoric	NO
FR0898	Lithic scatter	Unassigned Prehistoric	NO
FR0899	Lithic scatter	Unassigned Prehistoric	NO
FR0900	Lithic scatter	Unassigned Prehistoric	NO
FR0901	Lithic scatter	Early Archaic, Late Archaic, Early Woodland	NO
FR0902	Lithic scatter	Unassigned Prehistoric	NO
FR0903	Lithic scatter	Unassigned Prehistoric	NO
FR0904	Lithic scatter	Unassigned Prehistoric	NO
FR0905	Lithic scatter	Unassigned Prehistoric	NO
FR0906	Lithic scatter	Unassigned Prehistoric	NO
FR0907	Lithic scatter	Unassigned Prehistoric	NO
FR0908	Lithic scatter	Unassigned Prehistoric	NO
FR0909	Lithic scatter	Unassigned Prehistoric	NO
FR0910	Lithic scatter	Unassigned Prehistoric	NO
FR0911	Lithic scatter	Unassigned Prehistoric	NO
FR0912	Lithic scatter	Unassigned Prehistoric	NO
FR0913	Lithic scatter	Unassigned Prehistoric	NO
FR0914	Lithic scatter	Unassigned Prehistoric	NO
FR0915	Lithic scatter	Unassigned Prehistoric	NO
FR0920	Lithic scatter	Unassigned Prehistoric	NO
FR0922	Lithic scatter	Unassigned Prehistoric	NO
FR0923	Lithic scatter	Unassigned Prehistoric	NO
FR0924	Lithic scatter	Late Woodland	NO
FR2170	Lithic scatter	Middle Archaic	NO
FR2171	Lithic scatter	Unassigned Prehistoric	NO
FR2172	Lithic scatter	Unassigned Prehistoric	NO
FR2173	Lithic scatter	Unassigned Prehistoric	NO
FR2175	Lithic scatter	Unassigned Prehistoric	NO
FR2177	Historic scatter	Unassigned Prehistoric	NO
FR2350	Lithic scatter	Unassigned Prehistoric	NO
FR2351	Lithic scatter	Unassigned Prehistoric	NO

The Ohio Historic Inventory (OHI) files indicated that there are two previously recorded OHI resources in the study area. These include OHI FRA0192226 (Charles

Koogler Farm) and FRA0866528 (Egelhoff Residence). Neither of these are within or near the project area, however, the Charles Koogler Farm was confirmed to be demolished as it was at the location of the high school campus to the south of the project.

A review of the NRHP files and determination of eligibility files indicated that there are no resources within or adjacent the project area. There are no such resources located in the study area.

There have been five CRM surveys conducted within the study area, none of which incorporated any aspects of the current project (Aument 1991; Duerksen et all. 2000; Weller 2003; Wagner 2012; Aument and Gibbs 1991). Four of the surveys conducted were Phase I level reconnaissance surveys. Aument and Gibbs (1991) conducted a Phase III data recovery on sites 33FR895 and 33FR901. Neither of these are within or near the current project area.

Cartographic/atlas resources were reviewed for the project area. According to the *Atlas of Franklin County, Ohio* (Lake 1875) the property was owned by Elisa White. The USGS *1900 West Columbus 15 Minute Series (Topographic)* map indicates no buildings within the project area (Figure 4). There are no residences indicated in the vicinity of the project area.

Evaluation of Research Questions 1 and 2

There were two questions presented in the research design that will be addressed at this point. These are:

1) Did the literature review reveal anything that suggests the project area had been previously surveyed?
2) Are cultural resources likely to be encountered in the project area?

The project area has not been the subject of any previous investigations. There are several CRM surveys conducted within the study area. Mills (1914) did not identify sites in the immediate vicinity. Given the location of the project area and the presence of sites in the neighboring and similar terrain, it seems plausible that archaeological deposits might be present if there are intact soils.

Fieldwork Results

The field investigations for this project were conducted on March 2, 2016 (Figures 5-15). The weather was amiable for the completion of the fieldwork. The project area is approximately a 4-acre parcel that is the proposed location of the Bolton Station. Two factors inhibiting sampling during the investigation include inundated conditions and significant disturbance in portions of the project area.

The project area is located on the East side of Holt Road approximately 0.75 miles South of Alkire Road in Jackson Township, Franklin County. Flat terrain dominates the

project area. The project area is rectangular and is bordered by a housing development to the north. Holt Road defines the project's western boundary. The southern and eastern extents are defined by a tree line/hedgerow. Two mid-twentieth century houses and their associated structures, which once stood on the parcel, were demolished sometime between 2007 and 2009 based on aerial evidence. Concrete slab foundations and minor debris remain from the house's former locations (Figure 5 and 7). Gravel driveways connecting the foundations to Holt Road are still intact and create significant disturbance throughout portions of the parcel (Figure 5 and 6). The disturbed area is throughout the western and southcentral portions of the project (Figure 5). The ground surface is overgrown with mixed grasses and significant portions contain standing water.

Some shovel probes revealed disturbance of mixed topsoil and subsoil with heavy gravel content (Figure 5). The testing was limited to the southern and western portions of the project. Intact topsoil/subsoil was encountered, primarily in the southern and northwestern portion of the area. The topsoil in this area is dark grayish brown (10YR4/2) silt loam with an underlying subsoil that is a dark yellowish brown (10YR4/6) silty clay loam (Figure 12). Five transects of shovel tests were excavated with a total of twenty shovel tests and three shovel probes completed. The northwestern portion of the project area is located in a slight depression and is wholly inundated and unsuitable for shovel test excavation (Figure 5). This is not uncommon considering the two soil types in the project area that are classified as somewhat poorly drained to poorly drained. The landform for the adjacent modern development directly to the north of the project are built up slightly to avoid standing water issues and a small berm separates the nearest residences from the project area. All testing proved negative for cultural material and no sites were identified.

APE Definition and NRHP Determination

The APE is a term that must be applied on an individual project basis. The nature of the project or undertaking is considered in determining the APE. This may include areas that are off the property or outside of the actual project's boundaries to account for possible visual impacts. When construction is limited to underground activity, the APE may be contained within the footprint of the project area. The APE for this project includes the footprint of the project and a limited area surrounding it.

The undertaking includes the construction of a substation within the project area. The construction of the substation is not considered to have an effect on any historic properties.

The surroundings include several modern developments. A high school campus is located directly to the south and east (including the ballfields), to the west is the Bolton Field Airport, and to the north is all modern residential developments. Upon verification in the field, it was found that no architectural resources that are 50 years of age or older are located within a direct line-of-sight of the project. The undertaking is considered to have no affect on historic properties as it has: 1) a limited area of potential effect; 2) the

construction activity is consistent with the surroundings; 3) there are no historic properties within what is regarded as being the area of potential effect (Figure 2).

Recommendations

In March of 2016, Weller completed a Phase I Cultural Resources Management Investigation for the proposed Bolton Station located in Jackson Township, Franklin County, Ohio. The station will be constructed on an approximate 1.6 ha (4 ac) parcel located on the east side of Holt Road approximately 0.75 miles south of Alkire Road. Some of the area has been extensively disturbed in places from former construction and demolition activities related to two former houses with associated outbuildings that once stood on the property. These investigations did not result in the identification of archaeological sites. It is the opinion of Weller that no historic properties will be affected by the project. No further work is recommended for this undertaking.

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Figures

Figure 1. Political map of Ohio showing the approximate location of the project.

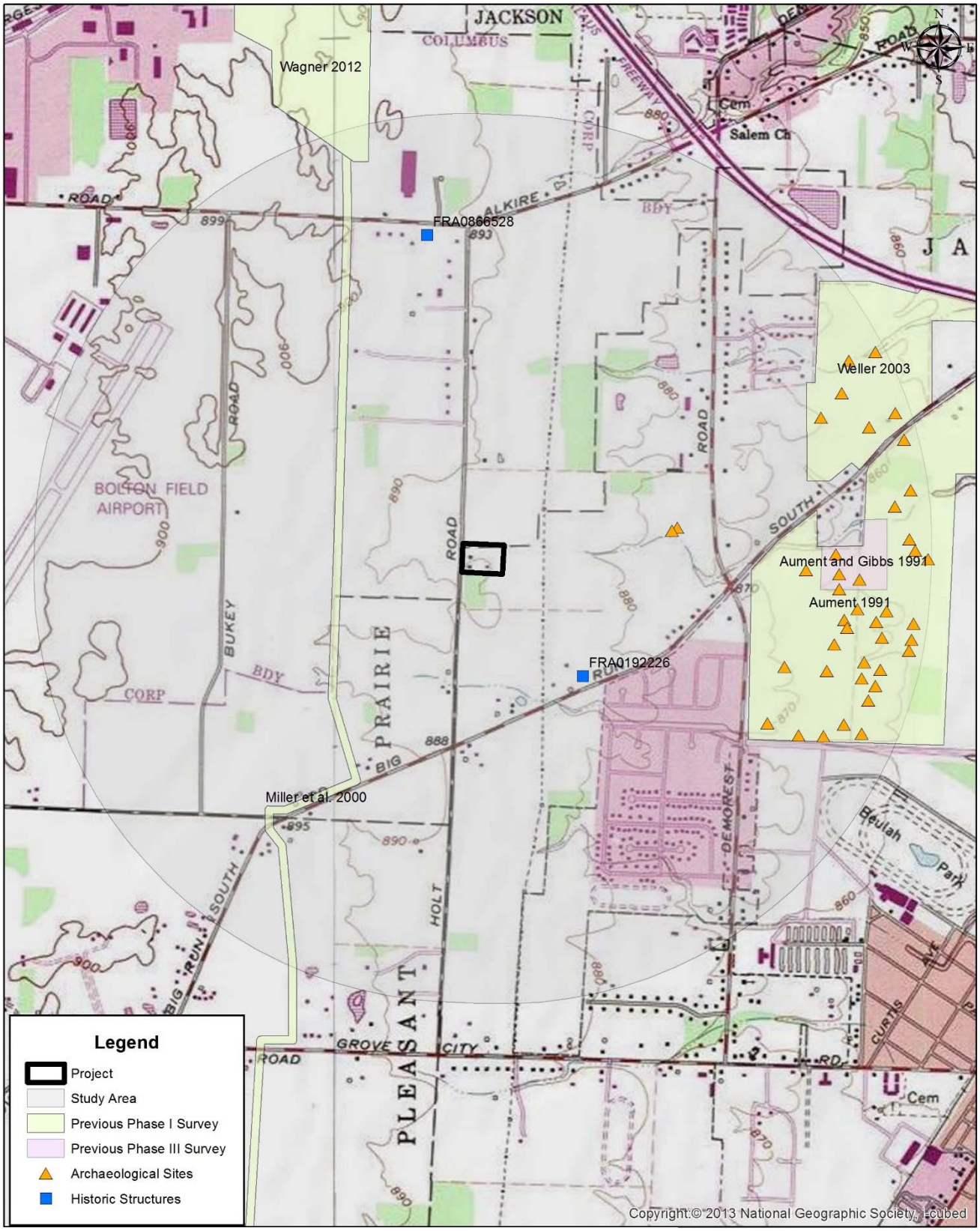

Figure 2. Portion of the USGS *1965 Southwest Columbus, Ohio 7.5 Minute Series (Topographic)* map indicating the location of the project and previously recorded resources in the study area.

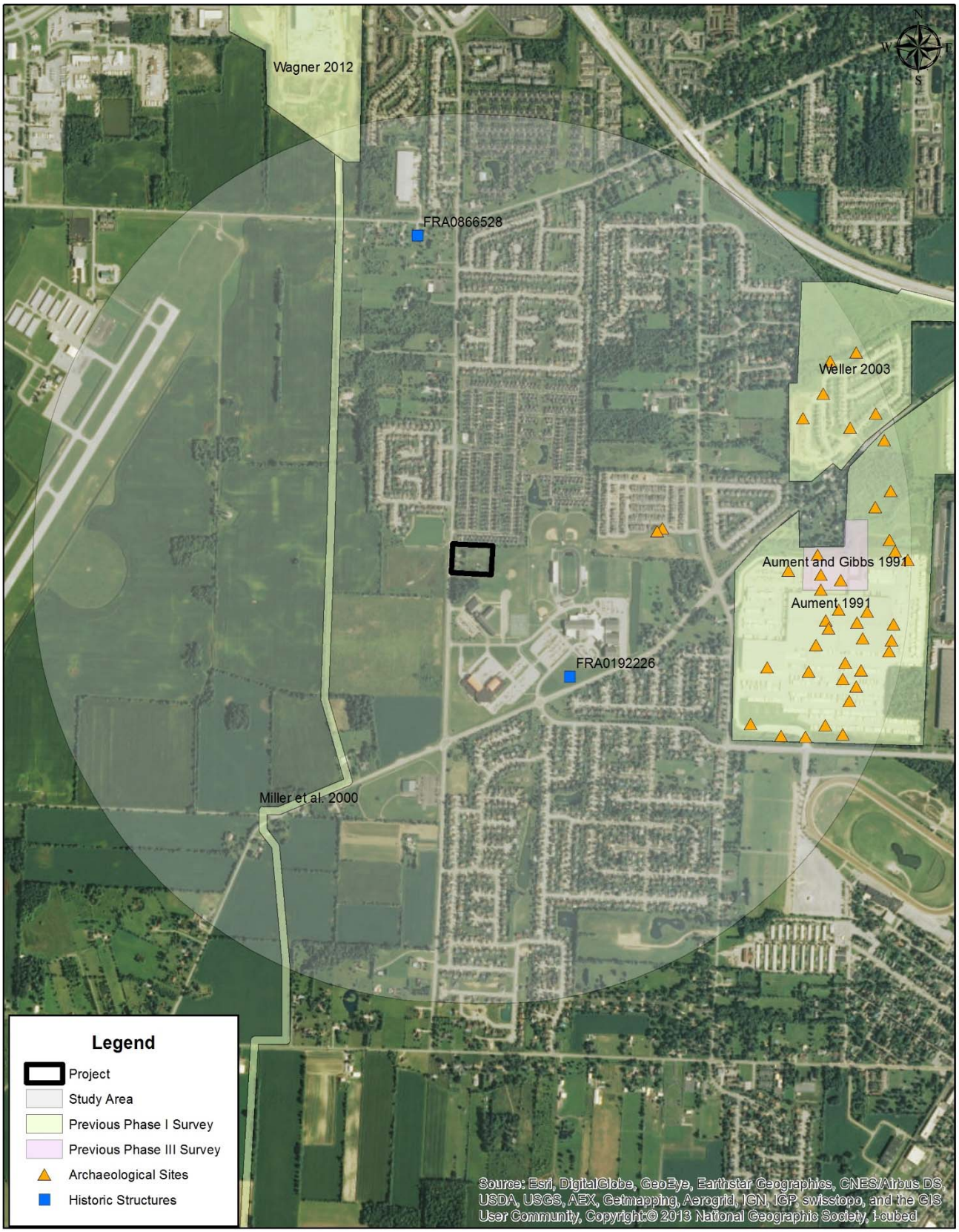

Figure 3. Aerial map indicating the location of the project and previously recorded resources in the study area.

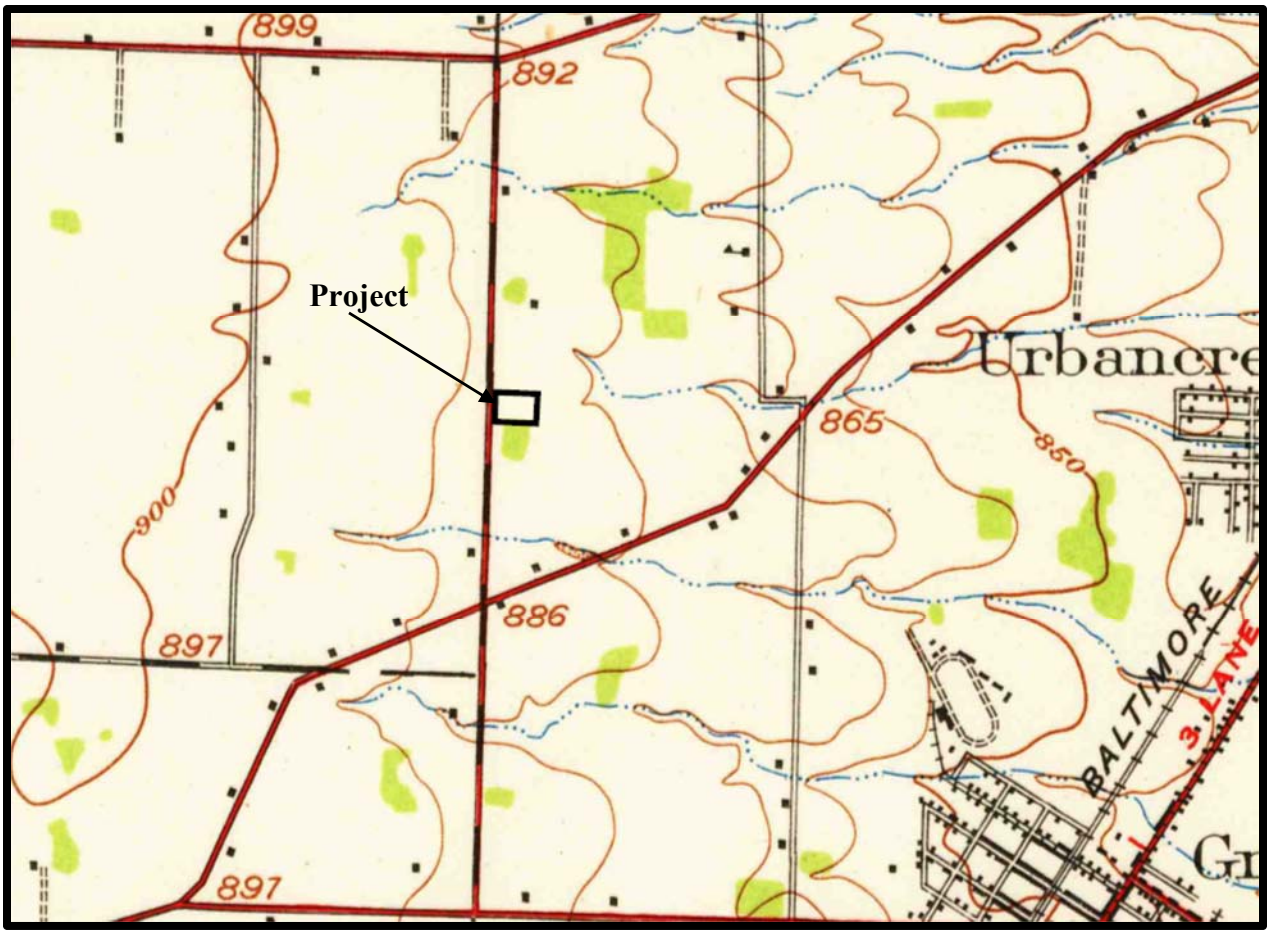

Figure 4. Portion of the USGS *1923 West Columbus, Ohio 15 Minute Series (Topographic)* map indicating the location of the project.

Project Area

Datum

Photo Orientation

Area in Standing Water

Disturbance

Shovel Test Unit in Standing Water

Negative Shovel Test Unit

Figure 5. Fieldwork map indicating the results of testing and photo orientations for the project.

Figure 6. View of an existing drive within the project area.

Figure 7. View of some of the disturbed area within the project.

Figure 8. View of Project area facing north.

Figure 9. View of project area facing east.

Figure 10. View of project area facing south.

Figure 11. View of project area facing west.

Figure 12. View of existing foundation.

Figure 13. View of conditions in northeast portion of project area.

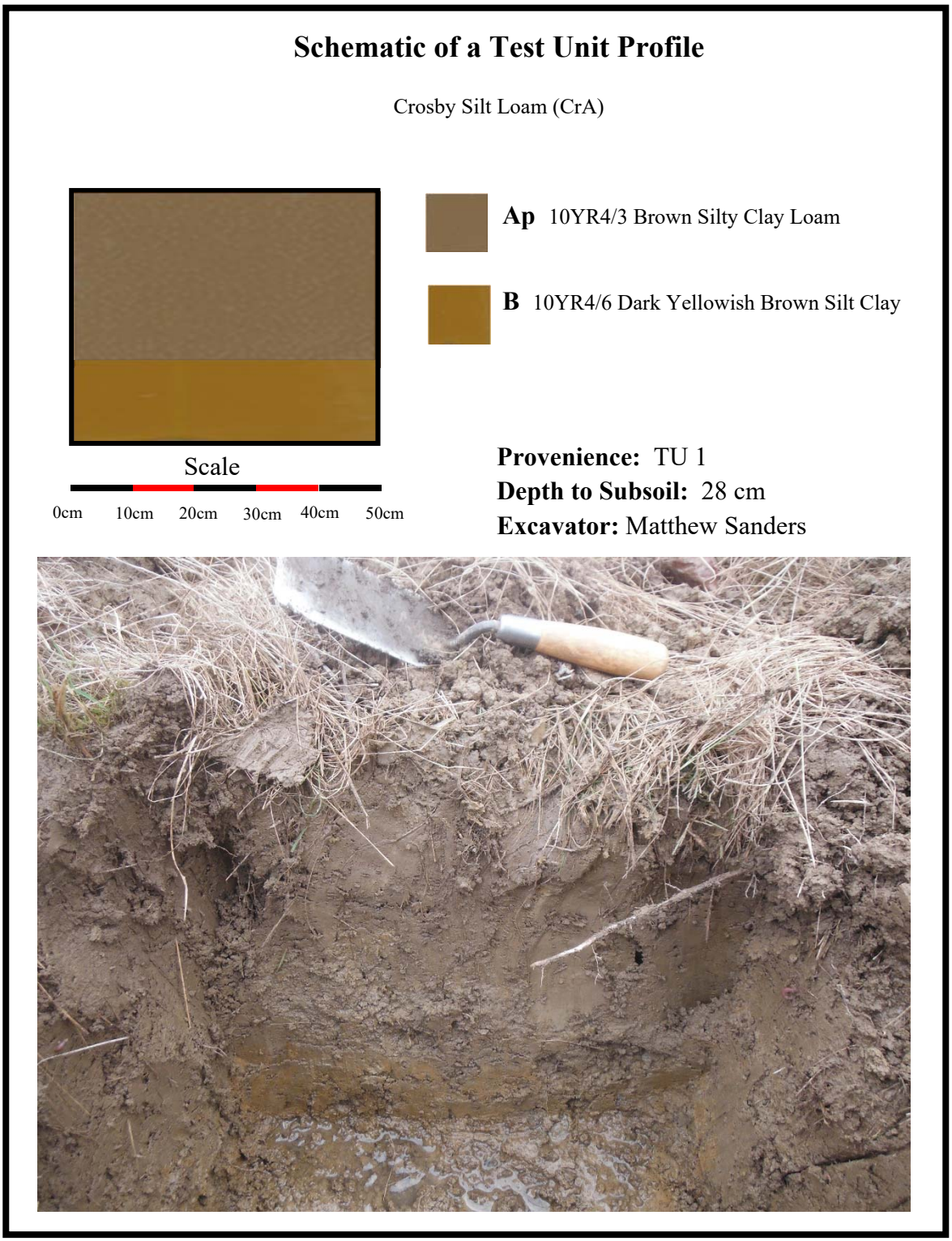

Figure 14. A typical shovel test unit excavated within the project.

Figure 15. Photo of typical disturbed shovel test unit excavated within the project area.

Appendix C Ecological Resources Inventory Report

Bolton Station 138 kV Line Extension Project, Franklin County, Ohio

Ecological Resources Inventory Report

Prepared for:
American Electric Power
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Gahanna, OH 43230

Prepared by:
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May 5, 2016

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1.0 INTRODUCTION

American Electric Power (AEP) is proposing to extend the existing Bolton 138 kilovolt (kV) electric transmission line to the proposed Bolton Station Facility in Grove City, Franklin County, Ohio (Figure 1, Appendix A). The proposed Project area is located on Holt Road just south of Stranton Park Drive and north of Big Run South Road. The study area for the proposed Project (the Project area), as shown on Figure 1 (Appendix A), is approximately 2.1 acres in size. The Project area was surveyed for wetlands, waterbodies, and potential threatened, endangered, and rare species habitat by Stantec Consulting Services Inc. (Stantec) biologists on March 3, 2016.

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: Midwest Region* (Version 2.0) (USACE 2010). 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 (2002). Functional assessment of streams within the Project area was based on completion of the OEPA's 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 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

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 walked the proposed Project area and collected information on existing habitat within the Project area and the potential for these habitats to be used by these species.

3.0 RESULTS

Stantec completed field surveys on March 3, 2016 for wetlands, waterbodies, and threatened and endangered species or their habitat. One palustrine emergent wetland was identified within the Project area and one upland drainage feature was identified just south of the Project area. Figure 2 shows the delineated wetland and upland drainage feature identified during the field surveys and Figure 3 shows the habitats identified within the Project area during rare, threatened, and endangered species habitat assessment surveys (Appendix A). Representative photos of the wetland, upland drainage feature, and other habitats 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. No streams were identified within the Project area.

3.1 TERRESTRIAL HABITAT

Table 1. Vegetation Communities and Land Cover Found within the Bolton Station 138 kV Line Extension Project Area, Franklin County, Ohio

Vegetation Communities and Land Cover Types within the Study Area:	Degree of Human-Related Ecological Disturbance	Unique, Rare, or High Quality?	Acres Within Project Study Area
Old Field	Extreme Disturbance/ Ruderal Community (dominated by opportunistic invaders or native highly tolerant taxa)	No	0.77
Manicured/Mowed Lawn	Extreme Disturbance/ Ruderal Community (dominated by non-native planted species, opportunistic invaders, and native highly tolerant taxa)	No	1.26
Palustrine Emergent Wetland	Moderate Disturbance/ Ruderal Community (dominated by opportunistic invaders or native highly tolerant taxa)	No	0.10
Total			**2.13**

3.2 WETLANDS

Table 2. Summary of Wetland Resources Found within the Bolton Station 138 kV Line Extension Project Area, Franklin County, Ohio

Wetland Name	Photo Numbers	Wetland Classification[1]	ORAM Score	ORAM Category	Delineated Area (acres)	Impacted Area (acres)[3]
Wetland 2	1-2	PEM[2]	21	1	0.10	0.00
Total					**0.10**	**0.00**

[1]Wetland classification is based on Cowardin et al. (1979).

[2] PEM = Palustrine Emergent Wetland

[3] At this time, it is assumed that the wetland can be avoided and/or crossed with timber mats and minimally impacted.

3.3 RARE, THREATENED, OR ENDANGERED SPECIES HABITAT

Table 3. Summary of Potential Ohio State-Listed Species within the Bolton Station 138 kV Line Extension Project Area, Franklin County, Ohio

Common Name	Scientific Name	State[1] Listing	Known to Occur in Franklin County?	Known Within One Mile of Project Area?[2]	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/ Recommendations
Butterflies								
Regal Fritillary	*Speyeria idalia*	E	Yes	No	Occurs in tallgrass prairie remnants and other open sites including damp meadows, marshes, wet fields, and pastures (Butterflies and Moths of North America 2016).	Yes	Some potentially suitable habitat occurs within the Project area (marshes). Impacts are possible though not likely due to the overall rarity of this species and the residential setting of the Project area.	No comments.
Mammals								
Indiana Bat	*Myotis sodalis*	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).	No	No effect due to lack of suitable roosting or hibernacula habitat within the Project area.	ODNR recommends clearing suitable roost trees between October 1 and March 31 to avoid potential adverse effects to this species; if trees must be cut in the summer months, ODNR recommends a bat mist net survey be conducted between June 1 and August 15 – prior to tree cutting.
Mussels								
Fanshell	*Cyprogenia stegaria*	E	Yes	No	This mussel is found in medium to large streams with gravel substrates and strong current, in both deep and shallow water (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	No comment.
Butterfly	*Ellipsaria lineolata*	E	Yes	No	This mussel is found in large rivers within areas with pronounced current and substrate of course sand and gravel. It can also be found in deep impoundment areas (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	No comment.
Elephant-ear	*Elliptio crassidens crassidens*	E	Yes	No	This mussel is found in muddy sand, sand, and rocky substrates in moderate currents. In some areas, it is common in large creeks to rivers with moderate to swift currents, primarily on sand and limestone or rock substrates (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project

Common Name	Scientific Name	State[1] Listing	Known to Occur in Franklin County?	Known Within One Mile of Project Area?[2]	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/ Recommendations
								is not likely to impact this species.
Purple Catspaw	*Epioblasma obliquata obliquata*	E	Yes	No	This mussel can be found in medium to large rivers with moderate gradient and riffles. Substrates can be sand to gravel (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Northern Riffleshell	*Epioblasma torulosa rangiana*	E	Yes	No	Habitat includes riffles and firmly packed substrates of fine to coarse gravel in swiftly flowing, shallow water. This mussel needs highly oxygenated water and is found in medium to large creeks instead of large rivers (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Snuffbox	*Epioblasma triquetra*	E	Yes	No	Occurs in medium-sized streams to large rivers, generally on mud, rocky, gravel, or sand substrates in flowing water. Snuffbox is commonly found deeply buried in the substrate (NatureServe 2016). 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 effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Ebonyshell	*Fusconaia ebena*	E	Yes	No	Inhabits large rivers and prefers swift water and stable sand or gravel shoals. Coarse sand and gravel substrate provides the most suitable habitat. It can occur at depths of 10-15 feet with current associated (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	No comments.
Long-solid	*Fusconaia subrotunda subrotunda*	E	Yes	No	Occurs in medium to large rivers in sand and gravel with strong current (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Pocketbook	*Lampsilis ovata*	E	Yes	No	This mussel is a generalist, occurring in different sized streams/rivers. Typically occurs in moderate to strong current with substrates of gravel and coarse sand (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Washboard	*Megalonaias nervosa*	E	Yes	No	Occurs in large rivers, typically in the main channel, or overbank areas of reservoirs. It is found in areas of slow current with muddy to coarse gravel substrates and water can be up to 50 feet deep (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Clubshell	*Pleurobema clava*	E	Yes	No	The clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra and Goforth (2001) found the clubshell in gravel/sand	No	No effect due to lack of suitable habitat within the	Due to the location, and that there is no in-water work proposed in a perennial stream of

Common Name	Scientific Name	State[1] Listing	Known to Occur in Franklin County?	Known Within One Mile of Project Area?[2]	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/ Recommendations
					substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.		Project area.	sufficient size, this project is not likely to impact this species.
Ohio pigtoe	*Pleurobema cordatum*	E	Yes	No	Occurs in medium to large rivers directly above riffles of gravel, cobble, and boulder, but occasionally in muddy, sandy, or gravel habitats at great depths (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Rabbitsfoot	*Quadrula cylindrica cylindrica*	E	Yes	No	The 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. Found in medium to large rivers in sand and gravel shoals (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Wartyback	*Quadrula nodulata*	E	Yes	No	Occurs in medium to large rivers generally in pools with depths up to 15-18 feet. Substrates include sand and mud (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	No comments.
Rayed Bean	*Villosa fabalis*	E	Yes	No	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants and increased substrate stability (Butler 2002, 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 effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Black Sandshell	*Ligumia recta*	T	Yes	No	Typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more. Found in sand, gravel, or silt (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Threehorn Wartyback	*Obliquaria reflexa*	T	Yes	No	Habitat includes large rivers with moderately strong current and stable substrate of gravel, sand, and mud (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Fawnsfoot	*Truncilla donaciformis*	T	Yes	No	Occurs in medium to large sized streams and rivers at variable depths. Substrates are typically either mud or sand with moderate current (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact this species.
Pondhorn	*Uniomerus tetralasmus*	T	Yes	No	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to	No	No effect due to lack of suitable habitat	Due to the location, and that there is no in-water work proposed in a

Common Name	Scientific Name	State[1] Listing	Known to Occur in Franklin County?	Known Within One Mile of Project Area?[2]	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/ Recommendations
					survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2016).		within the Project area.	perennial stream of sufficient size, this project is not likely to impact this species.
Fish								
Spotted Darter	*Etheostoma maculatum*	E	Yes	No	This fish is found in medium sized rivers and streams. They are typically found in areas of swift current at the top or bottom end of a riffle where there are many very large boulders or flat slabs or rock (ODNR Division of Wildlife 2016a).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Shortnose Gar	*Lepisosteus platostomus*	E	Yes	No	This fish is found in large rivers and associated overflow ponds and backwaters (ODNR Division of Wildlife 2016b).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Popeye Shiner	*Notropis ariommus*	E	Yes	No	This fish is found in extremely clear waters in moderate sized streams. These streams usually have slow to moderate flow and many long slow pools (ODNR Division of Wildlife 2016c).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Scioto Madtom	*Noturus trautmani*	E	Yes	No	Only known from Big Darby Creek and not seen since 1957. Collected from tail end of riffles with sand and gravel substrate (ODNR Division of Wildlife 2016d).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Tippecanoe Darter	*Etheostoma Tippecanoe*	T	Yes	No	This fish prefers medium to large streams in the Ohio River drainage system and are found in riffles of moderate current with substrate of gravel or cobble sized rocks (ODNR Division of Wildlife 2016e).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Tonguetied Minnow	*Exoglossum laurae*	T	Yes	No	Habitat includes rocky pools and runs of cool to warm water. They prefer clear creeks and small to medium sized rivers of moderate gradient with unsilted bottoms of gravel, cobble, and/or boulder. Spawning occurs in gravel nests in slow to moderate current (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Paddlefish	*Polyodon spathula*	T	Yes	No	This fish is found in the Ohio River and its larger tributaries, preferring sluggish pools and backwater areas (ODNR Division of Wildlife 2016f).	No	No effect due to lack of suitable habitat within the Project area.	No in-water work in perennial streams from April 15- June 30. If no in-water work is proposed, this project is not likely to impact this species.
Amphibians								
Eastern Hellbender	*Cryptobranchus alleganiensis alleganiensis*	E	Yes	No	Found mostly in unglaciated portions of Ohio, hellbenders prefer large, swift flowing streams where they hide during the day under large rocks. It typically feeds on crayfish, snails, minnows, insects, and worms (ODNR Division of Wildlife 2016g)	No	No effect due to lack of suitable habitat within the	No comments.

Common Name	Scientific Name	State[1] Listing	Known to Occur in Franklin County?	Known Within One Mile of Project Area?[2]	Habitat Preference	Potential Habitat Observed in Project Area?	Impact Assessment	ODNR Comments/ Recommendations
							Project area.	
Midland Mud Salamander	*Pseudotriton montanus diastictus*	T	Yes	No	Habitat includes muddy and silt-laden areas, where it is most often found under logs or stones along shallow, sluggish streams, spring runs, floodplains, or seepage areas, usually but not always in wooded areas (NatureServe 2016). This salamander is often observed under large, flat stones and they prefer muddy areas (ODNR Division of Wildlife 2016h)	Yes	No effect due to lack of suitable habitat within the Project area.	No comments.
Birds								
Upland Sandpiper	*Bartramia longicauda*	E	Yes	No	Breed in grasslands, pastures, and unkempt agricultural land with a mosaic of old fields and crop lands, and sometimes the grassy expanses of airports (ODNR Division of Wildlife 2016j)	No	No effect due to lack of suitable habitat within the Project area.	If no suitable habitat will be impacted, this project is not likely to impact this species.

[1]E= Endangered; T= Threatened
[2]According to correspondence from ODNR Natural Heritage Database – Appendix B

Table 4. Summary of Potential Federally Listed Species within the Bolton Station 138 kV Line Extension Project Area, Franklin County, Ohio

Common Name	Scientific Name	Federal[1] Listing	Known to Occur in Franklin County?	Habitat Preference[2]	Potential Habitat Observed in Project Survey Area?	Impact Assessment	USFWS Comments/Recommendations
Indiana bat	*Myotis sodalis*	E	Yes	This bat is likely distributed throughout Ohio, though not uniformly. It 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 occasionally been 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).	No	No effect due to lack of suitable roosting and hibernacula habitat within the Project area.	Due to the type, size and location of the project, and if removal of trees trees ≥3 inches diameter at breast height occurs between October 1 and March 31, the USFWS does not anticipate adverse effects to this species.
Northern long-eared bat	*Myotis septentrionalis*	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).	No	No effect due to lack of suitable roosting and hibernacula habitat within the Project area.	Due to the type, size and location of the project, and if removal of trees trees ≥3 inches diameter at breast height occurs between October 1 and March 31, the USFWS does not anticipate adverse effects to this species.
Scioto Madtom	*Noturus trautmani*	E	Yes	Only known from Big Darby Creek and not seen since 1957. Collected from tail end of riffles with sand and gravel substrate (ODNR Division of Wildlife 2016d).	No	No effect due to lack of suitable habitat within the Project area.	No comments.
Clubshell	*Pleurobema clava*	E	Yes	The clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra and Goforth (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	No	No effect due to lack of suitable habitat within the Project area.	No comments.
Northern Riffleshell	*Epioblasma torulosa rangiana*	E	Yes	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie (USFWS 1994). Habitat includes riffles and firmly packed substrates of fine to coarse gravel in swiftly flowing, shallow water. This mussel needs highly oxygenated water and is found in medium to large creeks instead of large rivers (NatureServe 2016)	No	No effect due to lack of suitable habitat within the Project area.	No comments.
Rabbitsfoot	*Quadrula cylindrica cylindrical*	T	Yes	The 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. Found in medium to large rivers in sand and gravel shoals (NatureServe 2016).	No	No effect due to lack of suitable habitat within the Project area.	No comments.
Rayed bean	*Villosa fabalis*	E	Yes	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants and increased substrate stability (Butler 2002, 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 effect due to lack of suitable habitat within the Project area.	No comments.
Snuffbox	*Epioblasma triquetra*	E	Yes	Occurs in medium-sized streams to large rivers generally on mud, rocky, gravel, or sand substrates in flowing water (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 effect due to lack of suitable habitat within the Project area.	No comments.

[1]E=Endangered; T=Threatened

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 on March 3, 2016. During the field surveys, one palustrine emergent wetland totaling approximately 0.10 acres was delineated within the Project area. The wetland was classified as a Category 1 wetland. No streams or open water features were determined within the Project area. One upland drainage feature, which lacked a continuously defined bed and bank/OHWM, was observed just south of the Project area. The locations of the wetland and upland drainage feature are shown on Figures 2 and 3 (Appendix A).

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 study 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.

The Project area includes a small amount of potentially suitable habitat for the regal fritillary, which is an Ohio-state listed endangered species. However, no occurrences of this species are known to occur within Project area or within a one-mile radius of it, according to correspondence received from the ODNR (Appendix B). Additionally, it's occurrence in the Project are is unlikely due to the majority of Project area and surrounding areas consisting of manicured lawn.

The ODNR Office of Real Estate response letter (Appendix B) stated that, if suitable habitat for the Indiana bat occurs within the Project area and trees must be cut, they recommend that cutting occur between October 1 and March 31. If suitable Indiana bat roost trees must be cut during the summer months, the ODNR recommended that a bat mist net survey be conducted between June 1 and August 15, prior to any cutting. The ODNR indicated that the Project is within the range of state listed fish and mussel species. However, since no in-water work is proposed, this project is not likely to impact these species.

The ODNR also stated that the project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. According to the ODNR (Appendix B) nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. They stated that, if this type of habitat will not be impacted (which is the case with this Project), this Project is not likely to impact this species.

The project area includes potentially suitable habitat for the following federally listed threatened and endangered species: Indiana bat and northern long-eared bat. A technical assistance letter was submitted to the USFWS. The USFWS response letter (Appendix B) indicated that, due to the project type, size, location, and if implementation of seasonal tree cutting (clearing of

trees ≥3 inches diameter at breast height between October 1 and March 31) occurs to avoid impacts to Indiana bats and northern long-eared bats, they do not anticipate adverse effects to any 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 ODNR Natural Heritage Database (Appendix B) is also unaware of any unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, or other protected natural areas within the project area or a one-mile radius of it.

5.0 REFERENCES

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Appendix A Figures

Figure No.
1

Title
Project Location Map

Client/Project
American Electric Power
Bolton Station 138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by PM on 2016-03-04
Technical Review by MP on 2016-03-04
Independent Review by DG on 2016-03-07

0 1,000 2,000 Feet
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Legend
Study Area

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

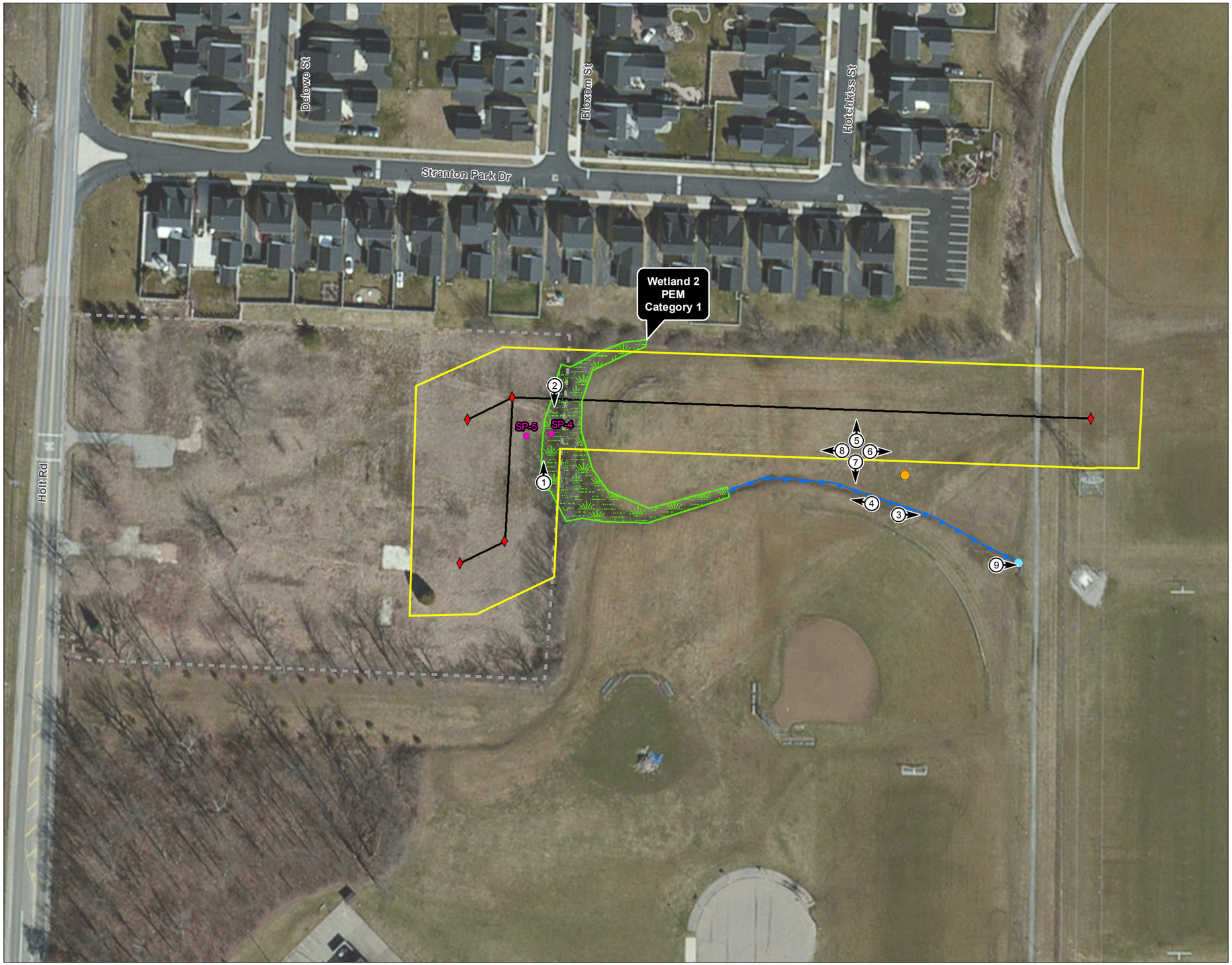

Figure No.

2

Title

Wetland and Waterbody Delineation Map

Client/Project

American Electric Power
Bolton Station 138 kV Line Extension Project

Project Location

Grove City,
Franklin County, Ohio

193704274
Prepared by MP on 2016-03-04
Technical Review by MP on 2016-03-04
Independent Review by DG on 2016-03-07

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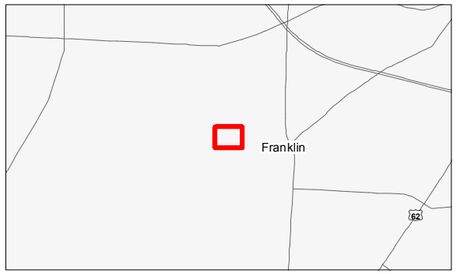
Legend

- Study Area
- Proposed Poles
- Proposed 138kV Line Centerline
- Culvert
- Manhole
- Wetland Determination Sample Point
- Field Delineated Wetland
- Bolton Station Property
- Upland Drainage Feature
- Photo Location



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP, NADS.
3. Orthophotography: Microsoft 2012

Stantec

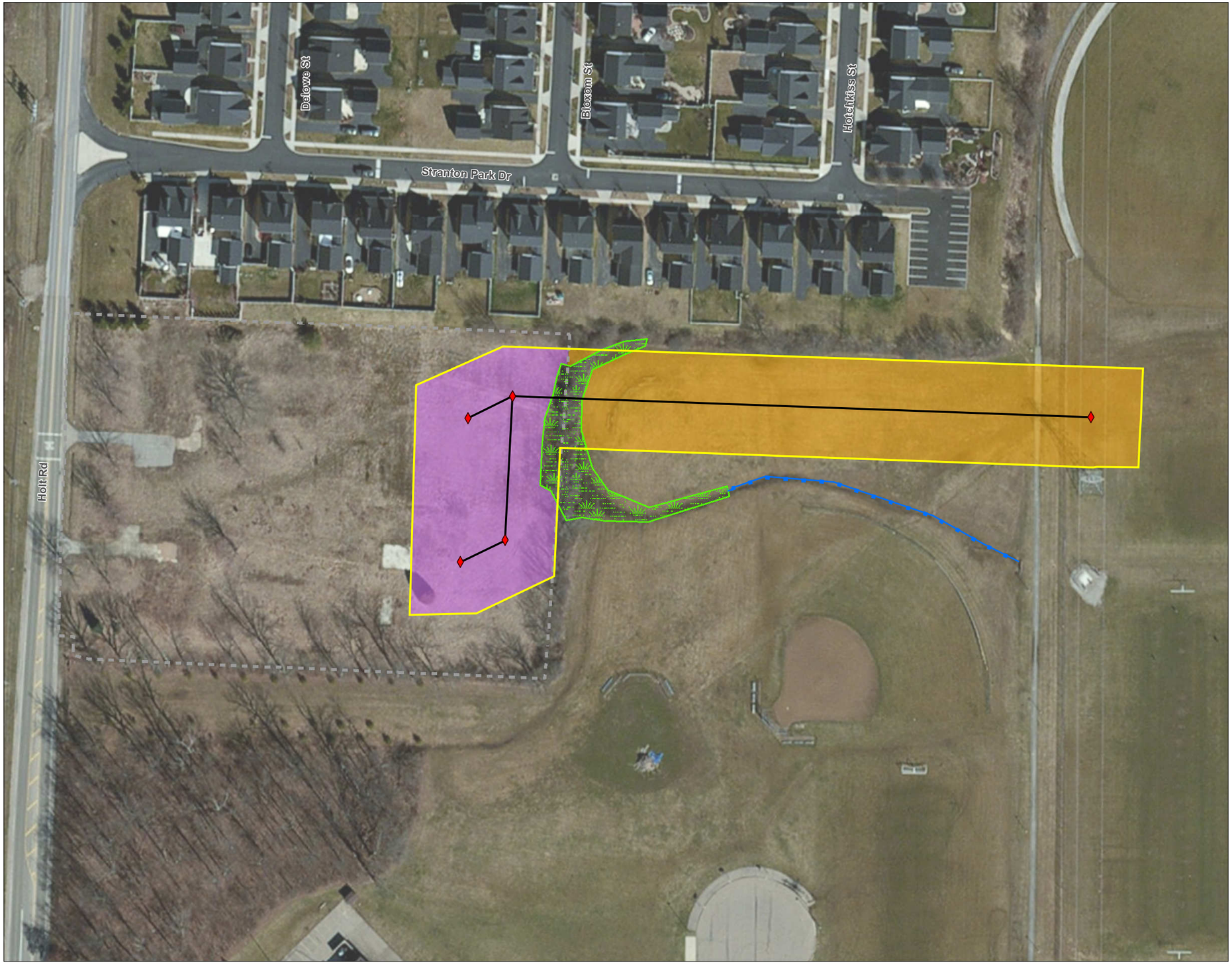


Figure No.
3

Title
Habitat Assessment Map

Client/Project
American Electric Power
Bolton Station 138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by MP on 2016-03-04
Technical Review by MP on 2016-03-04
Independent Review by DG on 2016-03-07

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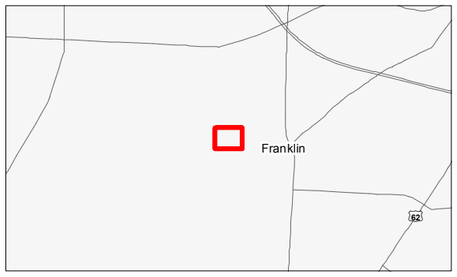
1:1,200 (At original document size of 11x17)

N

Legend
- Study Area
- Proposed Poles
- Proposed 138kV Line Centerline

Habitat Type
- Manicured/Mowed Lawn
- Old Field
- Field Delineated PEM Wetland
- Bolton Station Property
- Upland Drainage Feature



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP, NADS.
3. Orthophotography: Microsoft 2012

Stantec

Appendix B Agency Correspondence

Bomar, Kate

From: Godec, Daniel
Sent: Thursday, March 10, 2016 10:34 AM
To: obdrequest@dnr.state.oh.us
Cc: Binau, Jesse; ajtoohey@aep.com
Subject: American Electric Power (AEP) Bolton Station 138 kV Line Extension Project - Data Request
Attachments: BoltonStation_Extension_AEP_Figure1_Topo.pdf; BoltonExtension_StudyArea.zip; Bolton Station 138 kV Line Extention Project Natural Heritage Data Request Form.pdf

Good Morning,

On behalf of AEP, please find attached a Natural Heritage Data Request Form, a location map on USGS base (Figure 1), and shapefiles of the project study area (see attached .zip file). If you have any questions regarding this request, please do not hesitate to contact me via email at daniel.godec@stantec.com or via phone at the numbers listed below.

Thank you for your assistance!

Dan

Daniel Godec
Senior Environmental Project Manager
11687 Lebanon Road Cincinnati OH 45241-2012
Phone: (513) 842-8200
Cell: (513) 265-9763
Fax: (513) 842-8250
Daniel.Godec@stantec.com

Ohio Department of Natural Resources
DIVISION OF WILDLIFE

DNR 5203 (R0915)

NATURAL HERITAGE DATA REQUEST FORM

ODNR Division of Wildlife
Ohio Natural Heritage Program
2045 Morse Rd., Bldg. G-3
Columbus, OH 43229-6693
Phone: 614-265-6818
Email: obdrequest@dnr.state.oh.us

INSTRUCTIONS:

Please complete all the information on both sides of this form, sign (required) and email it to the address given above. Please provide a description of the work to be performed at the project site, and a map detailing your project site boundaries. If you have GIS capabilities or request a GIS response, please also submit a shapefile of your project site (unbuffered). Data requests will be completed within approximately 30 days, usually sooner. There is currently no charge to process requests.

WHAT WE PROVIDE:

As applicable to your project, the Ohio Natural Heritage Database (ONHD) will provide records for state and federally listed plants and animals, high quality plant communities, geologic features, breeding animal concentrations, scenic rivers, protected natural areas (managed areas), and significant unprotected natural areas (conservation sites). A one mile radius around the project site will automatically be searched. Because the ONHD contains sensitive information, it is our policy to provide only the data needed to complete your project.

Please note that this information is provided without comment on potential impacts to the species and their habitats, and therefore does not constitute coordination with ODNR under NEPA, the Fish & Wildlife Coordination Act, the Federal Water Pollution Control Act and other laws. If your project requires ODNR coordination, please submit it for a more extensive environmental review to environmentalreviewrequest@dnr.state.oh.us. Additional information on the environmental review process is available at http://realestate.ohiodnr.gov/environmental-review. If you have questions, please contact John Kessler at 614-265-6621 or john.kessler@dnr.state.oh.us. A ONHD search is included as part of the environmental review process.

Date: 03/09/2016 **Company name:** Stantec Consulting, Inc.

Name of person response letter should be addressed to:
Mr. ☑ **Ms.** ☐ **Dan Godec**

Address: 11687 Lebanon Road

City/State/Zip: Cincinnati/Ohio/45241-2012

Phone: 513-842-8203

E-mail address: *daniel.godec@stantec.com*

Project Name: **AEP Bolton Station 138 kV Line Extension Project**

Project Site Address: Holt Road, Grove City, Ohio

Project County: Franklin

Project City or Township: Grove City

Project site is located on the following USGS 7.5 minute topographic quad(s):
Southwest Columbus

Project latitude and longitude: 39.899141° N and -83.116366° W

Description of work to be performed at the project site:
American Electric Power (AEP) will be constructing and extension to an existing 138 kV electrical transmission line to energize o proposed electrical distribution substation (Bolton Station).

How do you want your data reported? (Both formats provide the same data. The manual search is most appropriate for small scale projects or for those without GIS capabilities. With this option we will send you a list of records and a map showing their location. If you request a GIS shapefile, we will send you a shapefile of data layers. You will then need to make your own map and list of data for your report. You must have GIS capabilities. If you choose this option, please email your project shapefile with your request. If you do not make a selection, a manual search will be performed. Please choose only one option below.)

☑ **Printed list and map (manual search)** **OR** ☐ **GIS shapefile (computer search)**

Other than the standard data (see "what we provide" at top of form), additional information you require:

Please provide us with a map showing records of state and federally listed plants and animals, high quality plant communities, geologic features, breeding animal concentrations, scenic rivers, protected natural areas (managed areas), and significant unprotected natural areas (conservation sites) within the project area and a one mile radius around it.

How will the information be used?

The information will be included in a rare, threatened and endangered species habitat assessment report that will be included within a Construction Notice/Letter of Notification application being prepared for the Ohio Power Siting Board in order to receive authorization for the project. The information will also be used to assist with demonstrating compliance with the Endangered Species Act, if applicable.

The chief of the Division of Wildlife has determined that the release of the ONHD information you have requested could be detrimental to the conservation of a species or unique natural feature. Pursuant to section 1531.04 of the Ohio Revised Code, this information is not subject to section 149.43 of the Revised Code. By signing below, you certify that the data provided will not be disclosed, published, or distributed beyond the scope of your specific project.

Signature Daniel J. Goder **Date:** 3/09/16

Figure No.
1

Title
Project Location Map

Client/Project
American Electric Power
Bolton Station 138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by PM on 2016-03-04
Technical Review by MP on 2016-03-04
Independent Review by DG on 2016-03-09

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1:24,000 (At original document size of 11x17)

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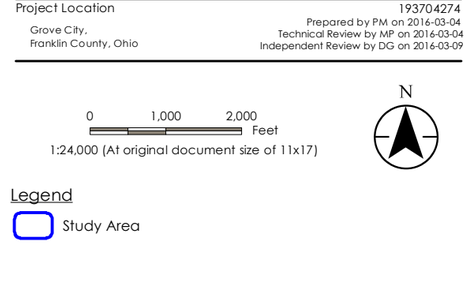
Study Area



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

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

March 10, 2016

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

Dear Mr. Godec,

After reviewing the Natural Heritage Database, I find the Division of Wildlife has no records of rare or endangered species in the AEP Bolton Station 138 kV Line Extension project area, including a one mile radius, in Jackson Township, Franklin County, Ohio. We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests or other protected natural areas 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,

Debbie Woischke

Debbie Woischke
Ohio Natural Heritage Database Program

Bomar, Kate

From: Godec, Daniel
Sent: Thursday, March 10, 2016 10:34 AM
To: john.kessler@dnr.state.oh.us
Cc: Binau, Jesse; ajtoohey@aep.com
Subject: American Electric Power (AEP) Bolton Station 138 kV Line Extension Project - Environmental Review Request
Attachments: BoltonExtension_StudyArea.zip; BoltonStation_Extension_AEP_Figure1_Topo.pdf; Bolton Station 138 kV Line Extension Project ODNR Office of Real Estate Letter_Final.pdf

Good Afternoon:

On behalf of AEP, Stantec Consulting Services Inc. (Stantec) is requesting an Ohio Department of Natural Resources (ODNR) - Office of Real Estate environmental review for the proposed Bolton Station 138 kV Line Extension Project in Grove City, Ohio. Please find attached a cover letter describing the project (including Lat/Long coordinates), a location map on USGS base (Figure 1), and a shapefile of the project study area (see attached .zip file).

If you have any questions regarding this request, please do not hesitate to contact me via email at daniel.godec@stantec.com or via phone at the numbers listed below.

Thank you for your assistance!

Dan

Daniel Godec
Senior Environmental Project Manager
11687 Lebanon Road Cincinnati OH 45241-2012
Phone: (513) 842-8200
Cell: (513) 265-9763
Fax: (513) 842-8250
Daniel.Godec@stantec.com

Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati OH 45241-2012
Tel: (513) 842-8200
Fax: (513) 842-8250

March 9, 2016

Attention: Mr. John Kessler
Ohio Department of Natural Resources
Office of Real Estate
2045 Morse Road, Building E-2
Columbus, OH 43229-6693
Via Email: john.kessler@dnr.state.oh.us

Dear Mr. Kessler,

Reference: Request for Environmental Review, AEP Bolton Station 138 kV Line Extension Project, Franklin County, Ohio

On behalf of AEP Ohio Transmission Company, Inc. (AEP), Stantec Consulting Services Inc. (Stantec), is formally requesting that the Ohio Department of Natural Resources (ODNR) Office of Real Estate complete an environmental review for the proposed Bolton Station Project area (the Project area). The Project area is located on Holt Road just south of its intersection with Stranton Park Drive in Grove City, Ohio (Figure 1). The approximate Project area latitude and longitude coordinates are 39.899141° N and -83.116366° W, respectively.

The Project area is approximately one acre in size and the Project consists of constructing and extension to an existing 139 kV electrical transmission line to energize a proposed electrical distribution substation. No residences are present within the Project area. The U.S. Geological Survey (USGS) topographic map (Figure 1) does not show any USGS-identified streams within the Project area.

Environmental field surveys were completed during March of 2016. At this time, we anticipate that impacts to wetlands and streams may be avoided and minimal tree clearing will take place. Where tree clearing is necessary for the Project, AEP intends to clear trees between October 1 and March 31 in order to reduce potential impacts to the Indiana bat (*Myotis sodalis*; federally listed endangered/state-listed endangered) and northern long-eared bat (*Myotis septentrionalis*; federally-listed threatened).

Please provide us with the results of the ODNR's environmental review at your earliest convenience. If you have questions or need additional information regarding the Project, please contact me at the phone number below. Thank you in advance for your assistance with this request.

Regards,

STANTEC CONSULTING SERVICES INC.

Daniel J. Godec

Reference: Request for Environmental Review, AEP Bolton Station 138 kV Line Extension Project, Franklin County, Ohio

Dan Godec
Senior Environmental Project Manager
Phone: (513) 842-8203
Fax: (513) 852-8250
Daniel.Godec@Stantec.com

Attachments: Figure 1 – Project Location Map

Figure No.
1

Title
Project Location Map

Client/Project
American Electric Power
Bolton Station 138 kV Line Extension Project

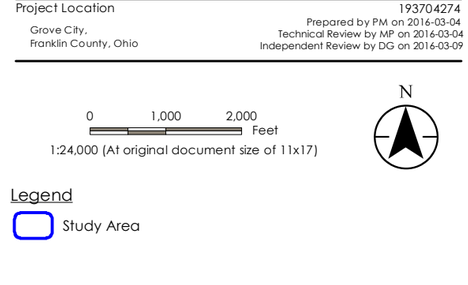
Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by PM on 2016-03-04
Technical Review by MP on 2016-03-04
Independent Review by DG on 2016-03-09

0 1,000 2,000 Feet
1:24,000 (At original document size of 11x17)

N

Legend
Study Area



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR JAMES ZEHRINGER, DIRECTOR

Office of Real Estate
Paul R. Baldridge, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6649
Fax: (614) 267-4764

April 14, 2016

Daniel Godec
Stantec
11687 Lebanon Road
Cincinnati, OH 45241-2012

Re: 16-183; Request for Environmental Review, AEP Bolton Station 138 kV Line Extension

Project: The proposed project involves constructing an extension to an existing 139 kV electrical transmission line to energize a proposed electrical distribution substation.

Location: The proposed project is located in Grove City, Franklin County, Ohio.

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

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

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

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

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

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

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the purple cat's paw (*Epioblasma o. obliquata*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel species, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federal endangered mussel, the long solid (*Fusconaia maculata maculata*), a state endangered mussel, the Ohio pigtoe (*Pleurobema cordatum*), a state endangered mussel, the pocketbook (*Lampsilis ovata*), a state endangered mussel, the washboard (*Megalonaias nervosa*), a state endangered mussel, the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, the pondhorn (*Uniomerus tetralasmus*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, the popeye shiner (*Notropis ariommus*), a state endangered fish, the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, the spotted darter (*Etheostoma maculatum*), a state endangered fish, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the tonguetied minnow (*Exoglossum laurae*), a state threatened fish, the paddlefish (*Polyodon spathula*) a state threatened fish, and the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these or other aquatic species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP). If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 to July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us

Bomar, Kate

From: Godec, Daniel
Sent: Thursday, March 10, 2016 10:20 AM
To: ohio@fws.gov
Cc: Binau, Jesse; ajtoohey@aep.com
Subject: American Electric Power (AEP) - Bolton Station 138 kV Line Extension Project: Request for Technical Assistance
Attachments: Bolton Station 138 kV Line Extension Project USFWS Coordination Letter_Final.pdf; BoltonStation_Extension_AEP_Figure1_Topo.pdf; BoltonExtension_StudyArea.zip

Good Morning:

On behalf of AEP, Stantec Consulting Services Inc. (Stantec) is requesting comments and information from the U.S. Fish and Wildlife Service regarding federally-listed threatened and endangered species for the proposed Bolton Station 138 kV Line Extension Project in Grove City, Ohio. Please find attached a cover letter describing the project (including Lat/Long coordinates), a location map on USGS base (Figure 1), and shapefiles of the project study area (see attached .zip file).

If you have any questions regarding this request, please do not hesitate to contact me via email at daniel.godec@stantec.com or via phone at the numbers listed below.

Thank you for your assistance!

Dan

Daniel Godec
Senior Environmental Project Manager
11687 Lebanon Road Cincinnati OH 45241-2012
Phone: (513) 842-8200
Cell: (513) 265-9763
Fax: (513) 842-8250
Daniel.Godec@stantec.com

Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati OH 45241-2012
Tel: (513) 842-8200
Fax: (513) 842-8250

March 9, 2016

Attention: Mr. Dan Everson
U.S. Fish and Wildlife Service
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, OH 43230
Via Email: Ohio@fws.gov

Dear Mr. Everson,

Reference: Request for Technical Assistance, AEP Bolton Station 138 kV Line Extension Project, Franklin County, Ohio

On behalf of AEP Ohio Transmission Company, Inc. (AEP), Stantec Consulting Services Inc. (Stantec), is formally requesting that the U.S. Fish and Wildlife Service (USFWS) Ohio Ecological Services Field Office provide comments regarding federally-listed threatened and endangered species for the proposed Bolton Station 138 kV Line Extension Project area (the Project area). The Project area is located on Holt Road just south of its intersection with Stranton Park Drive in Grove City, Ohio (Figure 1). The approximate Project area latitude and longitude coordinates are 39.899141° N and -83.116366° W, respectively.

The Project area is approximately one acre in size and the Project consists of constructing and extension to an existing 139 kV electrical transmission line to energize a proposed electrical distribution substation. No residences are present within the Project area. The U.S. Geological Survey (USGS) topographic map (Figure 1) does not show any USGS-identified streams within the Project area. According to the U.S. Fish and Wildlife Service Ohio Ecological Services Field Office website (http://www.fws.gov/midwest/ohio/pdf/OhioTEListByCountyOct2015.pdf), the Indiana bat (*Myotis sodalis*; federally-listed endangered), northern long-eared bat (*Myotis septentrionalis*; federally-listed threatened), Scioto madtom (*Noturus trautmani*; federally-listed endangered), clubshell (*Pleurobema clava*; federally-listed endangered), snuffbox (*Epioblasma triquetra*; federally-listed endangered), northern riffleshell (*Epioblasma torulosa rangiana*; federally-listed endangered), rayed bean (*Villosa fabalis*; federally-listed endangered), rabbitsfoot (*Quadrula cylindrica cylindrica*; federally-listed threatened), and bald eagle (*Haliaeetus leucocephalus*; federal species of concern) are the federally-listed species and federal species of concern known to occur in Franklin County at this time.

Environmental field surveys were completed during March of 2016. At this time, we anticipate that impacts to wetlands and streams may be avoided. Where tree clearing is necessary for the Project, AEP intends to clear trees between October 1 and March 31 in order to reduce potential impacts to the Indiana bat and northern long-eared bat.

Reference: Request for Technical Assistance, AEP Bolton Station 138 kV Line Extension Project, Franklin County, Ohio

Due to the assumed avoidance of impacts to wetlands and streams during construction of the Project, AEP anticipates that there will be no federal nexus for the Project. If it is discovered later that a federal nexus for the project exists (e.g., federal funding provided, federal permits required to construct), no tree clearing on any portion of the parcel will occur until consultation under Section 7 of the Endangered Species Act (ESA), between the USFWS and the federal action agency, is completed and the federal action agency will submit a determination of effects to the USFWS, relative to the federally-listed threatened and endangered species listed above, for your review and concurrence.

Please provide us with your comments regarding threatened and endangered species and the Project at your earliest convenience. If you have questions or need additional information regarding the Project, please contact me at the phone number below. Thank you in advance for your assistance with this request.

Regards,

STANTEC CONSULTING SERVICES INC.

Daniel J. Godec

Dan Godec
Senior Environmental Project Manager
Phone: (513) 842-8203
Fax: (513) 852-8250
Daniel.Godec@Stantec.com

Attachments: Figure 1 – Project Location Map

Figure No.
1

Title
Project Location Map

Client/Project
American Electric Power
Bolton Station 138 kV Line Extension Project

Project Location
Grove City,
Franklin County, Ohio

193704274
Prepared by PM on 2016-03-04
Technical Review by MP on 2016-03-04
Independent Review by DG on 2016-03-09

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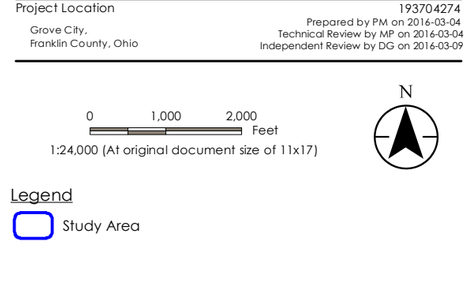
N

Legend
Study Area



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Data Sources Include: Stantec, AEP
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

From:	susan_zimmermann@fws.gov on behalf of Ohio, FW3
To:	Godec, Daniel
Subject:	AEP Bolton Station - New Electrical Substation and 138 kV Extension, Franklin Co.
Date:	Friday, April 15, 2016 11:11:48 AM
Attachments:	Capture of Dan.PNG

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# 03E15000-2016-TA-0946 (Substation **and** Line Extension)

Dear Mr. Godec,

We have received your recent correspondence regarding potential impacts to federally listed species in the vicinity of the above referenced project. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. We recommend that proposed activities minimize water quality impacts, including fill in streams and wetlands. Best management practices should be utilized to minimize erosion and sedimentation.

FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees =3 inches diameter at breast height between October 1 and March 31) to avoid impacts to Indiana bats and northern long-eared bats, we do not anticipate adverse effects to any 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 U.S. Fish and Wildlife Service (Service) should be initiated to assess any potential impacts.

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 Endangered Species Act (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.

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.), 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,

Dan Everson

Field Supervisor

Appendix C Representative Photographs

Photograph 1. View of wetland determination sample point SP-4 within Wetland 2 and adjacent old field habitat. Photograph taken facing north.

Photograph 2. View of wetland determination sample point SP-4 within Wetland 2 and adjacent old field habitat. Photograph taken facing south.

Photograph 3. View of upland drainage feature located just south of Project area. Photograph taken facing southeast.

Photograph 4. View of upland drainage feature located just south of Project area. Photograph taken facing northwest.

Photograph 5. View of manicured/mowed lawn in central portion of Project area. Photograph taken facing north.

Photograph 6. View of manicured/mowed lawn in central portion of Project area. Photograph taken facing east.

Photograph 7. View of manicured/mowed lawn in central portion of Project area. Photograph taken facing south.

Photograph 8. View of manicured/mowed lawn in central portion of Project area. Photograph taken facing west.

Photograph 9. View of culvert associated with upland drainage feature just south of Project area. Photograph taken facing east.

Appendix D Data Forms

D.1 WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Bolton Station Line Extension Project	Stantec Project #:	
Applicant:	American Electric Power (AEP)		
Investigator #1:	Aaron Kwolek	Investigator #2:	Michael de Villiers
Soil Unit:	Ko, Kokomo silty clay loam, 0-2% slopes	NWI/WWI Classification:	none
Landform:	Depression	Local Relief:	Concave
Slope (%):	0	Latitude: 39.88213°N	Longitude: -83.117639°W Datum: NAD 83

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ☑ Yes ☐ No

Are Vegetation ☐ , Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐ , Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	03/03/16
County:	Franklin
State:	Ohio
Wetland ID:	Wetland 2
Sample Point:	SP-4
Community ID:	PEM
Section:	--
Township:	--
Range:	-- Dir: --

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☑ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☑ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

Secondary:
- ☐ B6 - Surface Soil Cracks
- ☐ B10 - Drainage Patterns
- ☐ C2 - Dry-Season Water Table
- ☐ C8 - Crayfish Burrows
- ☐ C9 - Saturation Visible on Aerial Imagery
- ☐ D1 - Stunted or Stressed Plants
- ☑ D2 - Geomorphic Position
- ☐ D5 - FAC-Neutral Test

Field Observations:

Surface Water Present?	☑ Yes ☐ No	Depth:	<2	(in.)
Water Table Present?	☐ Yes ☑ No	Depth:	0	(in.)
Saturation Present?	☐ Yes ☑ No	Depth:	0	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Ko, Kokomo silty clay loam, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	2	1	10YR 3/2	100	--	--	--	--	silt loam
2	16	2	10YR 3/1	95	10YR 4/6	5	C	M	silty clay
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☐):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☑ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Bolton Station Line Extension Project | Wetland ID: Wetland 2 | Sample Point: SP-4

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Schedonorus arundinaceus*	30	Y	FACU
2.	*Elymus virginicus*	20	Y	FACW
3.	*Lolium perenne*	5	N	FACU
4.	*Carex vulpinoidea*	10	N	FACW
5.	*Epilobium coloratum*	10	N	OBL
6	*Toxicodendron radicans*	5	N	FAC
7.	*Apocynum cannabinum*	10	N	FAC
8.	*Juncus tenuis*	10	N	FAC
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ***50%*** (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	10	x 1 =	10
FACW spp.	30	x 2 =	60
FAC spp.	25	x 3 =	75
FACU spp.	35	x 4 =	140
UPL spp.	0	x 5 =	0
Total	100 (A)		285 (B)

Prevalence Index = B/A = ***2.850***

Hydrophytic Vegetation Indicators:

- ☐ Yes ☑ No Rapid Test for Hydrophytic Vegetation
- ☐ Yes ☑ No Dominance Test is > 50%
- ☑ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☑ No Morphological Adaptations (Explain) *
- ☐ Yes ☑ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

Woody Vines - All woody vines greater than 3.28 ft. in height.

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Bolton Station Line Extension Project	Stantec Project #:		Date:	03/03/16
Applicant:	American Electric Power			County:	Franklin
Investigator #1:	Aaron Kwolek	Investigator #2:	Michael de Villiers	State:	Ohio
Soil Unit:	Ko Kokomo silty clay loam, 0-2% slopes	NWI/WWI Classification:	none	Wetland ID:	Wetland 2
Landform:	plain	Local Relief:	Linear	Sample Point:	SP-5
Slope (%):	0	Latitude: 39.899165°N	Longitude: -83.117751°W	Community ID:	Upland
			Datum: NAD 83	Section:	--
				Township:	--
				Range:	-- Dir: --

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ☑ Yes ☐ No

Are Vegetation ☐ , Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐ , Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☐ Yes ☑ No	Hydric Soils Present?	☐ Yes ☑ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☐ **Yes** ☑ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☑ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

Secondary:
- ☐ B6 - Surface Soil Cracks
- ☐ B10 - Drainage Patterns
- ☐ C2 - Dry-Season Water Table
- ☐ C8 - Crayfish Burrows
- ☐ C9 - Saturation Visible on Aerial Imagery
- ☐ D1 - Stunted or Stressed Plants
- ☐ D2 - Geomorphic Position
- ☐ D5 - FAC-Neutral Test

Field Observations:

Surface Water Present?	☐ Yes ☑ No	Depth:	0	(in.)
Water Table Present?	☑ Yes ☐ No	Depth:	10	(in.)
Saturation Present?	☑ Yes ☐ No	Depth:	top 3	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks: [E.g. Depession connected to off-site stormwater system.]

SOILS

Map Unit Name: Ko Kokomo silty clay loam, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	16	1	10YR 3/1	100	-- --	--	--	--	silty clay
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☐ Yes ☑ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Bolton Station Line Extension Project | Wetland ID: Wetland 2 | Sample Point: SP-5

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Schedonorus arundinaceus*	80	Y	FACU
2.	*Juncus tenuis*	2	N	FAC
3.	*Thistle sp.*	15	N	NI
4.	*Apocynum cannabinum*	5	N	FAC
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	102		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ***0%*** (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	0	x 1 =	0
FACW spp.	0	x 2 =	0
FAC spp.	7	x 3 =	21
FACU spp.	80	x 4 =	320
UPL spp.	15	x 5 =	75
Total	102 (A)		416 (B)

Prevalence Index = B/A = ***4.078***

Hydrophytic Vegetation Indicators:

- ☐ Yes ☑ No Rapid Test for Hydrophytic Vegetation
- ☐ Yes ☑ No Dominance Test is > 50%
- ☐ Yes ☑ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☑ No Morphological Adaptations (Explain) *
- ☐ Yes ☑ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

Woody Vines - All woody vines greater than 3.28 ft. in height.

Hydrophytic Vegetation Present ☐ Yes ☑ No

Additional Remarks:

D.2 ORAM DATA FORMS

Wetland 2

Version 5.0	**Ohio Rapid Assessment Method for Wetlands** **10 Page Form for Wetland Categorization**	
	Background Information **Scoring Boundary Worksheet** **Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet**	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

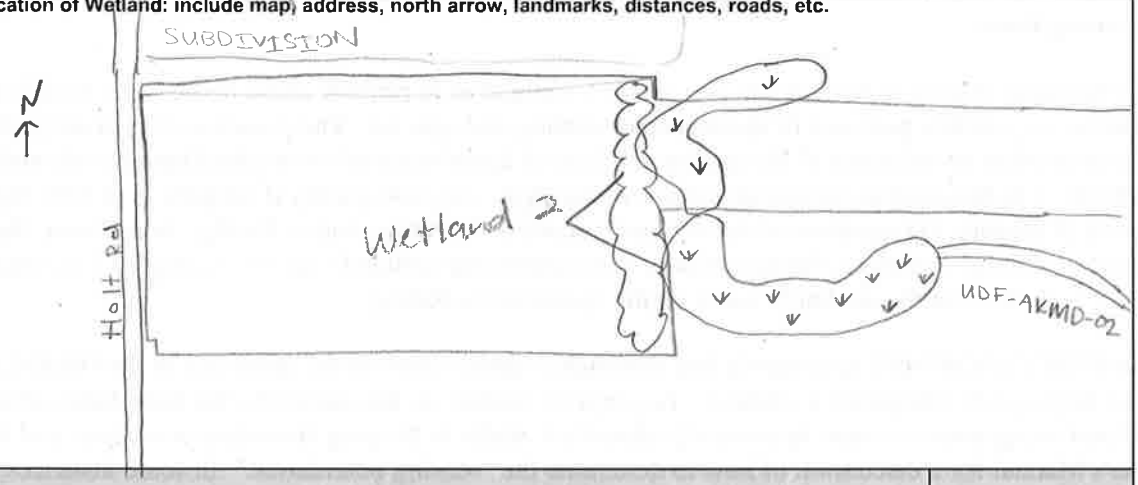
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Aaron Kwolek
Date:	3/3/2016
Affiliation:	Stantec
Address:	11687 Lebanon Rd
Phone Number:	(513) 842-8200
e-mail address:	aaron.kwolek@stantec.com
Name of Wetland:	Wetland 2
Vegetation Communit(ies):	PEM
HGM Class(es):	depressional

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

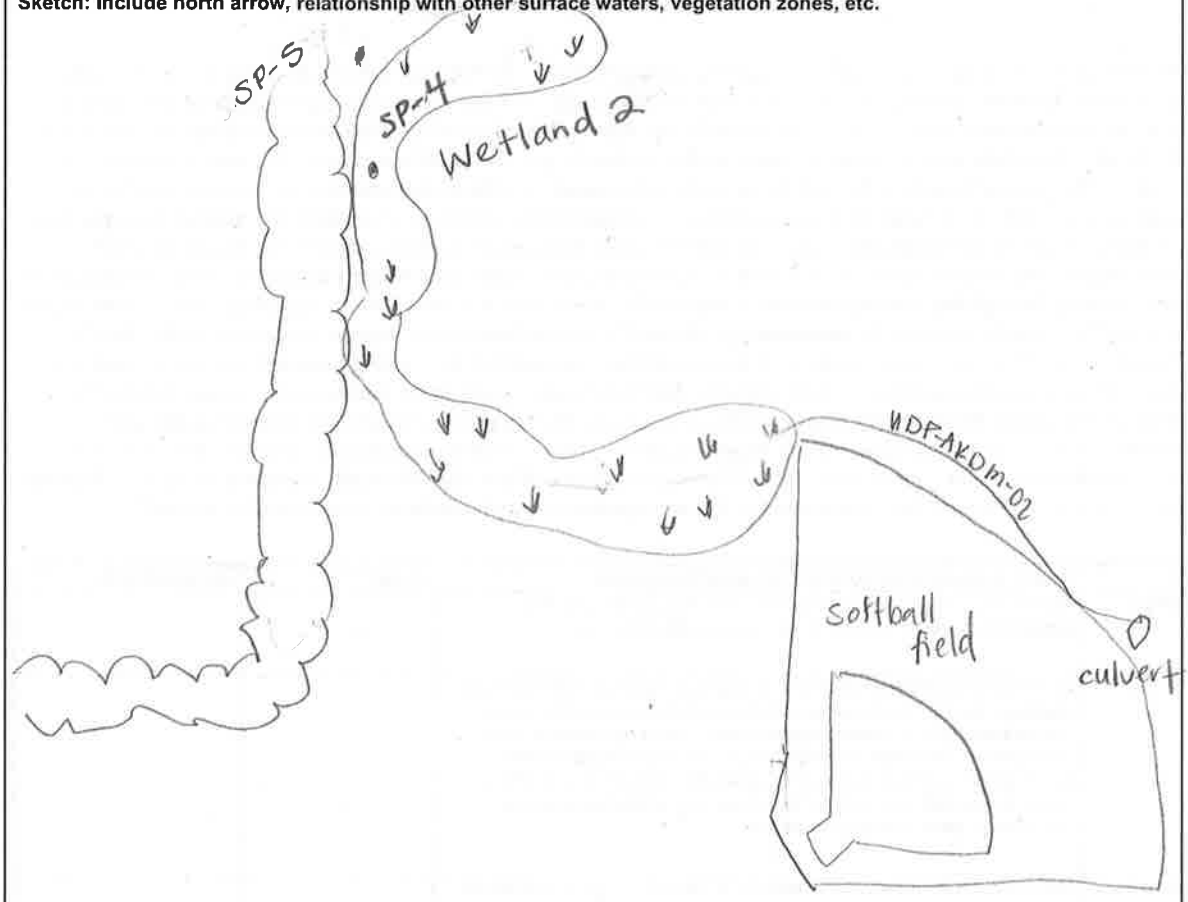


Lat/Long or UTM Coordinate	39.899234°N, -83.117618°W
USGS Quad Name	Southwest Columbus
County	Franklin
Township	N/A
Section and Subsection	N/A
Hydrologic Unit Code	05060001
Site Visit	3/3/2016
National Wetland Inventory Map	None
Ohio Wetland Inventory Map	N/A
Soil Survey	Ko Kokomo silty clay loam 0-2% slopes
Delineation report/map	See Jurisdictional Waters Report

Name of Wetland: Wetland 2

Wetland Size (acres, hectares): <0.1 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 21 **Category:** 1

Wetland 2

Scoring Boundary Worksheet

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

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

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

Wetland 2

Narrative Rating

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

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

Wetland 2

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

Wetland 2

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

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

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland 2	Rater(s): Aaron Kwolek	Date: 3/2/2016

Metric 1. Wetland Area (size).

max 6 pts. | subtotal: 0 | 0

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

max 14 pts. | subtotal: 3 | 3

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

max 30 pts. | subtotal: 7 | 10

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1) — 1
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

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

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

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1) — 1

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

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

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

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

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [x] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal: 10 | 10

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

subtotal this page: 10

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Site: Wetland 2	Rater(s): Aaron Kwolek	Date: 3/3/2016

10
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 10 subtotal

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

5 max 20 pts. | 21 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [3] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

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

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

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

6d. Microtopography.
Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

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End of Quantitative Rating. Complete Categorization Worksheets.

Wetland 2

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	7	
	Metric 4. Habitat	6	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	5	
	TOTAL SCORE	21	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland 2

Wetland Categorization Worksheet

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

	Final Category		
Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.