# CONSTRUCTION NOTICE FOR THE

# Duke Energy Ohio, Inc.

# Duke Energy Ohio St. Annes Avenue Tower Replacement Project

# PUCO Case No. 19-1384-EL-BNR

**Submitted to:**

**The Ohio Power Siting Board**

**Pursuant to OAC 4906-06**

**Submitted by:**

**Duke Energy Ohio, Inc.**

**July 2019**

# Construction Notice

This Construction Notice has been prepared by Duke Energy Ohio, Inc. (hereafter "Duke Energy Ohio") in accordance with Ohio Administrative Code (OAC) Section **4906-6-05** for the review of Accelerated Certificate Applications for the Duke Energy Ohio St. Annes Avenue Tower Replacement Project (formerly referred to as the Duke Energy Ohio C10-X2-129 Emergent Structure Replacement Project) (Project) . The following section corresponds to the administrative code sections for the requirements of a Construction Notice.

## 4906-06-05 APPLICATION REQUIREMENTS

### 4906-6-05 (B): General Information

### 4906-6-05 (B)(1) Name, Reference Number, Brief Description, and Construction Notice Requirement

Name of Project: Duke Energy Ohio St. Annes Avenue Tower Replacement Project

2019 LTFR Reference: The Project was included on pages 63 and 64 of the 2019 Long-Term Forecast Report (LTFR). The Project has not been presented to PJM for an upgrade identification number, as it results in no change to the model.

Brief Description of the Project:

Duke Energy Ohio proposes to replace an existing lattice tower (Structure C10-X2-129) with a new steel monopole structure with a concrete foundation within an existing Duke Energy Ohio right of way (ROW). The current structure has two circuits attached; Circuit 2865 is a 69-kilovolt (kV) transmission line and Circuit 6885 is a 138-kV transmission line. These circuits will be transferred over to the new monopole structure. The replacement of this structure is required due to damage to the lattice tower from a fallen tree. The Project is located in Hamilton County north of St. Annes Avenue and south of Aston View Lane.

Construction Notice Requirement:

This Project qualifies as a Construction Notice filing because of the change in structure type as required in OAC 4906-1-01, Appendix A, item (2)(a). Item (2)(a) allows for the filing of a Construction Notice for "*Adding new circuits on existing structures designed for*

*multiple circuit use, replacing conductors on existing structures with larger or bundled conductors, adding structures to an existing transmission line, or replacing structures with a different type of structure, for a distance of: (a) Two miles or less*"

## 4906-6-05 (B)(2): Need for the Project

The Project is required to repair the integrity of the lattice structure due to structural damage incurred by a recent fallen tree. Pictures of the damaged structure are included in Attachment A. The Project is also needed to ensure safety within the existing easements and remain in compliance with current transmission line standards. The entire Project area is located within existing transmission Duke Energy Ohio ROW.

## 4906-6-05 (B)(3): Location of the Project Relative to Existing or Proposed Lines

The location of the Project is depicted in Attachment A: Figures 1 and 2. Figure 1 shows the Project's general vicinity depicted on a United States Geological Survey (USGS) quadrangle topographic map. Figure 2 depicts the planned transmission line location, ecological resources in the Project vicinity, and additional details depicted on an aerial imagery map.

## 4906-6-05 (B)(4): Alternatives Considered

One of the existing lattice structure's main components (structure leg) was damaged and the repairs that would be necessary to repair/replace would be extensive and could cause further damage to the other structure legs.

The other alternative would be to replace the existing lattice tower with another lattice tower. This was not the preferred option because the load requirements do not require lattice and the outage duration would be longer to facilitate construction. This is why Duke Energy Ohio has the preferred solution as replacing the damaged tower with a steel monopole structure.

## 4906-6-05 (B)(5): Public Information Program

Property owners within 150 feet of the work will be notified by mail prior to the initiation of any construction. Further information on the ongoing status of this Project and other Duke Energy Ohio projects can be found at the following website: https://www.duke-energy.com/our-company/about-us/electric-transmission-projects.

## 4906-6-05 (B)(6): Construction Schedule

Work on the Project is scheduled to start, pending approval of this application, on August 5, 2019. Construction is scheduled to be complete on December 4, 2019.

## 4906-6-05 (B)(7): Area Map

Figures 1 and 2 in Attachment A depict the general location of the Project. Attachment A, Figure 1 depicts the general Project vicinity depicted on a USGS quadrangle topographic map. Attachment A, Figure 2 depicts the planned transmission line location, ecological resources in the Project vicinity, and additional details on an aerial imagery map.

## 4906-6-05 (B)(8): Property Owner List

The proposed Project is located within existing ROW easements.

## 4906-6-05 (B)(9): TECHNICAL FEATURES OF THE PROJECT

Duke Energy Ohio proposes to replace the damaged lattice structure with an steel monopole with a concrete foundation, located in the Village of North Bend and Miami Township, Hamilton County, Ohio. The current structure has two circuits attached; Circuit 2865 is a 69-kV transmission line and Circuit 6885 is a 138-kV transmission line. These circuits will be transferred over, using the existing wire, to the new monopole structure.

## 4906-6-05 (B)(9)(a): Operating Characteristics

| | |
|---|---|
| Voltage: | 138kV: 6885<br>69kV: 2865 |
| Structure Type: | Remove lattice tower C10-X2-129<br>Replace with one (1) steel monopole structure with concrete foundation |
| Conductors: | 138kV: 852.6 ACAR 30x7<br>69kV: 852.6 ACAR 30x7 |
| Insulators: | 138kV: Glass Suspension Insulators<br>69kV: Glass Suspension Insulators |
| Right-of-Way: | Within an existing Duke Energy Ohio easement |

## 4906-6-05 (B)(9)(b): Electric and Magnetic Fields

Information concerning the electric and magnetic fields is not required as the Project is not located within 100 feet of an occupied residence or institution.

## 4906-6-05 (B)(9)(c): Estimated Cost

The estimated cost for the Project is approximately $630,000.

## 4906-6-05 (B)(10): SOCIAL AND ECOLOGICAL IMPACTS

## 4906-6-05 (B)(10)(a): Land Uses

The Project is located in the Village of North Bend and Miami Township, Hamilton County, Ohio. The Village of North Bend covers about 1.15 square miles, contained a population of 857 people based on 2010 census data. Miami Township, which includes the Village of North Bend covers about 23.8 square miles and contained a population of 15,757 people based on 2010 census data. The land use immediately surrounding the Project area is predominantly undeveloped secondary forest and recreational (golf course).

## 4906-6-05 (B)(10)(b): Agricultural Land

Agricultural land vegetation assemblage does not exist within the Project area.

## 4906-6-05 (B)(10)(c): Archaeological or Cultural Resources

The Ohio Historic Preservation Office's (OHPO) online mapping system was consulted to identify previously recorded cultural resources within the one-mile buffer of the Study Area. The OHPO records check indicates that 30 archaeological sites, 94 historic structures, 1 cemetery, 2 National Registry of Historic Places (NRHP) Historic Districts, and 3 individually listed NRHP resources, 1 of which is an archaeological site that has been recommended for delisting, have been identified within the one-mile buffer. Two (2) previously identified cultural resources are located within or adjacent to the Study Area (33-Ha-0364/ NPS Ref. No. 75001420 and 33-Ha-0629). Site 33-Ha-0364 is currently listed on the NRHP; however, the mound associated with the site was determined to be non-cultural, and the site has been recommended for delisting from the NRHP; however, due to additional artifacts located within the site boundaries, it was recommended the site retain its state site trinomial. This site is not in an area where earth-moving activities are anticipated and no further work is recommended at this site. Site 33-Ha-0629 consists of a small lithic scatter identified within the Study Area. Current Project plans anticipate

earth-moving activities within the boundaries of the site; however, the site has been previously disturbed and graded and it is unlikely that the site is significant.

The majority of the western portion of the Study Area appears to have been graded as a result of the construction of the existing transmission line ROW. The current Project plan anticipates grading in four specific areas for more efficient vehicular access along the existing corridor as well as replacing a lattice tower with a single monopole tower in the same location. A grounding location is located at the eastern terminus of the Project corridor; however, no ground-disturbing work will occur between the lattice tower replacement and this location. The majority of the Project area has been previously surveyed for cultural resources. One small area of proposed grading near the structure has not been previously investigated for cultural resources. Cardno recommends an archaeological site visit and limited testing to confirm disturbed soils within this area due to the large amount of cultural resources in the region. In addition, a minimal portion of one archaeological site (33-Ha-0629) is located within a proposed grading area. This ephemeral site contained only two (2) flakes and Cardno recommends no further investigation of this site that was previously noted as being located within disturbed soils. No additional archaeological work is recommended in areas that have been previously investigated for cultural resources or in areas where no ground-disturbing work is anticipated.

**Table 1-1 Cultural Resources in the 1.0-mile buffer**

| Resource Number | Resource Type | Resource Name | Address/ Location |
|---|---|---|---|
| NPS Ref. No. 91001388 | NRHP Historic District | Village of Addyston Historic District | Addyston, Ohio |
| 33-Ha-0081 | Prehistoric Mound | N/A | Confidential |
| 33-Ha-0082 | Prehistoric Mound | N/A | Confidential |
| 33-Ha-0083 | Prehistoric Cemetery | N/A | Confidential |
| 33-Ha-0364/ NPS Ref. No. 75001420 | NRHP Listed Prehistoric/ Historic Site (recommended for delisting) | Conrad Mound Archaeological Site | Portions within study area |
| 33-Ha-0368 | Prehistoric Mound | N/A | Confidential |
| 33-Ha-0616 | Historic Site | N/A | Confidential |
| 33-Ha-0617 | Historic Site | N/A | Confidential |
| 33-Ha-0618 | Prehistoric and Historic Site | N/A | Confidential |
| 33-Ha-0619 | Historic Site | N/A | Confidential |
| 33-Ha-0620 | Prehistoric Site | N/A | Confidential |

**Table 1-1 Cultural Resources in the 1.0-mile buffer**

| Resource Number | Resource Type | Resource Name | Address/ Location |
|---|---|---|---|
| 33-Ha-0621 | Prehistoric and Historic Site | John Aston Warder Site | Confidential |
| 33-Ha-0622 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0623 | Historic Site | N/A | Confidential |
| 33-Ha-0624 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0625 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0626 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0627 | Historic Site | N/A | Confidential |
| 33-Ha-0628 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0629 | Prehistoric Site | N/A | Located within current study area |
| 33-Ha-0630 | Historic Site | N/A | Confidential |
| 33-Ha-0631 | Historic Site | N/A | Confidential |
| 33-Ha-0632 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0633 | Prehistoric and Historic Site | N/A | Confidential |
| 33-Ha-0634 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0635 | Historic Site | N/A | Confidential |
| 33-Ha-0636 | Historic Site | N/A | Confidential |
| 33-Ha-0688 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0689 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0690 | Prehistoric Site | N/A | Confidential |
| 33-Ha-0691 | Prehistoric Site | N/A | Confidential |
| HAM0003653/ NPS Ref. No. 780020840 | Single Dwelling | John Aston Warder House | 10 Muirfield Dr & Shady Ln |
| HAM0021753 | Church/Religious Structure | Cleves Presbyterian Church | 25 E State Rd |
| HAM0373653 | Single Dwelling | | 8709 Bridgetown Rd |
| HAM0373753 | Single Dwelling | | 8538 Bridgetown Rd |

**Table 1-1 Cultural Resources in the 1.0-mile buffer**

| Resource Number | Resource Type | Resource Name | Address/ Location |
|---|---|---|---|
| HAM0373853 | Barn | | 8460? Bridgetown Rd |
| HAM0467053 | Single Dwelling | | River Rd |
| HAM0467153 | Single Dwelling | | 10 Woodruff St |
| HAM0467253 | Single Dwelling | | 23 Washington Ave |
| HAM0467353 | Single Dwelling | | 9 Washington Ave |
| HAM0467453 | Single Dwelling | | 16 Washington Ave |
| HAM0467553 | Single Dwelling | | 18 Washington Ave |
| HAM0467653 | Church/Religious Structure | North Bend United Methodist | 125 Symmes Ave |
| HAM0467753 | Single Dwelling | | 129 Symmes Ave |
| HAM0467853 | Barn | Cady House | 48 Taylor Ave |
| HAM0467953 | | North Bend Child Care Inc | 36 Taylor Ave |
| HAM0468053 | Natural Feature | | Taylor Ave near Symmes Ave |
| HAM0468153 | Single Dwelling | | 25 Taylor Ave |
| HAM0468253 | Single Dwelling | | 4 Miami Ave |
| HAM0468353 | Commercial | Wear N Share | 3 Miami Ave |
| HAM0468453 | Single Dwelling | | 115 Shawnee St |
| HAM0468553 | Single Dwelling | | 6 Cliff Rd |
| HAM0468653 | Financial Institution | Cleves-North Bend Bldg & Loan | 125 Miami Ave |
| HAM0468753 | Natural Feature | Big Oak Spring | Miami Ave near Taylor Ave |
| HAM0468853 | Unknown Use | Red's Grocery/Hardware Store | 154 Miami Ave |
| HAM0468953 | Single Dwelling | | 8 W Harrison Ave |
| HAM0469053 | Service Station | | 1 E Harrison Ave |

**Table 1-1 Cultural Resources in the 1.0-mile buffer**

| Resource Number | Resource Type | Resource Name | Address/ Location |
|---|---|---|---|
| HAM0469153 | Single Dwelling | | 7 Harrison Ave |
| HAM0469253 | Single Dwelling | | 9 Harrison Ave |
| HAM0469353 | School | Taylor High School | 3630 Harrison Ave |
| HAM0469453 | Single Dwelling | | 170 Miami Ave |
| HAM0469553 | Single Dwelling | | 168 Miami Ave |
| HAM0469653 | Single Dwelling | | 162 Miami Ave |
| HAM0469753/ NPS Ref. No. 700004999/ OGS ID 15190 | Graves/Burials | William Henry Harrison Tomb and Monument | Cliff Rd, W of US 50 |
| HAM0469953 | Single Dwelling | | 115 Cliff Rd |
| HAM0470053 | Single Dwelling | Pat Hoegeman House | 26 Ridge Ave |
| HAM0470153 | Single Dwelling | | 401 S Miami Ave |
| HAM0470253 | Rail Related | | Miami Ave near Mt Nebo Rd |
| HAM0470353 | Single Dwelling | | 323 S Miami Ave |
| HAM0470453 | Single Dwelling | | 324 S Miami Ave |
| HAM0470553 | Row House | | 318-326 S Miami Ave |
| HAM0470653 | Single Dwelling | | Bassett St |
| HAM0470753 | Single Dwelling | | 177 Symmes Ave |
| HAM0470953 | Church/Religious Structure | Cleve's Comm Interfaith Cch | 231 S Miami Ave |
| HAM0471053 | Single Dwelling | | 214 S Miami Ave |
| HAM0471153 | Single Dwelling | | 214 S Miami Ave (rear) |
| HAM0471253 | Financial Institution | Knights of Pythias | 200 S Miami Ave |
| HAM0471353 | Commercial | General Metal Works | 145 S Miami Ave |
| HAM0471453 | Commercial | Terrel's Coifs & Colors | 131 S Miami Ave |

**Table 1-1 Cultural Resources in the 1.0-mile buffer**

| Resource Number | Resource Type | Resource Name | Address/ Location |
|---|---|---|---|
| HAM0471553 | Commercial | Treasure Outlet Gift Shoppe | 119 S Miami Ave |
| HAM0471653 | Single Dwelling | | 113 S Miami Ave |
| HAM0471753 | Single Dwelling | | 105 S Miami Ave |
| HAM0471853 | Village/Twp/City Hall | Miami Twp Hall | 112 S Miami Ave |
| HAM0471953 | Single Dwelling | | 104-106 S Miami Ave |
| HAM0472053 | Funeral Home | Argo Funeral Home | 100 S Miami Ave |
| HAM0472153 | Church/Religious Structure | Cleves United Methodist Church | 116 Milbury? Ave |
| HAM0472253 | Commercial | | 49 S Miami Ave |
| HAM0472353 | Commercial | Three Rivers TV Service | 27 S Miami Ave |
| HAM0472453 | Commercial | Merrilees Hardware | 25 S Miami Ave |
| HAM0472553 | Commercial | Ann's Tavern | 15 S Miami Ave |
| HAM0472653 | Commercial | Kattman Harmacy | 8 S Miami Ave |
| HAM0472753 | Commercial | Korner Carry Out | 2 S Miami Ave |
| HAM0472853 | Financial Institution | Central Trust Co | NWC W State St & Miami Ave |
| HAM0472953 | Single Dwelling | | 20 W State St |
| HAM0473053 | Rail Related | Dental Depot | Conrail RailRoad near US 50 & SR 5 |
| HAM0473153 | Single Dwelling | | 200 N Miami Ave |
| HAM0473253 | Single Dwelling | | 207 N Miami Ave |
| HAM0473353 | Single Dwelling | | 211 N Miami Ave |
| HAM0474353 | Single Dwelling | | 200 N Porter St |
| HAM0474453 | Single Dwelling | | 200 Skidmore Ave |
| HAM0474553 | Single Dwelling | | 100 Skidmore Ave |
| HAM0474653 | Single Dwelling | | 22 Skidmore Ave |
| HAM0474753 | Single Dwelling | | 15 E State St |

**Table 1-1 Cultural Resources in the 1.0-mile buffer**

| Resource Number | Resource Type | Resource Name | Address/ Location |
|---|---|---|---|
| HAM0474953 | Single Dwelling | Miller-Stockum Post 485 | 29 E State St |
| HAM0475053 | Single Dwelling | | 56 E State St |
| HAM0475153 | Single Dwelling | | 66 E State St |
| HAM0475253 | Single Dwelling | | 80 E State St |
| HAM0475353 | Single Dwelling | | 142 E State St |
| HAM0475453 | Single Dwelling | | 8768 Bridgetown Rd |
| HAM0475553 | Single Dwelling | | 8760 Bridgetown Rd |
| HAM0475653 | Single Dwelling | | Bridgetown Rd |
| HAM0475753 | Single Dwelling | | 153 Harrison Ave |
| HAM0475853 | Single Dwelling | | 146 Cleves Ave |
| HAM0598053 | Single Dwelling | | 137 Cleves Ave |
| HAM0598153 | Single Dwelling | | 418 S Miami Ave |
| HAM0598253 | Single Dwelling | | 28 Harrison Ave |
| HAM0598353 | Single Dwelling | | 116 Mt Nebro Rd |
| HAM0598453 | Single Dwelling | | 160 Cleves Ave |
| HAM0598553 | Single Dwelling | | 206 Symmes Ave |
| HAM0598653 | Single Dwelling | | 8 E State St |
| HAM0598753 | Single Dwelling | | 24 Ridge Ave |
| HAM0598853 | Single Dwelling | | 203 Main St |
| HAM0637753/ NPS Ref. No. 01000562 | Canal Related | Harrison Tunnel | E of US 50 |
| HAM0852753 | Storage | Storage Building | Congress Green & Cliff Rd |
| HAM0852853 | Food Procurement/ Processing | Harrison Mill Stone | Cliff Rd, W of US 50 |

## 4906-6-05 (B)(10)(d): Local, State, and Federal Requirements

An Earthwork Permit from the Hamilton County Soil and Water Conservation District will be submitted in July 2019 for the proposed 1.12 acres of ground disturbance associated with the Project.

A Driveway Permit from the Hamilton County Engineers Office will be submitted in July 2019 for the proposed installation of one (1) temporary construction entrance to access the Project area.

A National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Storm Water is required from the Ohio Environmental Protection Agency (OEPA) since the Project will have over an acre of ground disturbance. This permit was approved on June 25, 2019 (Ohio EPA Facility Permit Number 1GC07271*AG) and a copy of the OEPA approval letter is available in Attachment C.

Duke Energy Ohio has applied for clearance from the Federal Aviation Administration (FAA) and the Ohio Department of Transportation for no-hazard determinations to navigable airspace.

No other local, state or federal permit or other authorizations are required for the Project.

## 4906-6-05 (B)(10)(e): Rare, Threatened, and Endangered Species Investigation

Several sources of information were consulted to further define the potential habitat of listed species that occur within the county of the Project. Attachment A, Table 1, contains a list of the Rare, Threatened and Endangered (RTE) species known to occur within Hamilton County and their potential to occur within the Project area based on their habitat requirements and observations during the field survey.

Coordination with the U.S. Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources Division of Wildlife (ODNR-DOW) was initiated on June 12, 2019. The ODNR-DOW data request receipt was received on June 13, 2019 and the USFWS response was received on June 25, 2019 (Attachment C).

The entire Project area was field surveyed by Cardno, Inc. (Cardno), as part of contracted services to assess ecological impacts. This included habitat assessments to identify RTE species and their habitat, specifically Indiana bat and northern long-eared bat roost trees. Based on Cardno's field inspection, the Project area consisted of actively maintained right-of-way, maintained turf/recreational land, and secondary growth forest. Secondary growth forest was located adjacent to the Project area as well as along the riparian corridor to Stream 1, but will not be impacted by construction activities. No trees with characteristic habitat indicators of primary maternity roost trees were identified within the Project area.

## 4906-6-05 (B)(10)(f): Areas of Ecological Concern

As a part of the investigation, Duke Energy Ohio hired Cardno to conduct an investigation for areas of ecological concern. As a part of Cardno's investigation, a request was submitted to the ODNR Environmental Review Services and USFWS on June 12, 2019, to research the presence of any unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife area, nature preserves, parks or forest, national wildlife refuges, or other protected areas within one (1) mile of the Project area, using the ODNR Natural Heritage Database. A copy of the USFWS response and ODNR-DOW data request receipts are included in Attachment C.

As a part of the field investigation and ecological assessment, Cardno conducted a wetland delineation and stream assessment of the Project area. Cardno's investigation included approximately 13.9 acres around the proposed centerline, access roads, and additional workspace areas. During the investigation, Cardno identified one (1) perennial stream (Stream 1) and no potentially regulated wetlands within the Project area. See Attachment D, Regulated Waters Delineation Report.

The proposed construction access plan as shown in Attachment A, Figure 2.01-2.024, was developed by Cardno to minimize disturbance to all streams and wetlands. No impacts to streams or RTE habitat will result from the Project.

As a part of the investigation, Cardno identified 100-year floodplains using the FEMA National Flood Hazard Layer within the Project area. Attachment A, Figure 2 depicts the location of the 100-year floodplains in relation to the Project area. No 100-year floodplains were identified within the Project area.

## 4906-6-05 (B)(10)(g): Other Information

To the best of Duke Energy Ohio's knowledge, no unusual conditions exist that would result in environmental, social, health, or safety impacts. Construction and operation of the proposed Project will meet all applicable safety standards established by the Occupational Safety and Health Administration, and will be in accordance with the requirements specified in the latest revision of the National Electric Safety Code as adopted by the Public Utilities Commission of Ohio.

## 4906-6-07: Document of Construction Notice Transmittal and Availability for Public Review

Copies of the Construction Notice have been sent to the appropriate public officials for Hamilton County, the Village of North Bend, and Miami Township, as well as to the Hamilton County Public Library.

# Attachment A

# Figures and Tables

PROJECT LOCATION

HAMILTON COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: HOODEN AND ADDYSTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 01/2017.

N

0 1,000 2,000 4,000 Feet

Project Centerline
State Highway
Interstate
US Highway
Railroad
County Boundary
Existing Facility
Municipal Boundary

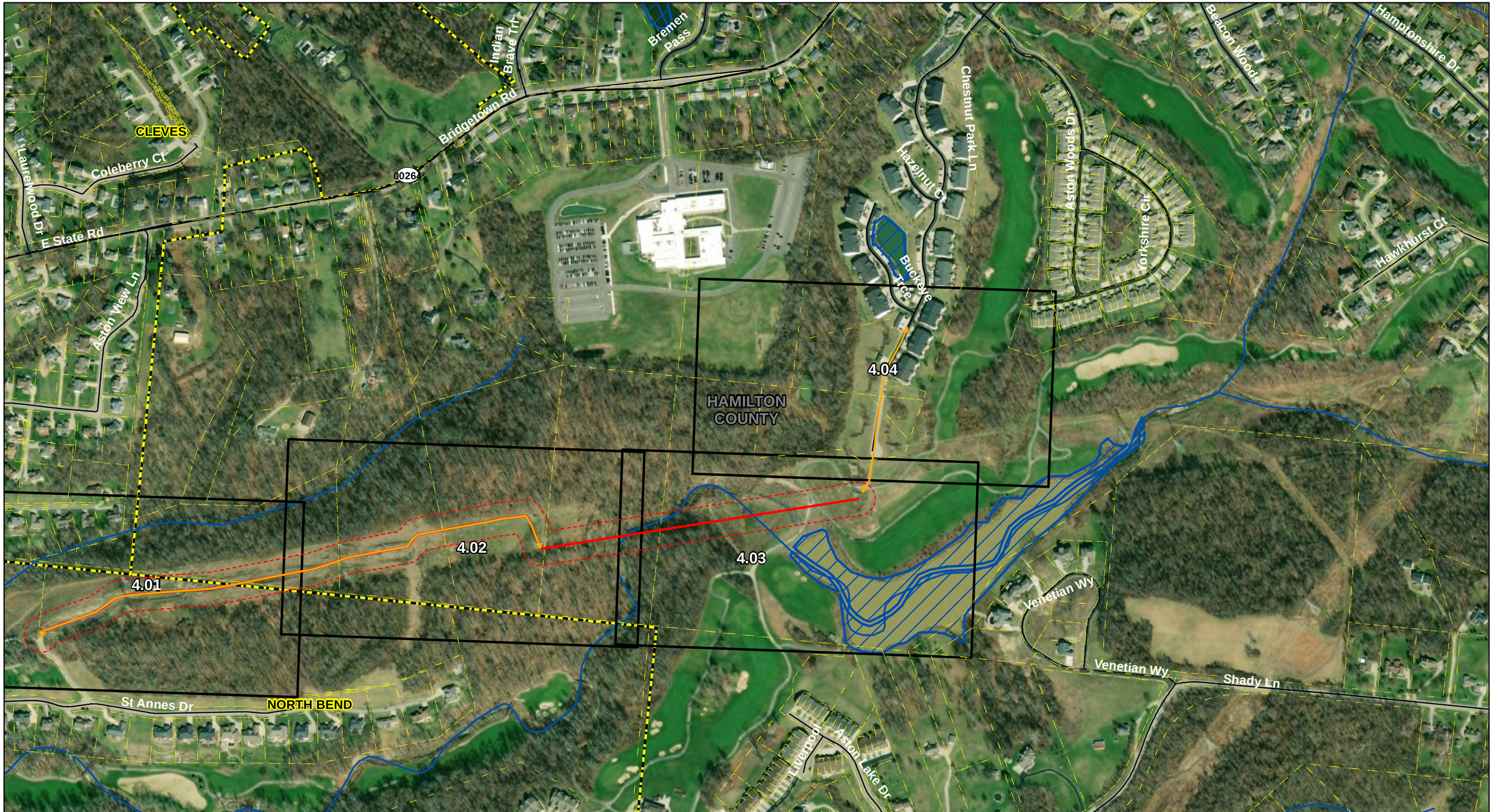
DUKE ENERGY.

Cardno

FIGURE 1
OPSB BNR FILING
PUCO Case No. 19-1384-EL-BNR
ST. ANNES TOWER PLACEMENT PROJECT
DUKE ENERGY OHIO
PROJECT VICINITY MAP

DRAWN BY: COD
CHECKED: CJ
DATE: 6/27/2019
APPROVED: JT

\\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\OPSB\M96_EmergentTower_OPSB_F1_Project Vicinity.mxd




Project Location

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 210 420 840 Feet

Potential Access
Project Centerline
150-ft Corridor
M96_parcels
Sheet Index
NWI Wetland
NHDFlowline
100Yr Floodplain
Interstate
State Highway
US Highway
Railroad
County Boundary*
Municipal Boundary
Existing Facility

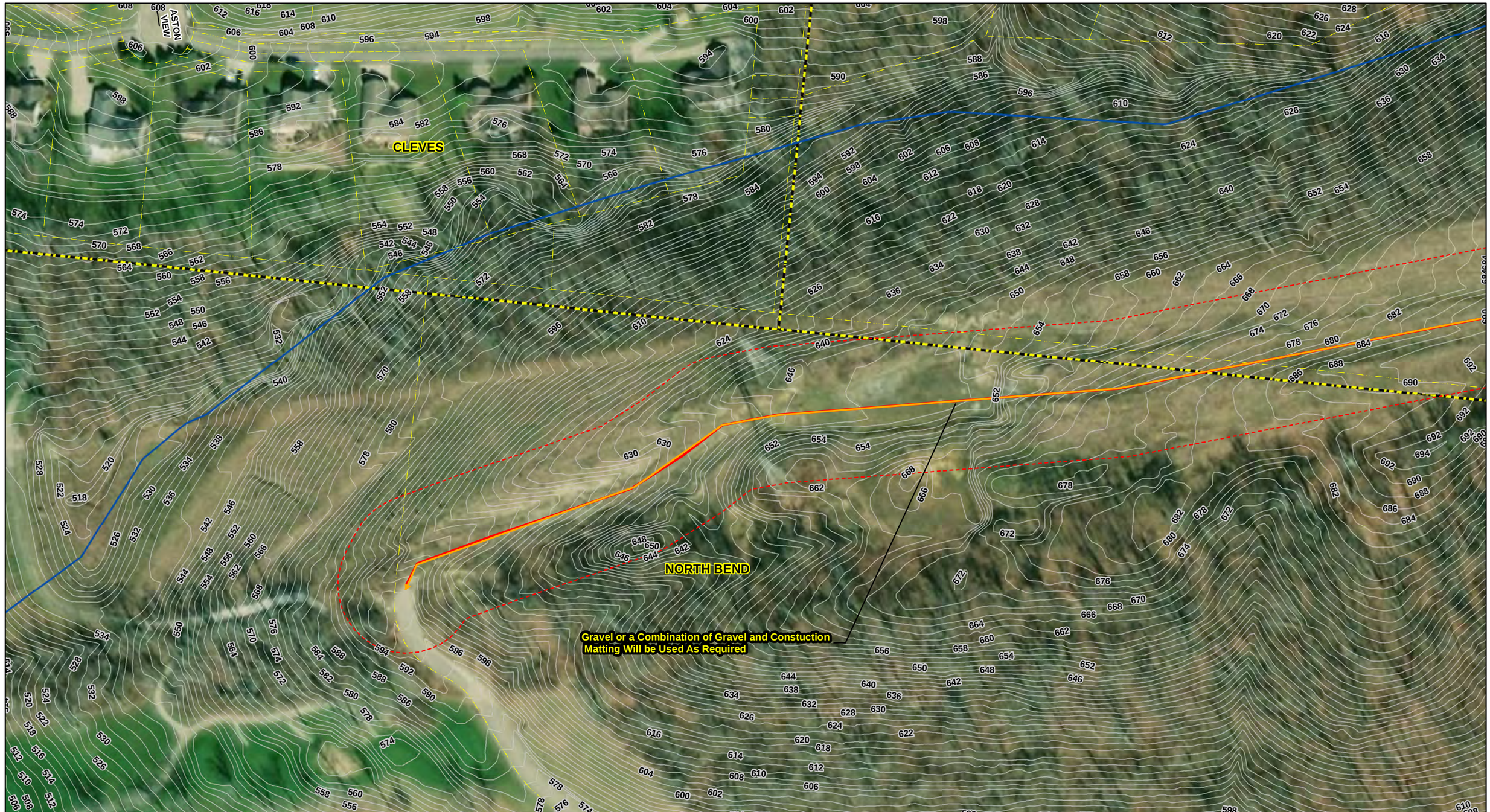
DUKE ENERGY.

Cardno

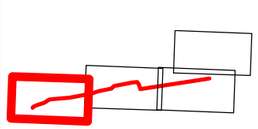
FIGURE: 2
OPSB BNR FILING
PUCO Case No. 19-1384-EL-BNR
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS PLAN INDEX SHEET

DRAWN BY: COD DATE: 6/25/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\OPSB\M96_EmergentTower_2_OPSB_KeyMap.mxd




SHEET INDEX



REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- Potential Access
- Project Centerline
- 150-ft Corridor
- Parcels
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- Existing Facility
- 1' Contour Line

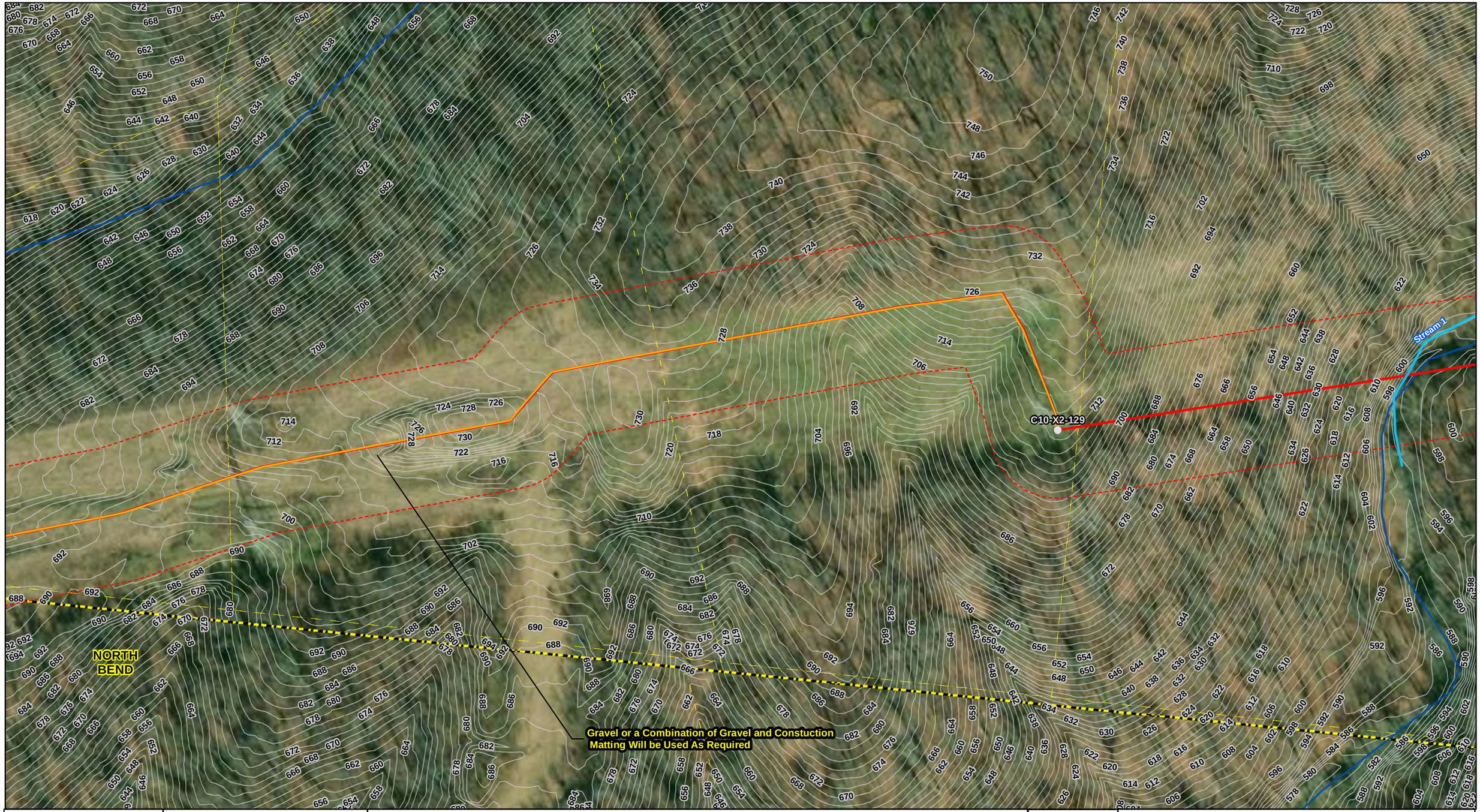
DUKE ENERGY.

Cardno

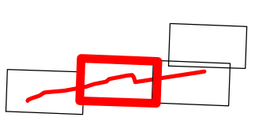
FIGURE 2.01
OPSB BNR FILING
PUCO Case No. 19-1384-EL-BNR
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS

DRAWN BY: COD DATE: 6/25/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\OPSB\SWPPP_M96_EmergentTower_4plus_OPSB_set.mxd




SHEET INDEX



REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- Potential Access
- Project Centerline
- 150-ft Corridor
- Parcels
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- Existing Facility
- 1' Contour Line

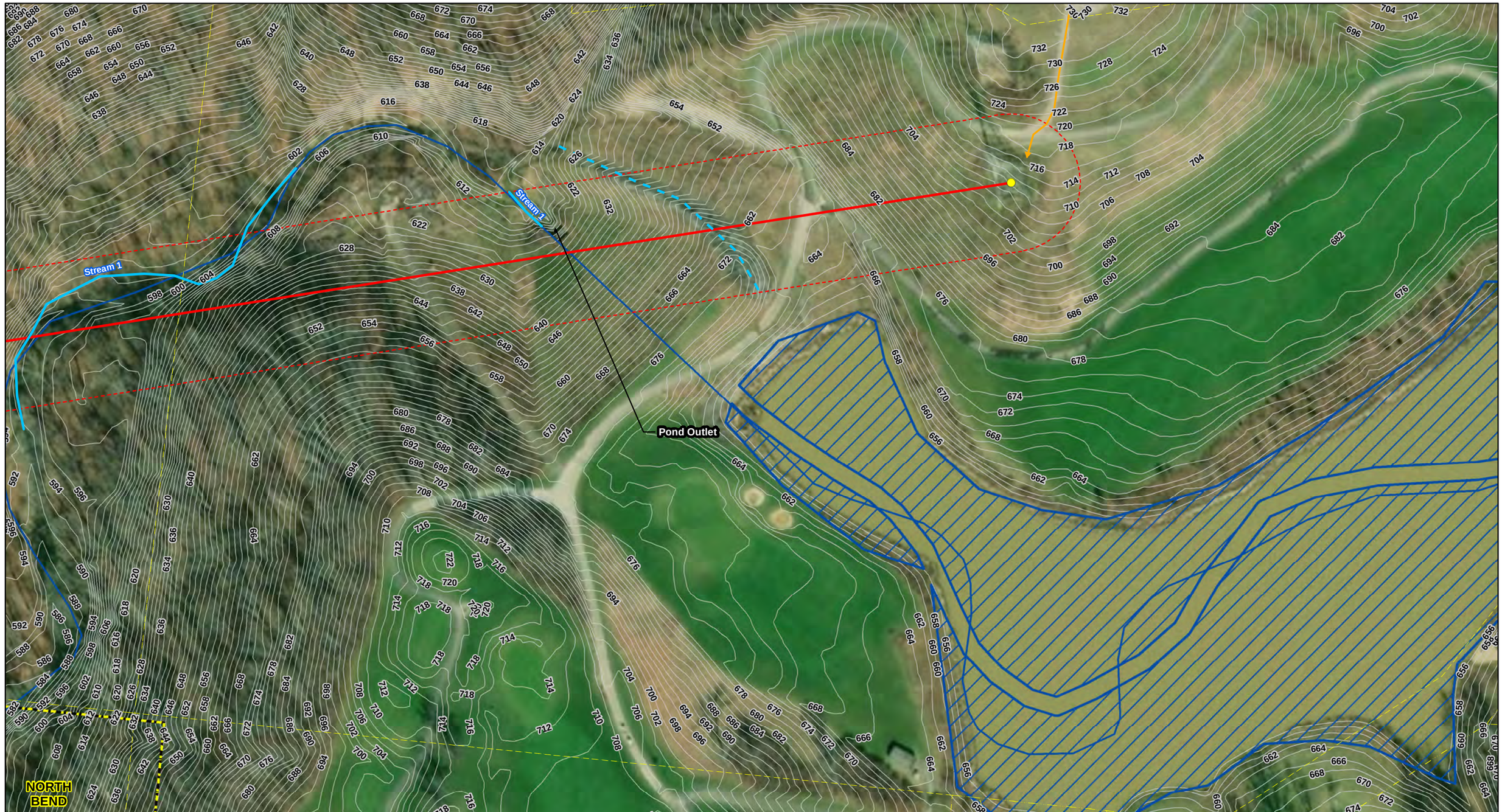
DUKE ENERGY.

Cardno

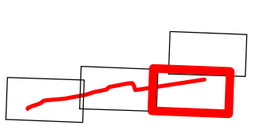
FIGURE 2.02
OPSB BNR FILING
PUCO Case No. 19-1384-EL-BNR
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS

DRAWN BY: COD DATE: 6/25/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\OPSB\SWPPP_M96_EmergentTower_4plus_OPSB_set.mxd




SHEET INDEX



REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- Potential Access
- Project Centerline
- 150-ft Corridor
- Parcels
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- Existing Facility
- 1' Contour Line

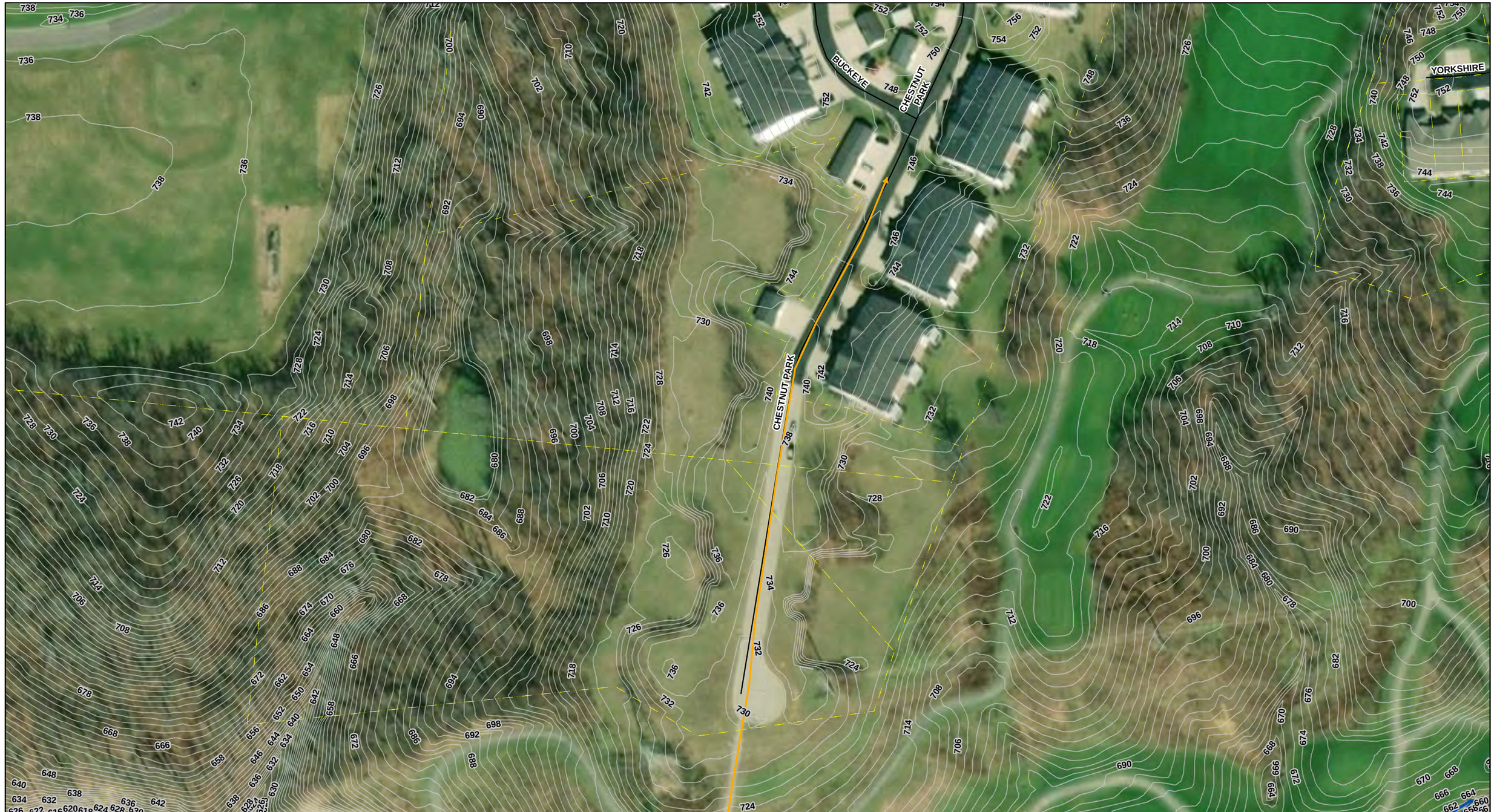
DUKE ENERGY.

Cardno

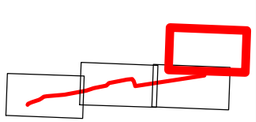
FIGURE 2.03
OPSB BNR FILING
PUCO Case No. 19-1384-EL-BNR
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS

DRAWN BY: COD DATE: 6/25/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\OPSB\SWPPP_M96_EmergentTower_4plus_OPSB_set.mxd




SHEET INDEX



REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- Potential Access
- Project Centerline
- 150-ft Corridor
- Parcels
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- Existing Facility
- 1' Contour Line

DUKE ENERGY.

Cardno

FIGURE 2.04
OPSB BNR FILING
PUCO Case No. 19-1384-EL-BNR
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS

DRAWN BY: COD DATE: 6/25/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\OPSB\SWPPP_M96_EmergentTower_4plus_OPSB_set.mxd

**Construction Notice**
**Duke Energy Ohio St. Anne's Avenue Tower Replacement Project**
**Hamilton County, Ohio**

# Attachment B

# Cultural Resources Literature Review

# Cultural Resources Literature Review

St. Annes Avenue Tower Replacement Project

Hamilton County, Ohio

Cardno

# Document Information

| | |
|---|---|
| Prepared for | Duke Energy Ohio |
| Project Name | Cultural Resources Literature Review St. Annes Avenue Tower Replacement Project, Hamilton County, Ohio |
| Project Number | J156720M96 |
| Client Contact | Dustin Giesler (Duke Energy Ohio) |
| Project Manager | Cori Jansing (Cardno) |
| Date | June 24, 2019 |

Prepared and Submitted By Kaye Grob and Veronica Parsell

Principal Investigator Veronica Parsell

Prepared for:

Duke Energy Ohio
139 E. 4th Street, Cincinnati, Ohio 45202

Prepared by:

Cardno
11121 Canal Road, Cincinnati, Ohio, 45241

# Table of Contents

**Executive Summary** ..... **iv**

**1 Introduction** ..... **1**

**2 Background Research** ..... **3**

2.1 Literature Review ..... 3

2.1.1 National Historic Landmarks List ..... 3

2.1.2 National Register of Historic Places (NRHP) ..... 3

2.1.3 Ohio Archaeological Inventory Forms (OAI) ..... 4

2.1.4 Ohio Historic Inventory Forms (OHI) ..... 9

2.1.5 Ohio Genealogical Society (OGS) Cemetery Survey files ..... 9

2.1.6 Cultural Resource Management (CRM) Reports ..... 9

2.1.7 Historic Maps and Atlases ..... 11

2.2 Brief Environmental Context ..... 12

2.2.1 Project Area Soils ..... 12

2.2.2 Prehistoric Cultural Setting ..... 14

2.2.3 Historic Cultural Setting ..... 17

2.3 Summary and Discussion ..... 18

**3 Summary and Recommendations** ..... **19**

3.1 Project Overview ..... 19

3.2 Applicable Regulations and Guidelines ..... 19

3.3 Summary of Results and Recommendations ..... 20

**4 References Cited** ..... **21**

# Appendices

Appendix A OHI Resources within the Study Area

Appendix B Historic Maps and Aerials

Appendix C Photopages

# Tables

Table 1. Archaeological sites within the 1.6 km (1.0 mi) Study Area ..... 4

Table 2. Soil Units within the Project Area ..... 12

# Figures

Figure 1. Project Location ..... 2

Figure 2. Previously Identified Cultural Resources ..... 7

Figure 3. Previous Cultural Resources Investigations ..... 8

Figure 4. Project Area Soils ..... 13

# Executive Summary

Cardno, Inc. (Cardno) conducted a cultural resources literature review for the Duke Energy Ohio St. Annes Avenue Tower Replacement Project Area in Hamilton County, Ohio. Research focused on documenting known prehistoric and historic resources within a 1.6 km (1 mi) radius of the Project Area (the Study Area) to ascertain the likelihood for encountering unidentified cultural resources within Project Area boundaries. The literature review centered on the 1.6 km (1 mi) Study Area but also examined the region on a larger scale when appropriate.

The current project plans anticipate specific areas along an existing transmission line corridor that will be graded in order to allow ease of vehicular access within the 45.7 meter (m) (150 foot [ft]) wide corridor as well as the replacement of a singular lattice tower with a single engineered monopole with a foundation in the current tower location (Figure 1). The anticipated graded areas total 0.46 hectares (ha) (1.13 acres [ac]).

The literature review indicates that two previously identified archaeological sites are located within or adjacent to the Project Area (33-Ha-0364 and 33-Ha-0629). A total of 30 archaeological sites, 94 historic structures, two cemeteries, two NRHP Historic Districts, and three individually listed NRHP resources, one of which is an archaeological district that has been recommended for delisting, have been identified within the 1.6 km (1 mi) Study Area. The majority of the Project Area has been heavily disturbed by mechanical equipment. These areas are not conducive for containing intact cultural deposits.

The majority of the western portion of the Project Area appears to have been graded as a result of the construction of the existing transmission line Right-Of-Way (ROW). The majority of the Project Area has also been previously surveyed for cultural resources (Genheimer 1994; Kreinbrink 1995). One (1) small area of proposed grading area located immediately east of Duke Energy Structure C10-X2-129 has not been previously investigated for cultural resources. Cardno recommends an archaeological site visit and limited testing to confirm disturbed soils within this area due to the large amount of cultural resources in the region. In addition, a minimal portion of one (1) archaeological site (33-Ha-0629) is located within proposed grading Area 2. This ephemeral site contained only two (2) flakes and Cardno recommends no further investigation of this site, as it was previously noted as being located within disturbed soils. The remainder of the Project Area has either been previously surveyed for cultural resources or no ground disturbing work will occur within the Project Area in these locations. No further archaeological investigations are recommended for previously surveyed areas or areas in which no ground-disturbing work is anticipated.

# 1 Introduction

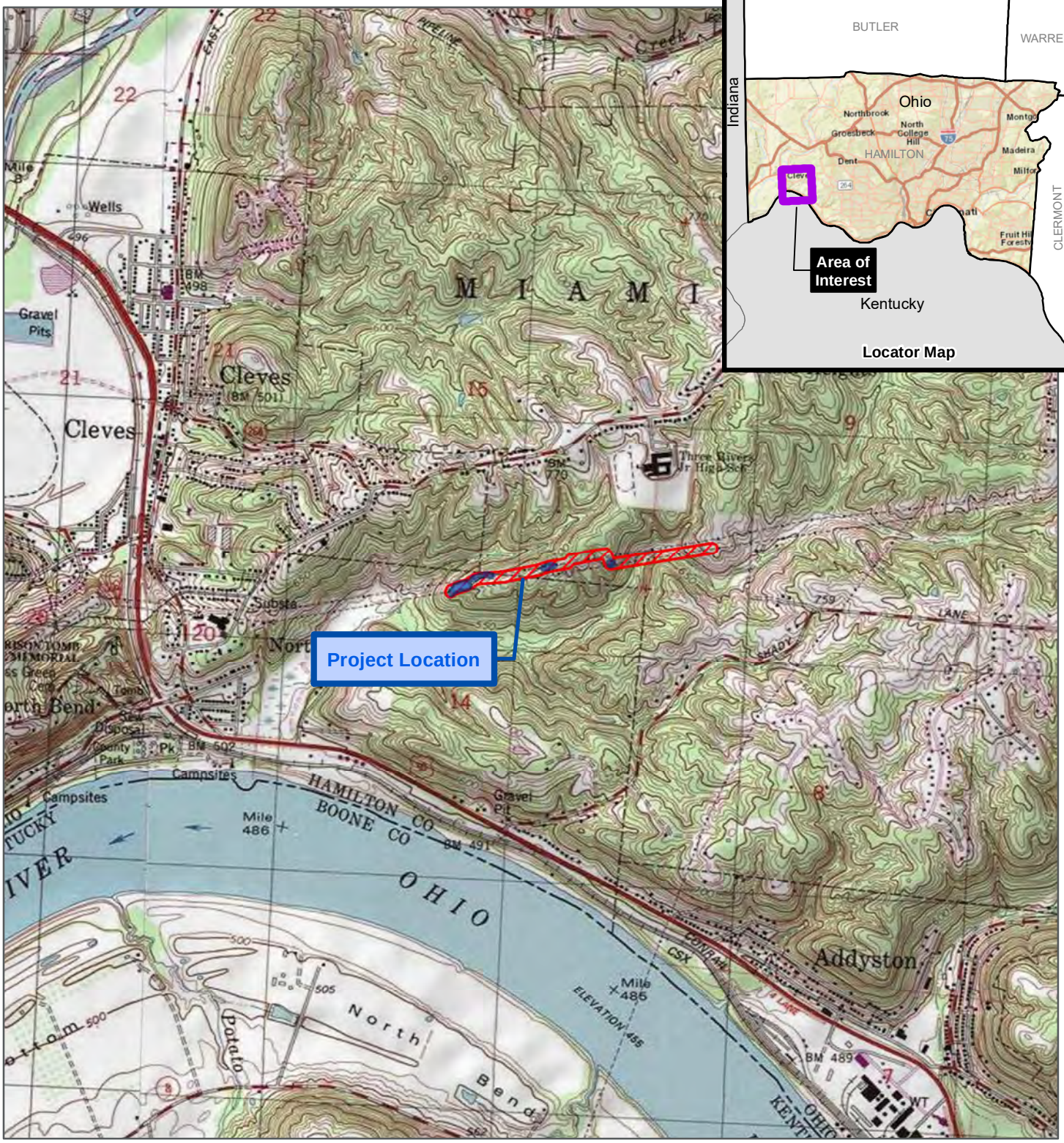
In response to a request from Duke Energy Ohio (Duke Energy), Cardno, Inc. (Cardno) conducted a cultural resources records review for the Duke Energy St. Annes Avenue Tower Replacement Project Area in Hamilton County, Ohio (the Project Area). Based on information provided by Duke Energy, the Project Area is located in the Sections 9, 14, and 15 on the Addyston, Ohio 7.5' topographic map in Hamilton County, Ohio (Figure 1). The Project Area consists of a 1.2 km (0.75 mi) long, 45.7 m (150 ft) wide project corridor for a transmission improvement project. It initiates at a proposed access route within the Duke Energy Right-Of-Way (ROW) located south of Aston View Lane, north of St. Annes/Ohio Avenue, east of East Harrison Avenue, and west of the Aston Oaks Golf Club at approximately 39.155217, -84.735031 and travels east 0.5 miles to Duke Energy Structure C10-X2-129, located at 39.156456, -84.727087 in Miami Township, Hamilton County, Ohio. The Project Area continues to travel east to a grounding location at 39.157153°, -84.721906°. No earth disturbing work will occur between Duke Energy Structure C10-X2-129 and this location. The access for this Project anticipates grading three areas in order allow ease of vehicular access. The project will additionally replace one lattice tower has a 138kV and 69kV line that it is supporting with single engineered monopole with a foundation in the current tower location. An area measuring 30.5 m x 30.5 m (100 ft x 100 ft) will be graded for the replacement tower foundation. No additional earth disturbing work is anticipated, beyond vehicular travel that will not exceed the disturbance created by the current corridor maintenance equipment. The Project Area consists of approximately 5.63 hectares (ha) (13.9 acres [ac]), with an actual project earth disturbance potential of 0.46 ha (1.13 ac).

The project plans as currently drawn anticipate four areas where grading will be required. The proposed earth disturbing work/ grading associated with the St. Annes Avenue Tower Replacement Project is necessary to allow ease of vehicular access along the existing power line corridor, and to replace one existing lattice tower with a new single engineered monopole. Grading will be accomplished largely through the use of mechanical equipment. No other ground-disturbing work beyond the use of the corridor for vehicular access is anticipated; however, grading plans are currently still being finalized.

Background research conducted in June 2019 focused on a 1.6 km (1 mi) radius around the proposed Project Area (the "Study Area"). Cardno gathered information about previously conducted cultural resource investigations and documented cultural resources as well as the environmental and cultural context of the region to assess the potential for additional undocumented cultural resources in and around the Study Area.

Key personnel committed to the project include Ms. Veronica Parsell and Ms. Kaye Grob, who served as report co-authors. Mr. Stephen LaFon created the report graphics.

This report presents the research design and results of the background research in Section 2.0. Section 3.0 discusses the conclusions and recommendations. The references cited in this report appear in Section 4.0. Appendix A lists Ohio Historic Inventory (OHI) resources within the Study Area, Appendix B includes historic maps, and Appendix C includes project overview photos.




0 500 1,000 2,000 Feet

0 100 200 300 400 500 600 Meters

Grading Area

Project Location

N W E S

7.5' Quadrangle: Addyston
T1e R2n Sec14-15
Project No. j156720m96

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

**Figure 1: Project Location**

Cultural Resources Literature Review
St. Annes Avenue Tower Replacement Project
Duke Energy Ohio
Hamilton County, Ohio

Cardno
11121 Canal Road, Cincinnati, OH 45241
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com

Date: 6/24/2019 File Path: \\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\LitReview\F1_Location.mxd Saved By: Cori.Jansing

Basemap: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community, Copyright:© 2013 National Geographic Society, i-cubed

# 2 Background Research

The objective of the current study is to identify and evaluate previously documented archaeological resources present within the proposed Project Area, as well as assess the potential for the Project Area to contain additional cultural resources.

This section provides a basic context through which to evaluate the results of our investigation, and will briefly outline the environmental and cultural background of the region in and around Hamilton County, Ohio.

## 2.1 Literature Review

Research was conducted using data from online files provided by the Ohio Historic Preservation Office (OHPO) in June 2019 (OHC 2015a). Cardno focused on previously recorded resources within 1.6 km (1 mi) of the Project Area, but also examined the larger region where appropriate. For the literature review the following resources were consulted:

- National Historic Landmark list;
- National Register of Historic Places (NRHP) list;
- Ohio Archaeological Inventory Forms (OAI);
- Ohio Historic Inventory Forms (OHI);
- Cultural Resource Management reports;
- Ohio Genealogical Society (OGS) Cemetery Survey files;
- County Histories and Atlas Maps;
- Mills (1914) Archaeological Atlas of Ohio.

Reviewed records indicate that 30 archaeological sites, 94 historic structures, one cemetery, two NRHP Historic Districts, and three individually listed NRHP resources, one of which is an archaeological district that has been recommended for delisting, have been identified within the 1.6 km (1 mi) Study Area (Figure 2).

### 2.1.1 National Historic Landmarks List

No National Historic Landmarks are located within the 1.6 km (1.0 mi) Study Area.

### 2.1.2 National Register of Historic Places (NRHP)

Research indicates two NRHP Historic Districts and three individually listed NRHP resources are located the 1.6 km (1 mi) Study Area. The Village of Addyston Historic District (NPS Ref. No. 91001388) is located approximately 1.28 km (0.79 mi) south of the Project Area. The William Henry Harrison Tomb State Memorial (OGS ID 15190; OHI No. HAM0469753; NPS Ref. No. 70000499) is located approximately 1.38 km (0.86 mi) west of the Project Area.

The John Aston Warder House (NPS Ref. No. 780020840; OHI No. HAM0003653) is located 0.45 km (0.28 mi) south of the Project Area. The property associated with the house is known for the unusual trees and shrubs that Mr. Warder planted created. Mr. Warder was also the first president of the American Forestry Association (Kreinbrink 1994a).

The Cincinnati Whitewater and Canal Tunnel/ Harrison Tunnel (NPS Ref. No. 01000562; OHI No. HAM0637753) consists of a brick and sandstone canal tunnel constructed between 1837 and 1846. It was the first canal tunnel built in Ohio and one of 12 within the United States. Portions of the tunnel have been

destroyed by the construction of surrounding infrastructure (Cowden et al. 2001). The tunnel is located approximately 1.31 km (0.81 mi) west of the Project Area.

Lastly, portions of the Conrad Mound Archaeological Site (NPS Ref. No. 75001420; 33-Ha-0364) are located within the northern boundary of the St. Annes Avenue Tower Replacement Project Area. The site was originally reported to consist of a 60-meter diameter conical Woodland period burial mound. The site was listed in the NRHP in 1975. A total of five acres were included in the National Register nomination, with the mound in the center, as features often occur in association with Woodland mounds, and the boundary was determined to ensure that any associated features would be included and protected (Scheurer 1974). Following its nomination to the NRHP, in 1994, Kemron conducted archaeological excavations via trenching at the mound and determined it was not cultural in nature. The trench within the purported mound contained soil stratigraphy similar to the surrounding landform. Results of testing indicated the mound was a natural rise at the end of a narrow bedrock uplift or ridge, situated on the crest of a longer sloping ridge system. Kreinbrink (1994c) recommended that the site retain its site trinomial due to the ephemeral lithic scatter associated with the original reporting; however, she recommended that it be removed from the National Register. No evidence could be found that this resource has been subsequently delisted.

Although the boundaries of this NRHP listed resource are located within the current project boundaries, they are not located within areas that will be subject to earth disturbing work. In addition, a 1994 survey that included the current Project Area as well as portions of this resource did not identify any cultural resources within or adjacent to the NRHP boundary (Genheimer 1994).

### 2.1.3 Ohio Archaeological Inventory Forms (OAI)

The OAI files indicates 30 archaeological sites within the 1.6 km (1 mi) Study Area (Table 1). Of these sites, two are located within the current Project Area (Figure 2). Site 33-Ha-0364 (NPS Ref. No. 75001420) consists of the Conrad Mound Archaeological Site, and is discussed above. This site is not located in an area that will be subject to earth moving activities, and a previous survey of the site within the current Project Area did not reveal any cultural resources. In addition, it was determined that the mound was not cultural and it was recommended the resource be delisted from the NRHP (Kreinbrink 1994c), although it appears to not have been delisted as recommended. No further archaeological work is recommended at site 33-Ha-0364.

Site 33-Ha-0629 consists of a small prehistoric lithic scatter identified during a 1994 survey (Genheimer 1994). This site is located within an area in which grading is proposed during the current project activities (Area 2). The site consists of 2 lithic flakes and was reported to have been located within the powerline corridor where previous grading was observed by the investigators (Genheimer 1994). No NRHP assessment was provided by the original reporting of the site; however, as the site is ephemeral in nature and has been subjected to previous disturbance, no further archaeological work is recommended at site 33-Ha-0629.

Additional archaeological sites outside the Project Area are listed in Table 1. Archaeological sites outside the Project Area are not depicted on Figure 2 due to the sensitive nature of the resource.

**Table 1. Archaeological sites within the 1.6 km (1.0 mi) Study Area**

| Site Number | Site Type | Site Affiliation | NRHP Status |
|---|---|---|---|
| 33-Ha-0081 | Prehistoric Mound | Woodland | No provided recommendations |
| 33-Ha-0082 | Prehistoric Mound | Woodland | No provided recommendations |
| 33-Ha-0083 | Prehistoric Cemetery | Unidentified Prehistoric | No provided recommendations |

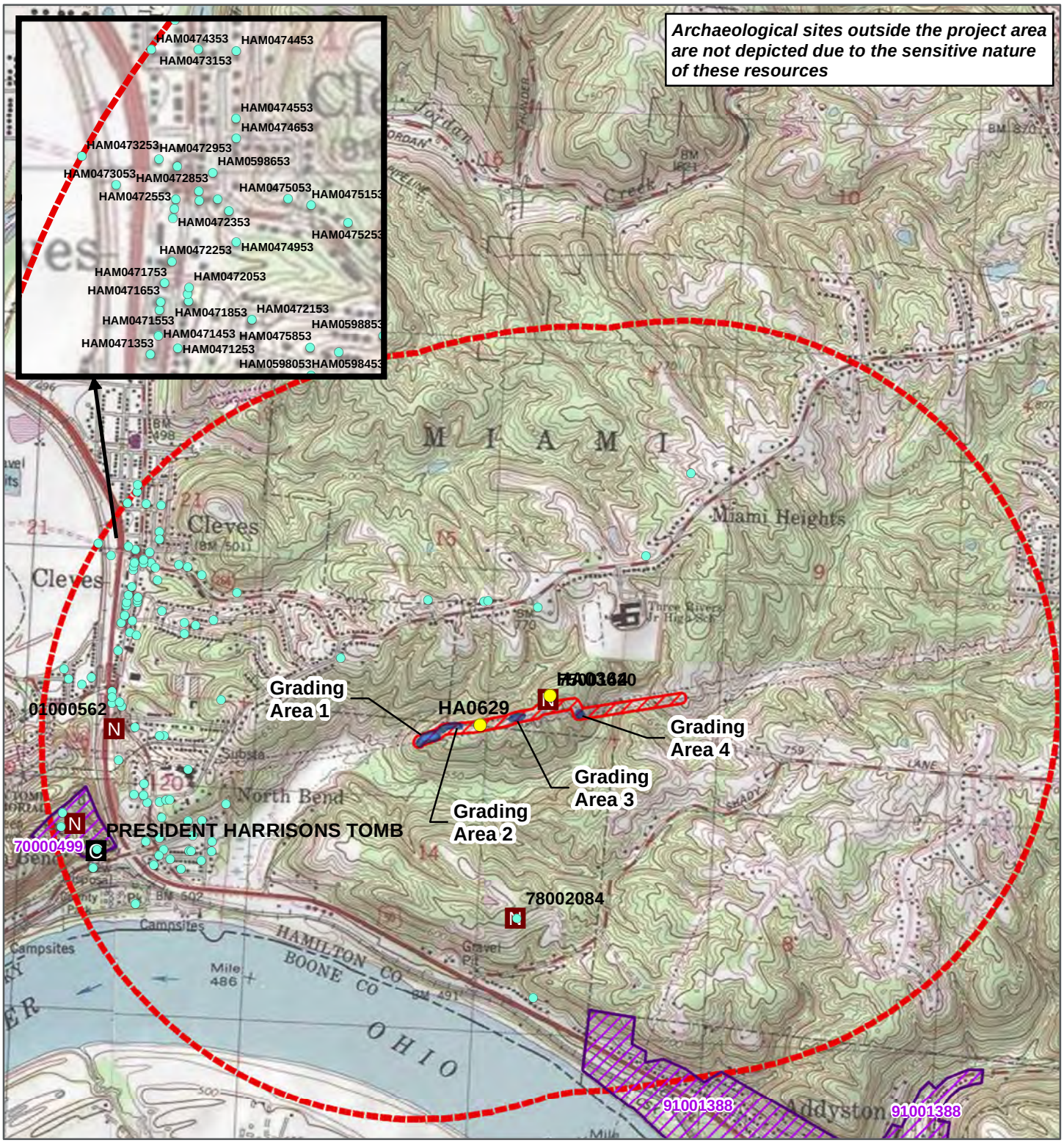
**Table 1. Archaeological sites within the 1.6 km (1.0 mi) Study Area**

| Site Number | Site Type | Site Affiliation | NRHP Status |
|---|---|---|---|
| *33-Ha-0364 | Prehistoric/ Historic | Unidentified Prehistoric/ Historic Non-aboriginal | Listed on the NRHP; however, recommended for delisting |
| 33-Ha-0368 | Prehistoric Mound | Woodland | No provided recommendations |
| 33-Ha-0616 | Historic | Historic Non-aboriginal | No further work recommended |
| 33-Ha-0617 | Historic | Historic Non-aboriginal | No further work recommended |
| 33-Ha-0618 | Prehistoric and Historic | Unidentified Prehistoric/ Historic Non-aboriginal | Potentially Eligible |
| 33-Ha-0619 | Historic | Historic Non-aboriginal | No further work recommended |
| 33-Ha-0620 | Prehistoric | Unidentified Prehistoric | No further work recommended |
| 33-Ha-0621 | Prehistoric and Historic | Middle Woodland/ Historic Non-aboriginal | Potentially Eligible |
| 33-Ha-0622 | Prehistoric | Unidentified Prehistoric | No further work recommended |
| 33-Ha-0623 | Historic | Historic Non-aboriginal | Potentially Eligible |
| 33-Ha-0624 | Prehistoric | Unidentified Prehistoric | No further work recommended |
| 33-Ha-0625 | Prehistoric | Unidentified Prehistoric | No further work recommended |
| 33-Ha-0626 | Prehistoric | Unidentified Prehistoric | No further work recommended |
| 33-Ha-0627 | Historic | Historic Non-aboriginal | Potentially Eligible |
| 33-Ha-0628 | Prehistoric | Woodland | No further work recommended |
| *33-Ha-0629 | Prehistoric | Unidentified Prehistoric | No further work recommended |
| 33-Ha-0630 | Historic | Historic Non-aboriginal | No further work recommended |
| 33-Ha-0631 | Historic | Historic Non-aboriginal | No further work recommended |
| 33-Ha-0632 | Prehistoric | Middle Woodland | No further work recommended |
| 33-Ha-0633 | Prehistoric and Historic | Unidentified Prehistoric/ Historic Non-aboriginal | Potentially Eligible |
| 33-Ha-0634 | Prehistoric | Woodland | No further work recommended |
| 33-Ha-0635 | Historic | Historic Non-aboriginal | No further work recommended |

**Table 1. Archaeological sites within the 1.6 km (1.0 mi) Study Area**

| Site Number | Site Type | Site Affiliation | NRHP Status |
|---|---|---|---|
| 33-Ha-0636 | Historic | Historic Non-aboriginal | No further work recommended |
| 33-Ha-0688 | Prehistoric | Unidentified Prehistoric | Ineligible |
| 33-Ha-0689 | Prehistoric | Unidentified Prehistoric | Ineligible |
| 33-Ha-0690 | Prehistoric | Unidentified Prehistoric | Ineligible |
| 33-Ha-0691 | Prehistoric | Unidentified Prehistoric | Ineligible |

*Site within or adjacent to Project Area




0 1,000 2,000 Feet

0 200 400 600 Meters

Archaeological Site
Historic Structures
NR Listings
OGS Cemeteries
Grading Area
Project Location
NR Boundaries
1-Mile Radius

N
W E
S

7.5' Quadrangle:
Addyston
T1e R2n Sec14-15
Project No.
j156720m96

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

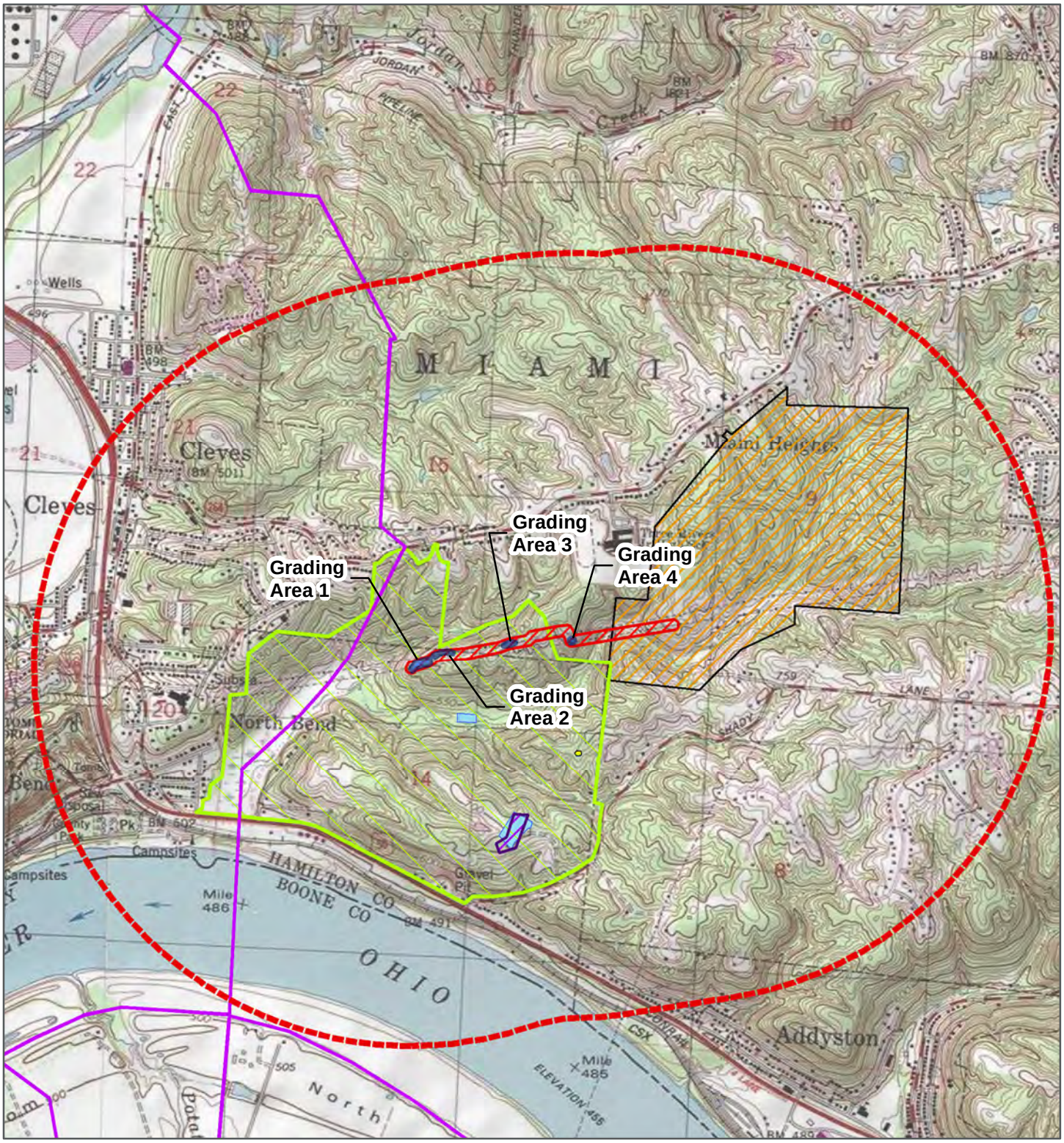
**Figure 2: Previously Identified Cultural Resources**

Cultural Resources Literature Review
St. Annes Avenue Tower Replacement Project
Duke Energy Ohio
Hamilton County, Ohio

Cardno
11121 Canal Road, Cincinnati, OH 45241
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com

Date: 6/25/2019 File Path: \\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\LitReview\F2_PrevIDCultResources.mxd Saved By: Cori.Jansing

Basemap: Copyright:© 2013 National Geographic Society, i-cubed




N
W E
S

**7.5' Quadrangle: Addyston**
**T1e R2n Sec14-15**
**Project No. j156720m96**

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

## Figure 3: Previous Cultural Resources Investigations

Cultural Resources Literature Review
St. Annes Avenue Tower Replacement Project
Duke Energy Ohio
Hamilton County, Ohio

Cardno
11121 Canal Road, Cincinnati, OH 45241
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com

Date: 6/25/2019 File Path: \\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\LitReview\F3_PrevCultResInvestigations.mxd Saved By: Cori.Jansing

Basemap: Copyright:© 2013 National Geographic Society, i-cubed

### 2.1.4 Ohio Historic Inventory Forms (OHI)

The OHI files list 94 historic resources within the 1.6-km (1-mi) Study Area (Figure 2). The structures include dwellings, a service station, mills/ processing/ manufacturing facilities, springs, a cemetery, commercial buildings, a school, barns, canal and rail related structures, and churches. The majority of these historic resources are located west of the Project Area in Cleves and North Bend. None of these resources are located within or adjacent to the areas where project activities will occur. The current project will conduct improvements on an existing transmission line corridor ROW, including grading for more efficient vehicular access. This grading will not directly affect any of the historic resources, nor will it adversely affect the current setting of the Project Area. The documented historic structures within the Study Area are listed in Appendix A.

### 2.1.5 Ohio Genealogical Society (OGS) Cemetery Survey files

One cemetery was identified within the 1.6-km (1-mi) Study Area (Figure 2). President Harrison's Tomb (OGS ID 15190; OHI No. HAM0469753; NPS Ref. No. 70000499) is located 1.38 km (0.86 mi) west of the Project Area. The cemetery is listed in the NRHP as the William Henry Harrison Tomb State Memorial.

### 2.1.6 Cultural Resource Management (CRM) Reports

Records on file at OHPO indicate that six cultural resource investigations have previously been conducted within 1.6 km (1 mi) of the Project Area (Figure 3).

In 1992, ASC Group conducted an archaeological reconnaissance for a Texas Eastern Pipeline travelling from Whitewater Township in Hamilton County, Ohio to the Greater Cincinnati Airport in Boone County, Kentucky (Corso et al. 1992). The survey investigated approximately 15 mi of pipeline route. A total of 53 archaeological sites were identified as a result of the survey, and subsequently the route was adjusted to only impact 34 of these sites. Of these sites, 28 sites were determined ineligible for the NRHP and 6 sites were recommended for further work to determine NRHP eligibility. None of these potentially eligible sites are located within the current Project Area.

In 1994, five archaeological investigations were conducted related to the Aston Oaks Development Project (Genheimer 1994; Kreinbrink 1994b and 1994c; Kreinbrink and Roberts 1994; Kreinbrink 1995). R.G. Archaeological Services conducted the primary survey, which investigated the majority of the current Project Area. The total Aston Oaks Development project encompassed 650 ac; however, the Genheimer (1994) survey investigated the Cleves and North Bend portion of the Project Area, which included 380 ac. Approximately 55 of these acres were situated on relatively flat land. The survey area included the entirety of the NRHP-listed John Aston Warder estate as well as the Conrad mound NRHP-listed site (33-Ha-0364). Twenty-one new archaeological sites were recorded as a result of this investigation (33-Ha-616 through 33-Ha-0636). Sites 33-Ha-0364, 33-Ha-0618, 33-Ha-0621, 33-Ha-0623, 33-Ha-0627, and 33-Ha-0633 were recommended for project avoidance as they could represent significant sites that were potentially eligible for the NRHP or were currently listed on the NRHP. It was also recommended that the NRHP boundary for the John Aston Warder estate be reduced from 232 ac to 3 ac as a result of disturbances to the original estate as well as the concentration of eligible resources near the farmstead center (Genheimer 1994). This survey investigated a large majority of the current Project Area and identified one new archaeological site within the current Project Area (33-Ha-0629), which was determined to not be significant (Genheimer 1994). The investigation also noted grading disturbance within the current transmission line ROW.

Later in 1994, Phase II archaeological testing was conducted at three sites and avoidance plans were created for these three sites as well as three additional sites (Kreinbrink 1994b). Five of these sites are outside of the current Project Area; however, one site (33-Ha-0364) is located within portions of the Project Area. The Phase II evaluation testing at this site determined that the NHRP-listed Conrad mound was non-cultural in nature and represented a natural geological formation. As a result, it was recommended that the

site be delisted from the NRHP but maintain a state site trinomial for the lithic and historic scatter identified within the recorded site boundaries (Kreinbrink 1994c).

Kreinbrink and Roberts (1994) also conducted Phase II evaluation testing at portions of the John Aston Warder site (33-Ha-0621) that would be impacted by the Aston Oaks Development project. It was determined that these two areas were heavily disturbed by historical activities and the two areas within site 33-Ha-0621 to be impacted by the project did not warrant inclusion as part of the John Aston Warder estate on the National Register. No further work was recommended for the investigated portions of site 33-Ha-0621 (Kreinbrink and Roberts 1994).

In 1995, an additional 270 ac associated with the Aston Oaks Development project were investigated for cultural resources. Four prehistoric lithic scatters were identified as a result of the survey (33-Ha-0688 through 33-Ha-0691). None of these sites were found to meet criteria for inclusion in the NRHP and it was recommended the project proceed as planned (Kreinbrink 1995). This survey investigates the majority of the eastern portion of the Project Area.

### 2.1.7 Historic Maps and Atlases

Three available historic maps were referenced for information pertaining to the historic use of the Project Area between 1869 and 1963 (Titus 1869; USGS 1914, and 1963) (Appendix B).

The 1869 atlas depicts no structures or features in the Project Area (Titus 1869). The Project Area is owned by Samuel Froome, M. Marklan, and Lucy E. Reynolds. The Project Area is located east of North Bend and Cleves. The location within Cincinnati does not appear to reflect the suburban nature of the Project Area today (Titus 1869).

The 1914 Cincinnati West 1:62,500 topographic map depicts no structures or features within the Project Area. The Project Area is in an undeveloped area east of North Bend and Cleves (USGS 1914).

By 1963, the current transmission line corridor has been constructed and no structures or features beyond the transmission corridor are mapped within or adjacent to the Project Area (USGS 1963).

In the *Archaeological Atlas of Ohio*, Mills (1914) lists a total of 186 prehistoric sites in Hamilton County including mounds, enclosures, villages, and burials. No mapped archaeological sites appear to be in the current Project Area.

## 2.2 Brief Environmental Context

The Project Area is located within the Interior Low Plateau Bluegrass Section Physiographic Region, in the Outer Bluegrass region (Brockman 1998). The Project Area is located within the Mill Creek watershed. An unnamed tributary of the Ohio River is located approximately 153 m (502 ft) south of the Project Area. The Project Area is located in an existing transmission line corridor. The area contains two high-tension transmission lines, and has likely been heavily disturbed by the construction of these features. This disturbance and associated grading was documented in an earlier cultural resources investigation (Genheimer 1994).

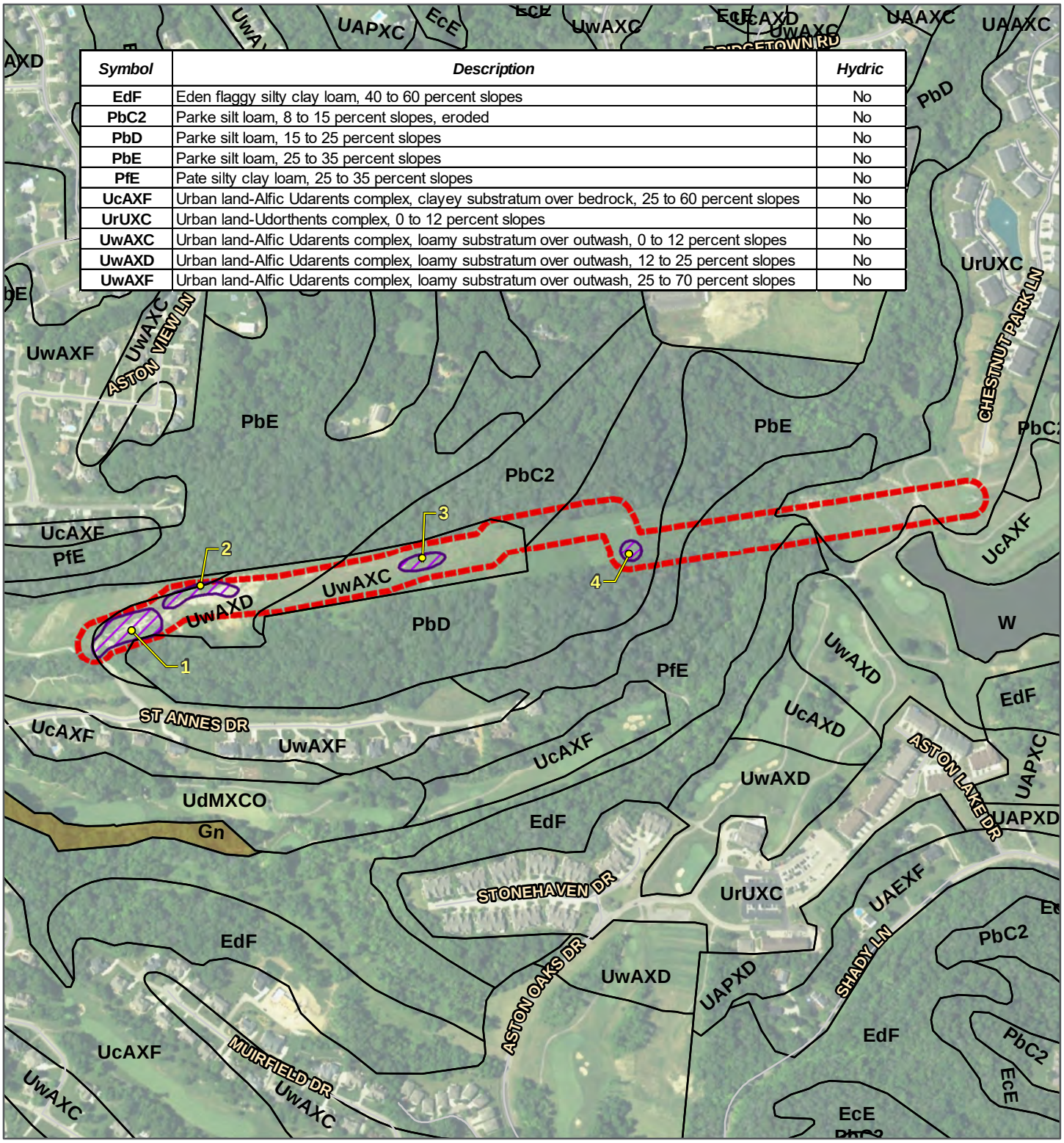
### 2.2.1 Project Area Soils

The Project Area is located within the Parke soil association, which consists of “deep, gently sloping to steep, well drained medium textured soils on high terraces” (USDA/SCS 1982) (Figure 4). Soils within the Project Area are depicted on Figure 4 and listed in Table 2. The soils in the Project Area are predominantly disturbed, urban soil units or are found in steeply sloped areas.

**Table 2. Soil Units within the Project Area**

| No | Soil Characteristics | Hydric |
|---|---|---|
| UcAXF | Urban land-Alfic Udarents Complex, clayey substratum over bedrock, 25-60% slopes | No |
| UrUXC | Urban land-Udorthents Complex, 0-12% slopes | No |
| UwAXD | Urban land-Alfic Udarents Complex, loamy substratum over outwash, 12-25% slopes | No |
| UwAXC | Urban land-Alfic Udarents Complex, loamy substratum over outwash, 0-12% slopes | No |
| UwAXF | Urban land-Alfic Udarents Complex, loamy substratum over outwash, 25-70% slopes | No |
| EdF | Eden flaggy silty clay loam, 40-60% slopes | No |
| PbC2 | Parke silt loam, 8-15% slopes, eroded | No |
| PbD | Parke silt loam, 15-25% slopes | No |
| PbE | Parke silt loam, 24-35% slopes | No |
| PfE | Pate silty clay loam, 25-35% slopes | No |

| Symbol | Description | Hydric |
|---|---|---|
| EdF | Eden flaggy silty clay loam, 40 to 60 percent slopes | No |
| PbC2 | Parke silt loam, 8 to 15 percent slopes, eroded | No |
| PbD | Parke silt loam, 15 to 25 percent slopes | No |
| PbE | Parke silt loam, 25 to 35 percent slopes | No |
| PfE | Pate silty clay loam, 25 to 35 percent slopes | No |
| UcAXF | Urban land-Alfic Udarents complex, clayey substratum over bedrock, 25 to 60 percent slopes | No |
| UrUXC | Urban land-Udorthents complex, 0 to 12 percent slopes | No |
| UwAXC | Urban land-Alfic Udarents complex, loamy substratum over outwash, 0 to 12 percent slopes | No |
| UwAXD | Urban land-Alfic Udarents complex, loamy substratum over outwash, 12 to 25 percent slopes | No |
| UwAXF | Urban land-Alfic Udarents complex, loamy substratum over outwash, 25 to 70 percent slopes | No |




N
W E
S

7.5' Quadrangle:
Addyston
T1e R2n Sec14-15
Project No.
j156720m96

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

**Figure 4: Project Area Soils**

Cultural Resources Literature Review
St. Annes Avenue Tower Replacement Project
Duke Energy Ohio
Hamilton County, Ohio

Cardno
11121 Canal Road, Cincinnati, OH 45241
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com

Date: 6/11/2019
Basemap:
File Path: \\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\LitReview\F4_Soils.mxd
Saved By: Cori.Jansing

### 2.2.2 Prehistoric Cultural Setting

Archaeological sites are well-documented in Hamilton County, Ohio. The county is located in a region with a temperate climate, well-drained soils, topography, and riverine corridors, making it an ideal location for settlement and subsistence throughout history. Nearly 870 archaeological sites have been documented in Hamilton County to date, including many with a historic component (OHC 2015a). The prehistoric occupation of Ohio is generally divided into three broad periods: Paleoindian, Archaic, and Woodland. Hamilton County contains sites dating to each of these time periods; however, many of the recorded prehistoric sites in the county do not contain diagnostic artifacts and therefore cannot be attributed to specific cultural occupations (OHC 2015a). This section will outline each of these broad time periods, including smaller divisions within each.

#### *2.2.2.1 Paleoindian Period (ca. 13,000 – 10,000 B.P.)*

The Paleoindian period encompasses the cultural remains of the earliest recorded occupants of the region, after about 13,000 years before present day (B.P.), shortly following the retreat of the last glaciers to cover the land. Paleoindians were nomadic groups comprised of small kin-based bands that primarily practiced a foraging subsistence strategy. Current research suggests that these Paleoindian bands moved within a circumscribed geographic range to intercept large herd animals during their migratory cycles (Gramly 1988; Stothers 1996). Over time, the focus likely shifted from large-scale hunting expeditions to a more regular procurement of game, accompanied by a decrease in the overall size of territory exploited by these groups

Paleoindian sites are most easily recognized in the archaeological record by the presence of lanceolate spear points. These points may be fluted (a large flake removed from each side of the base) or unfluted. Early Paleoindian projectile points are often made of high quality materials, usually from a widely dispersed area, which suggest a high level of mobility. Later Paleoindian points are more often made from local chert types, which may reflect a reduction in this mobility.

Documented archaeological sites dating to this time period are relatively rare in this part of state. The Ohio Archaeological Inventory lists approximately 10 sites dating to the Paleoindian period in Hamilton County.

#### *2.2.2.2 The Archaic Period (10,000 – 2,500 B.P)*

The Archaic period is identified by archaeologists as the period when settlements organized around local environmental resources replaced the broad seasonal migration patterns of the Paleoindian period. Approximately 26 sites in Hamilton County can be broadly attributed to the Archaic Period, often through the presence of characteristic projectile points (OHC 2015a).

##### 2.2.2.2.1 Early Archaic (10,000 – 8,000 B.P.)

The Early Archaic time period is often identified in the archaeological record by the transition from large, lanceolate bifaces of Paleoindian assemblages to smaller, notched and bifurcated bifaces. Groundstone tools and other lithic tools such as gravers, scrapers, and notched knives are also observed in the Early Archaic. Local cherts continue to appear in the archaeological record as a common resource. Early Archaic subsistence strategies continued the focus on large migrating Pleistocene herd animals, but Early Archaic groups also began to exploit more local environmental resources including smaller game animals. Early Archaic artifacts tend to display more diversity in style and function, which also may reflect diversity in resource exploitation. Currently, 34 documented sites in Hamilton County have an Early Archaic component (OHC 2015a).

##### 2.2.2.2.2 Middle Archaic Period (8,000 – 5,000 B.P.)

Archaeologists observe little change between the Early and Middle Archaic periods. The Middle Archaic period is reflected by changes in projectile point and blade types, but these variations are more prominent in southern portions of the U.S., and are not evident in southern Ohio (Vickery and Litfin 1992). The Middle

Archaic may be described simply as a transitional period between the Early and Late Archaic periods. Only 2 sites in Hamilton County have a documented Middle Archaic component (OHC 2015a).

#### 2.2.2.2.3 Late Archaic Period (5,000 – 2,500 B.P.)

The Late Archaic Period sees an increased focus on regional mobility patterns as well as an increase in resource diversity. Late Archaic groups incorporated plants into a larger part of their subsistence strategy. Late Archaic sites often represent repeated occupation over a long period of time, which suggests a regular, more localized pattern of movement across the landscape. Projectile points and other lithic tools also show an increase in variation. Small side-notched and corner-notched points and side and end scrapers appear frequently in Late Archaic assemblages. Groundstone tools are also increasingly evident. Pottery begins to appear in the transition between the Late Archaic and Early Woodland periods. There are approximately 43 documented sites with a Late Archaic component in Hamilton County (OHC 2015a).

### *2.2.2.3 The Woodland Period (2,500 – 500 B.P)*

Wide exchange of materials, the innovation of ceramic technology, the emergence of domesticated crops and animals, and an increasing shift toward permanent settlements generally identify the transition to the Woodland time period. Populations in the Woodland period tended to be broad spectrum hunter-gatherers, living in semi-sedentary occupations made up of small groups, likely based on kinship. These occupations were typically located around riverine environments and organized around communal burials. Innovations such as a more intensive reliance on pottery, horticulture, as well as the bow and arrow also occur during the Woodland time period. Hamilton County contains over 170 sites with artifacts dating to the Woodland period (OHC 2015a).

#### 2.2.2.3.1 Early Woodland Period (2,500 – 1,900 B.P.)

The Early Woodland period marks the transition from the more nomadic Archaic subsistence strategy to a more localized, semi-sedentary subsistence strategy. The Adena culture is representative of the Early Woodland period in southern Ohio. Cultural material associated with the Adena are stemmed projectile points with weak shoulders, ceramic vessels with flat bottoms and lug handles, drills, scrapers, and a variety of ornamental and ceremonial materials (Tuck 1978). The earliest earthworks and burial mounds in southern Ohio are attributed to the Adena. These earthworks were often constructed over another structure, indicated by the presence of post-hole features. Burials are often associated with a variety of exotic materials, such as cut mica, copper, beads, gorgets, and shell. It is important to note, however, that “Adena”, like “Hopewell” in the Middle Woodland, refers more to a pattern of mortuary practices and exchange of goods, rather than to a discrete group of peoples. Currently, 31 sites in Hamilton County date to the Early Woodland Period (OHC 2015a).

#### 2.2.2.3.2 The Middle Woodland Period (1,900 – 1,400 B.P)

Archaeologists generally describe the Middle Woodland period in Ohio as the period associated with the development of the Hopewell culture. The subsistence strategy was organized around a seasonal pattern of resource procurement and an increasing reliance on horticulture. The Middle Woodland period saw a continued increase in population and social organization, reflected in the numerous earthworks constructed in this period. These earthworks, often constructed in geometric figures, may have represented ceremonial centers suggesting that populations may have been organized at some larger scale. The prehistoric trade of exotic materials also reached a high during the Middle Woodland as populations within the “Hopewell Interaction Sphere” traded materials from as far away as the Upper Peninsula of Michigan (copper), the Gulf Coast (shell and shark teeth), and the Carolinas (mica). It is likely that the Hopewell Interaction Sphere represents a broad but loosely organized pattern of exchange rather than a well-defined system of trade (Pacheco 1996). While pottery tends to be more utilitarian in nature, vessels with an engraved duck motif appear in funerary contexts. In general, Middle Woodland vessels have thinner walls than earlier ceramics. There are approximately 53 sites in Hamilton County with a Middle Woodland component (OHC 2015a).

#### 2.2.2.3.3 The Late Woodland/Late Prehistoric Period (1,400 – 1,000 B.P.)

A significant reduction in the extensive, extra-regional trade of exotic goods and materials marks the Late Woodland period. The construction of large ceremonial earthworks also ends in the Late Woodland, as there is a shift in mortuary practices to interring burials into existing, older mounds or small stone mounds. Isolated, individual burials are also observed. This period is also characterized by an increasingly sedentary residential pattern of large nucleated villages supported by a growing reliance on maize and other cultigens as a substantial part of the Late Woodland diet. Palisades or ditches were sometimes constructed around these villages. This need for defensive structures suggests an increasing instability at times. Resource diversity also continued to increase, although reliance on aquatic resources was less pronounced in southern Ohio than in other areas of the Midwest. The deeply dissected drainages of southern Ohio do not produce the oxbow pond or lake features as seen in the Mississippi, Missouri or Illinois River valleys (Seeman and Dancey 2000). Late Woodland artifacts include small triangular points, scrapers, mortars and pestles, celts, and hoes. A distinct technological innovation of the period was the use of earthen ovens for steaming or baking food (Seeman and Dancey 2000). Pottery in the early portion of the Late Woodland exhibits thick angular shoulders (Newtown shoulder) and contrasts with Middle Woodland containers (Seeman and Dancey 2000). The bow and arrow became prevalent, though likely in the later portion of the Late Woodland. Hamilton County contains approximately 32 documented sites with artifacts dating to the Late Woodland Period (OHC 2015a).

### *2.2.2.4 Fort Ancient (1,000 B.P. – contact)*

In southwest Ohio, archaeologists have described a settlement system marked by sedentary villages located along floodplains, with smaller resource-specific occupations in the uplands and lowlands (Pollack and Henderson 2000). The Fort Ancient period has been described as an in situ development from Late Woodland groups in the Ohio valley, extending into southeastern Indiana, northern Kentucky, southern Ohio, and eastern West Virginia (Drooker 1997). The Mississippian influence is evident in designs and forms, but made from locally available materials such as spatula shaped celts, triangular projectile points, and the falcon motif. Fort Ancient villages are typically located along the Ohio River and its major tributaries. In the late pre-contact period, the majority of settlements were located within 12.4 mi (20 km) of the Ohio River (Drooker 1997). Many of these villages are organized around a central plaza and some were surrounded by palisades. Structures varied in size from as small as 107 square feet (10 square meters) to as large as 1930 square feet (180 square meters) (Drooker 1997). Semi-subterranean pit houses provided cooler temperatures in the summer and warmer temperatures in the winter. Storage pits also became more extensive, with some measuring 3.4 ft (1 m) in diameter and 6.5 ft (2 m) in depth, capable of storing over 45 bushels of shelled corn (Cowan 1987).

Use of burial mounds declined after approximately 700 B.P., as people began interring their deceased in the villages around plazas as well as in and around houses. Funerary items include pots and pipes, but more exotic materials such as marine shell also are seen. The presence of marine shell and other engraved Mississippian goods along with the location of Fort Ancient groups along the Ohio River suggest some level of regional interaction. The late pre-contact period, however, is characterized by more concentrated settlement locations and more intraregional similarities in goods such as ceramics.

By the later part of the Fort Ancient period (post 1400 A.D.), most settlements were located within 20 km of the Ohio River and appear to represent a collection of formerly dispersed groups (Drooker and Cowan 2001). This period also includes increased intra and extra-regional interaction among eastern and western populations (Drooker and Cowan 2001). The mid-sixteenth century marks the beginning of the Protohistoric period, when European goods begin to arrive in the region, but prior to substantial European establishment.

One of the most prominent sites in the area dating to the Fort Ancient period is the Madisonville site located near Cincinnati. Currently, there are approximately 48 sites that date to this time period in Hamilton County (OHC 2015a).

### 2.2.3 Historic Cultural Setting

The establishment of Detroit (1701) as a major center for fur trade and as the seat of European political and military power in the region led to an increase of non-Native people and a resurgence of Native Americans in the Ohio area throughout the eighteenth century (Nester 2000). By the mid-eighteenth century, British and French traders began to rival each other in the Ohio region. Following the French and Indian War (1756-1763), the French relinquished control of all Ohio lands to the British (Nester 2000). In the years following the treaty that ended the war, British colonists were often engaged in skirmishes and battles with the Native Americans, who were disgruntled with the postwar policies of the British. In an attempt to maintain peaceful relations with the tribes that participated as allies to the French during the war, Great Britain passed the Royal Proclamation of 1763, which restricted settlement west of the Appalachian Mountains (OHC 2015b). The proclamation only served to anger the colonists, who continued to move west and settle. The British victory in the French and Indian War and the events that followed shortly thereafter sparked the upheaval that would lead to the American Revolution against Great Britain (OHC 2015b). After the Revolutionary War (1775–1783), most of the Native American territory was ceded to the United States through a series of treaties, including the Treaty of Fort McIntosh (Pennsylvania) in 1785 and the Treaty of Greenville (Ohio) in 1795 (OHC 2015c).

The 1795 Treaty of Greenville, which was signed at Fort Greenville (now the city of Greenville located northwest of Montgomery County in Darke County), effectively ended war with the Native Americans and meant that southwest Ohio could develop along the Great and Little Miami Rivers. The stage had been set for this development by John Cleves Symmes, an investor who purchased the entire area between the Great and Little Miami Rivers, from the Ohio River north to the Mad River (in present-day Montgomery County) (Honious 2003). Symmes had purchased the land in 1787, for 66 cents an acre; however, it was not until the Treaty of Greenville, which created a boundary line between land owned by Native American tribes and the area open to European settlement, that Symmes could profit from his purchase (Honious 2003). Two weeks after the treaty was signed, Symmes sold a portion of his property to a group of developers that included Arthur St. Clair (the Governor of the Northwest Territory), Israel Ludlow, James Wilkinson, and Congressman Jonathan Dayton (Honious 2003). Known as the “Dayton Purchase,” this tract included land in present-day eastern Montgomery County and western Greene County, and included the land that would become the city of Dayton. The investors chose “Dayton” for the name as the most pleasant of their four surnames (Honious 2003). Ohio officially became a state in February 1803, when President Jefferson endorsed the United States Congress's decision to grant Ohio statehood; however, Ohio celebrates statehood in March 1, when the Ohio General Assembly met for the first time (OHC 2015d).

#### *2.2.3.1 Hamilton County*

Hamilton County, Ohio, established on January 2, 1790, was the second county formed in the Northwest Territory. The county was named in honor of Alexander Hamilton, the first Secretary of the Treasury of the U.S. The Symmes Purchase of 1787, also known as the Miami Purchase, included what is now Hamilton and Butler Counties. By January 1789, the Town of Losantiville, which would become Cincinnati, was platted and divided into plots and the area began to grow slowly (Ohio History Central 2015e). In 1789 Fort Washington was constructed to protect the settlers in the Symmes Purchase and northern Kentucky (Ohio History Central 2015e). In 1790, the governor of the Northwest Territory established Hamilton County, and made Losantiville, the county seat (Ohio History Central 2015e).

After the battle of Fallen Timbers in 1794, which lead to the signing of the Treaty of Greenville and the ceding of much of present day Ohio, Hamilton County really began to grow, reaching nearly 15,000 people by 1820 (Ohio History Central 2015e). During the nineteenth century, Hamilton County continued to prosper (Ohio History Central 2015e). The Ohio River provided numerous opportunities for business and travel up and down the river valley (Ohio History Central 2015e). The addition of the Miami and Erie Canal made transportation of cattle and crops much easier and less expensive. By the late nineteenth century, Cincinnati was the largest city in Ohio, with almost 300,000 people (Ohio History Central 2015e). More than 15

railroads connected Cincinnati to other parts of Ohio and the U.S. By 1890, Hamilton County had become an important industrial, political, literary, and educational center in Ohio and the U.S. (Ohio History Central 2015e). For most of the twentieth century, Hamilton County experienced continued growth.

## 2.3 Summary and Discussion

This section presented the results of the cultural resources records review. The records check indicates that 30 archaeological sites, 94 historic structures, one cemetery, two NRHP Historic Districts, and three individually listed NRHP resources, one of which is an archaeological site that has been recommended for delisting, have been identified within the 1.6 km (1 mi) Study Area. The literature review indicates that two previously identified cultural resources are located within or adjacent to the Project Area (33-Ha-0364/ NPS Ref. No. 75001420 and 33-Ha-0629). Site 33-Ha-0364 is currently listed on the NRHP; however, the mound associated with the site was determined to be non-cultural. As a result, the site has been recommended for delisting from the NRHP. This site is not in an area where earth-moving activities are anticipated. Site 33-Ha-0629 consists of a small lithic scatter identified in a previously disturbed area within the transmission corridor. Current project plans anticipate earth-moving activities within the boundaries of the site; however, the site has been previously disturbed and was previously recommended not significant (Genheimer 1994).

The majority of the Project Area has been surveyed for cultural resources (Genheimer 1994; Kreinbrink 1995). The cultural context of the region suggests that it is unlikely that intact cultural resources would be extant within the Project Area. The majority of the western portion of the Project Area is located in disturbed and graded areas as a result of the installation of the existing transmission corridor. However, the central portion of the Project Area has not been previously investigated for cultural resources and a site visit and limited archaeological testing are recommended to confirm disturbed and graded soil units in this area. Photographs of the Project Area are located in Appendix C.

# 3 Summary and Recommendations

## 3.1 Project Overview

In response to a request from Duke Energy, Cardno conducted a cultural resources records review for the St. Annes Avenue Tower Replacement Project in Hamilton County, Ohio. Based on information provided by Duke Energy, the Project Area is located in Sections 9, 14, and 15, on the Addyston, Ohio 7.5' USGS topographic map in Hamilton County, Ohio. The Project Area begins at a proposed access route initiating within the Duke Energy Right-of-Way located south of Aston View Lane, north of St. Annes/Ohio Avenue, east of E. Harrison Avenue, and west of the Aston Oaks Golf Club at approximately 39.155217, -84.735031. It travels east for 0.5 miles to Duke Energy Structure C10-X2-129, located at 39.156456, -84.727087 in Miami Township, Hamilton County, Ohio. The Project Area continues to travel east to a grounding location at 39.157153°, -84.721906°. No earth disturbing work will occur between Duke Energy Structure C10-X2-129 and this location. The project will additionally replace one lattice tower with single engineered monopole with a foundation in the current tower location. The access for this project anticipates grading in four areas in order allow ease of vehicular access and construction of the replacement tower. No additional earth disturbing work is anticipated beyond vehicular travel that will not exceed the disturbance created by the current corridor maintenance equipment. The Project Area consists of an approximately 0.8 km (0.5 mi) long, 45.7 m (150 ft) wide transmission corridor located in areas that have been subjected to previous mechanical earthmoving. The Project Area consists of approximately 5.63 ha (13.9 ac), with an actual project earth disturbance potential of 0.46 ha (1.13 ac).

Background research conducted in June 2019 focused on a 1.6 km (1 mi) Study Area around the proposed project footprint. Cardno gathered information about previously conducted cultural resource investigations and documented cultural resources as well as the environmental and cultural context of the region to assess the potential for additional undocumented cultural resources in and around the Project Area.

## 3.2 Applicable Regulations and Guidelines

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies assess the effect(s) of their projects on cultural resources eligible for listing in the NRHP. Section 106 of the NHPA applies to any federal agency undertaking that has the potential to affect cultural resources eligible for listing in the NRHP, should they be present. This federal agency action may include permitting, funding, or other approval of project activities.

Section 106 of the NHPA requires that the federal agency assess effects of their undertakings in areas where the effects are likely to occur, known as the Area of Potential Effects (APE). The APE takes into account both direct and indirect effects. Direct effects are limited to the areas of likely ground disturbance in the planned area of improvements and in associated easements. Direct effects in these areas may affect archaeological or architectural resources if present. Indirect effects includes areas where visual, noise, or other effects caused by the project occur outside the footprint of the Project Area. Indirect effects may affect architectural resources, certain types of archaeological resources, or other cultural resources if present. Based on our current understanding of the project, Section 106 is not applicable, due to a lack of federal involvement in the project.

Ohio Administrative Code 4906-06 outlines the requirements regarding filing an accelerated certificate application with the Ohio Power Siting Board. This regulation requires the applicant "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".

Pursuant to Ohio Revised Code §149.53, if archaeological artifacts or human remains are identified during project activities in any location, work within the area must stop and the OHPO must be notified within two (2) business days.

## 3.3 Summary of Results and Recommendations

The records check indicates that 30 archaeological sites, 94 historic structures, one cemetery, two NRHP Historic Districts, and three individually listed NRHP resources, one of which is an archaeological site that has been recommended for delisting, have been identified within the 1.6 km (1 mi) Study Area. Two previously identified cultural resources are located within or adjacent to the Project Area (33-Ha-0364/ NPS Ref. No. 75001420 and 33-Ha-0629). Site 33-Ha-0364 is currently listed on the NRHP; however, the mound associated with the site was determined to be non-cultural, and the site has been recommended for delisting from the NRHP. This site is not in an area where earth-moving activities are anticipated. Site 33-Ha-0629 consists of a small lithic scatter identified within the transmission corridor. Current project plans anticipate earth-moving activities within the boundaries of the site; however, the site has been previously disturbed and graded and was found to be not significant.

The majority of the western portion of the Project Area appears to have been graded as a result of the construction of the existing transmission line right-of-way. The current project anticipates grading in specific areas for more efficient vehicular access along the existing corridor and construction of a replacement tower. The majority of the Project Area has been previously surveyed for cultural resources (Genheimer 1994; Kreinbrink 1995). One small area of proposed grading along the central portion of the proposed Project Area (Area 4) has not been previously investigated for cultural resources. Cardno recommends an archaeological site visit and limited testing to confirm disturbed soils within this area due to the large amount of cultural resources in the region. In addition, a minimal portion of one archaeological site (33-Ha-0629) is located within proposed grading Area 2. This ephemeral site contained only 2 flakes and Cardno recommends no further investigation of this site, as it was noted as being located within disturbed soils and found to be not significant. In addition, Cardno recommends no further archaeological work in areas that have been previously surveyed or in areas in which no ground- disturbing work is anticipated.

# 4 References Cited

Brockman, C. Scott

1998 Physiographic Regions of Ohio. Electronic document, http://www.epa.state.oh.us/portals/27/SIP/Nonattain/F2-physiographic_regions_of_Ohio.pdf, accessed June 2019.

Corso, Robert A., Joseph E. Wakeman, John Barker, Deborah Dobson-Brown, and Jacquelyn Johnston

1992 Literature Review and Reconnaissance Survey of the Proposed Texas Eastern Products Pipeline Company, Limited Partnership Pipeline in Whitewater and Miami Townships, Hamilton County, Ohio and Boone County, Kentucky. Prepared by ASC Group. Copy on file at the Ohio History Connection.

Cowan, C. Wesley

1987 First Farmers of the Middle Ohio Valley. Cincinnati Museum of Natural History, Cincinnati, Ohio.

Cowden, Adrienne, Tom Fugate, and Harrison Stamm Gowdy.

2001 National Register of Historic Places Inventory-Nomination Form: Cincinnati and Whitewater Canal Tunnel. United States Department of the Interior-National Park Service. Prepared by Gray and Pape. Copy on file at the Ohio History Connection.

Drooker, P.

1997 The View from Madisonville: Protohistoric Western Fort Ancient Interaction Patterns. Memoirs of the Museum of Anthropology No. 21. The University of Michigan, Ann Arbor.

Drooker, P.B. and C.W. Cowan

2001 Transformation of the Fort Ancient cultures of the central Ohio Valley. In Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A.D. 1400-1700, ed. D.S. Brose, C.W. Cowan, and R.C. Manifort, Jr. Smithsonian Institution Press, Washington, D.C., 83-106.

Genheimer, Robert

1994 An Archaeological Assessment of the Cleves and North Bend Portion of the Proposed Aston-Oaks Development in Hamilton County, Ohio. Prepared by R.G. Archaeological Services. Copy on file at the Ohio History Connection.

Gramly, R.

1988 Paleoindian Sites South of Lake Ontario, Western and Central New York State. In Late Pleistocene and Early Holocene Paleoecology and Archaeology of the Eastern Great Lakes

Region, edited by R.S. Laub, N. Miller and D. Steadman, pp. 265-280. Bulletin of the Buffalo Society of Natural Sciences 33.

Honious, Ann

2003 What Dreams We Have: The Wright Brothers and Their Hometown of Dayton, Ohio. U.S. Department of the Interior, National Park Service. Electronic document http://www.nps.gov/parkhistory/online_books/daav/chap1.htm, accessed March 2016.

Kreinbrink, Jeannine

1994a National Register of Historic Places Inventory-Nomination Form: John Aston Warder House. United States Department of the Interior-National Park Service. Prepared by Kemron Environmental Services. Copy on file at the Ohio History Connection.

1994b Management Summary: Archaeological Testing at the Aston Oaks Development Project, Hamilton County, Ohio. Prepared by Kemron Environmental Services. Copy on file at the Ohio History Connection.

1994c Combined Reports: Archaeological Testing at Site 33HA364, Hamilton County, Ohio. Prepared by Kemron Environmental Services. Copy on file at the Ohio History Connection.

1995 Report for Phase I Archaeological Survey, 270 Acres at Aston Oaks Project Area, Hamilton County, Ohio. Prepared by NES, Inc. Copy on file at the Ohio History Connection.

Kreinbrink, Jeannine and Stephen Roberts

1994 Eligibility Testing at the John Aston Warder Site, 33HA621, Hamilton County, Ohio. Prepared by Kemron Environmental Services. Copy on file at the Ohio History Connection.

Mills, W. C.

1914 Archaeological Atlas of Ohio. Ohio State Archaeological and Historical Society, Columbus.

Nester, William

2000 The Great Frontier War: Britain, France, and the Imperial Struggle for North America, 1607-1755. Praeger Publishers. Westport, Connecticut.

Ohio History Connection (OHC)

2015a Ohio State Historic Preservation Office Online Mapping System. Electronic document, https://www.ohiohistory.org/preserve/state-historic-preservation-office/mapping, accessed June 2019.

2015b Ohio History Central: French and Indian War. Electronic document, http://www.ohiohistorycentral.org/w/French_and_Indian_War, accessed July 2017.

2015c Ohio History Central: Treaty of Greeneville (1795). Electronic document, http://www.ohiohistorycentral.org/w/Treaty_of_Greeneville_(1795), accessed July 2017.

2015d Ohio History Central: Ohio Statehood. Electronic document, http://www.ohiohistorycentral.org/w/Ohio_Statehood, accessed July 2017.

2015e Ohio History Central: Hamilton County. Electronic document, http://www.ohiohistorycentral.org/w/Hamilton_County, accessed August 2018.

Pacheco, P.

1996 Ohio Hopewell Regional Settlement Patterns. In A View From the Core: A Synthesis of Ohio Hopewell Archaeology, edited by P. J. Pacheco, pp. 18-35. Ohio Archaeological Council, Columbus.

Pollack, David and A. Gwyn Henderson

2000 “Insights Into Fort Ancient Cultural Change: A View from South of the River.” In Cultures Before Contact: the Late Prehistory of Ohio and Surrounding Regions, ed. R.A. Genheimer. Columbus: Ohio Archaeological Council, 194-227.

Scheurer, Elizabeth

1974 National Register of Historic Places Inventory-Nomination Form: Conrad Mound Archaeological District. United States Department of the Interior-National Park Service. Prepared by the Miami Purchase Association. Copy on file at the Ohio History Connection.

Seeman, M. and W. Dancey

2000 The Late Woodland Period in Southern Ohio: Basic Issues and Prospects. In Late Woodland Societies: Tradition and Transformation Across the Midcontinent, edited by T. E. Emerson, D. L. McElrath, and A. C. Fortier, pp. 583-611. University of Nebraska Press, Lincoln.

Stothers, D.

1996 Resource Procurement and Band Territories: A Model for Lower Great Lakes Paleoindian and Early Archaic Settlement Systems. Archaeology of Eastern North America 24: 173-216.

Titus, C.O.

1869 Atlas of Hamilton County, Ohio. C.O. Titus Publishing. Philadelphia.

Tuck, J.

1978 Regional Cultural Development, 3,000-300 B.C. Handbook of North American Indians (15). Smithsonian Institution Press, Washington, D.C.

USDA/SCS

1982 Soil Survey of Hamilton County, Ohio. United States Department of Agriculture/Natural Resources Conservation Service

2014 Websoil Survey. Electronic document, http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx, accessed June 2019.

United States Geological Survey (USGS)

1914 West Cincinnati, Ohio-Kentucky Quadrangle [map]. 1:62,500. United States Department of the Interior. Hamilton County, Ohio (WCI).

1963 Addyston, Ohio-Kentucky [map]. 1:24,000. 7.5 Minute Series. United States Department of the Interior. Hamilton County, Ohio (WCI). Updated from 1960.

Vickery, K. and J. Litfin

1992 A Proposed Revision of the Classification of Midwestern Paleoindian, Early Archaic, and Middle Archaic Projectile Points. Department of Anthropology, University of Cincinnati, Cincinnati.

Cultural Resources Literature Review
St. Annes Avenue Tower
Replacement Project
Hamilton County, Ohio

APPENDIX

# A

## OHI RESOURCES WITHIN THE STUDY AREA

**Appendix A: Previously Recorded OHI Structures in the 1.6 km (1 mi) Study Area**

| Structure Number | Historic Use | Address | Approx. Date |
|---|---|---|---|
| HAM0003653 | Single Dwelling | 10 Muirfield Dr & Shady Ln | 1878 |
| HAM0021753 | Church/Religious Structure | 25 E State Rd | 1850 |
| HAM0373653 | Single Dwelling | 8709 Bridgetown Rd | 1880 |
| HAM0373753 | Single Dwelling | 8538 Bridgetown Rd | 1920 |
| HAM0373853 | Barn | 8460? Bridgetown Rd | 1850 |
| HAM0467053 | Single Dwelling | River Rd | 1865 |
| HAM0467153 | Single Dwelling | 10 Woodruff St | 1910 |
| HAM0467253 | Single Dwelling | 23 Washington Ave | 1875 |
| HAM0467353 | Single Dwelling | 9 Washington Ave | 1870 |
| HAM0467453 | Single Dwelling | 16 Washington Ave | 1915 |
| HAM0467553 | Single Dwelling | 18 Washington Ave | 1910 |
| HAM0467653 | Church/Religious Structure | 125 Symmes Ave | 1911 |
| HAM0467753 | Single Dwelling | 129 Symmes Ave | 1920 |
| HAM0467853 | Barn | 48 Taylor Ave | 1840 |
| HAM0467953 | | 36 Taylor Ave | |
| HAM0468053 | Natural Feature | Taylor Ave near Symmes Ave | 1900 |
| HAM0468153 | Single Dwelling | 25 Taylor Ave | 1900 |
| HAM0468253 | Single Dwelling | 4 Miami Ave | 1910 |
| HAM0468353 | Commercial | 3 Miami Ave | 1890 |
| HAM0468453 | Single Dwelling | 115 Shawnee St | 1870 |
| HAM0468553 | Single Dwelling | 6 Cliff Rd | 1890 |
| HAM0468653 | Financial Institution | 125 Miami Ave | 1935 |
| HAM0468753 | Natural Feature | Miami Ave near Taylor Ave | 1900 |
| HAM0468853 | Unknown Use | 154 Miami Ave | 1935 |
| HAM0468953 | Single Dwelling | 8 W Harrison Ave | 1910 |
| HAM0469053 | Service Station | 1 E Harrison Ave | 1914 |
| HAM0469153 | Single Dwelling | 7 Harrison Ave | 1905 |
| HAM0469253 | Single Dwelling | 9 Harrison Ave | |
| HAM0469353 | School | 3630 Harrison Ave | 1925 |
| HAM0469453 | Single Dwelling | 170 Miami Ave | 1890 |
| HAM0469553 | Single Dwelling | 168 Miami Ave | 1895 |
| HAM0469653 | Single Dwelling | 162 Miami Ave | 1910 |
| HAM0469753 | Graves/Burials | Cliff Rd, W of US 50 | 1841 |
| HAM0469953 | Single Dwelling | 115 Cliff Rd | 1925 |
| HAM0470053 | Single Dwelling | 26 Ridge Ave | 1925 |
| HAM0470153 | Single Dwelling | 401 S Miami Ave | 1910 |
| HAM0470253 | Rail Related | Miami Ave near Mt Nebo Rd | 1900 |
| HAM0470353 | Single Dwelling | 323 S Miami Ave | 1900 |
| HAM0470453 | Single Dwelling | 324 S Miami Ave | 1865 |
| HAM0470553 | Row House | 318-326 S Miami Ave | 1865 |

**Appendix A: Previously Recorded OHI Structures in the 1.6 km (1 mi) Study Area**

| Structure Number | Historic Use | Address | Approx. Date |
|---|---|---|---|
| HAM0470653 | Single Dwelling | Bassett St | 1865 |
| HAM0470753 | Single Dwelling | 177 Symmes Ave | 1890 |
| HAM0470953 | Church/Religious Structure | 231 S Miami Ave | 1870 |
| HAM0471053 | Single Dwelling | 214 S Miami Ave | 1870 |
| HAM0471153 | Single Dwelling | 214 S Miami Ave (rear) | 1870 |
| HAM0471253 | Financial Institution | 200 S Miami Ave | 1900 |
| HAM0471353 | Commercial | 145 S Miami Ave | 1935 |
| HAM0471453 | Commercial | 131 S Miami Ave | 1920 |
| HAM0471553 | Commercial | 119 S Miami Ave | 1910 |
| HAM0471653 | Single Dwelling | 113 S Miami Ave | 1880 |
| HAM0471753 | Single Dwelling | 105 S Miami Ave | 1895 |
| HAM0471853 | Village/Twp/City Hall | 112 S Miami Ave | 1866 |
| HAM0471953 | Single Dwelling | 104-106 S Miami Ave | 1870 |
| HAM0472053 | Funeral Home | 100 S Miami Ave | 1910 |
| HAM0472153 | Church/Religious Structure | 116 Milbury? Ave | 1885 |
| HAM0472253 | Commercial | 49 S Miami Ave | 1880 |
| HAM0472353 | Commercial | 27 S Miami Ave | 1890 |
| HAM0472453 | Commercial | 25 S Miami Ave | 1870 |
| HAM0472553 | Commercial | 15 S Miami Ave | 1910 |
| HAM0472653 | Commercial | 8 S Miami Ave | 1875 |
| HAM0472753 | Commercial | 2 S Miami Ave | 1920 |
| HAM0472853 | Financial Institution | NWC W State St & Miami Ave | 1920 |
| HAM0472953 | Single Dwelling | 20 W State St | 1840 |
| HAM0473053 | Rail Related | Conrail Railroad near US 50 & SR 5 | 1890 |
| HAM0473153 | Single Dwelling | 200 N Miami Ave | 1850 |
| HAM0473253 | Single Dwelling | 207 N Miami Ave | 1910 |
| HAM0473353 | Single Dwelling | 211 N Miami Ave | 1925 |
| HAM0474353 | Single Dwelling | 200 N Porter St | 1925 |
| HAM0474453 | Single Dwelling | 200 Skidmore Ave | 1865 |
| HAM0474553 | Single Dwelling | 100 Skidmore Ave | 1965 |
| HAM0474653 | Single Dwelling | 22 Skidmore Ave | 1965 |
| HAM0474753 | Single Dwelling | 15 E State St | 1910 |
| HAM0474953 | Single Dwelling | 29 E State St | 1872 |
| HAM0475053 | Single Dwelling | 56 E State St | 1895 |
| HAM0475153 | Single Dwelling | 66 E State St | 1850 |
| HAM0475253 | Single Dwelling | 80 E State St | 1840 |
| HAM0475353 | Single Dwelling | 142 E State St | 1860 |
| HAM0475453 | Single Dwelling | 8768 Bridgetown Rd | 1950 |
| HAM0475553 | Single Dwelling | 8760 Bridgetown Rd | 1950 |

**Appendix A: Previously Recorded OHI Structures in the 1.6 km (1 mi) Study Area**

| Structure Number | Historic Use | Address | Approx. Date |
|---|---|---|---|
| HAM0475653 | Single Dwelling | Bridgetown Rd | 1865 |
| HAM0475753 | Single Dwelling | 153 Harrison Ave | 1895 |
| HAM0475853 | Single Dwelling | 146 Cleves Ave | 1895 |
| HAM0598053 | Single Dwelling | 137 Cleves Ave | 1895 |
| HAM0598153 | Single Dwelling | 418 S Miami Ave | 1900 |
| HAM0598253 | Single Dwelling | 28 Harrison Ave | 1925 |
| HAM0598353 | Single Dwelling | 116 Mt Nebro Rd | 1880 |
| HAM0598453 | Single Dwelling | 160 Cleves Ave | 1900 |
| HAM0598553 | Single Dwelling | 206 Symmes Ave | 1910 |
| HAM0598653 | Single Dwelling | 8 E State St | 1910 |
| HAM0598753 | Single Dwelling | 24 Ridge Ave | 1920 |
| HAM0598853 | Single Dwelling | 203 Main St | 1910 |
| HAM0637753 | Canal Related | E of US 50 | 1840 |
| HAM0852753 | Storage | Congress Green & Cliff Rd | 1930 |
| HAM0852853 | Food Procurement/ Processing | Cliff Rd, W of US 50 | 1972 |

Cultural Resources Literature Review
St. Annes Avenue Tower
Replacement Project
Hamilton County, Ohio

# APPENDIX B

## HISTORIC MAPS

## Appendix B: 1869 Map

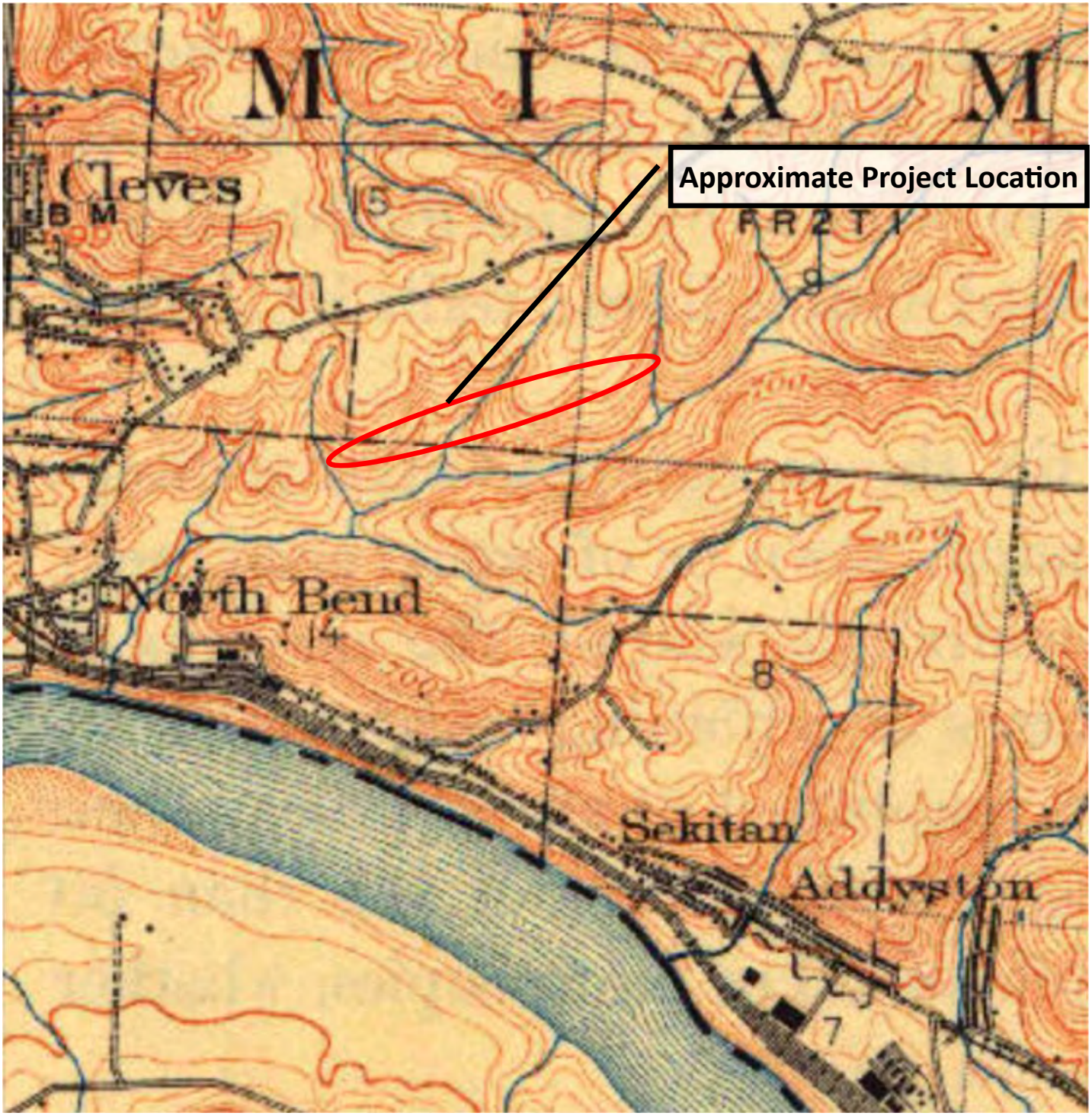
Cultural Resources Literature Review
St. Annes Avenue Tower Replacement Project

Duke Energy Ohio
Hamilton County, Ohio

Project Number:
J156720M96

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs.

Cardno
Shaping the Future
11121 Canal Road, Cincinnati, OH 45241 USA
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com




Project Number:
J156720M96

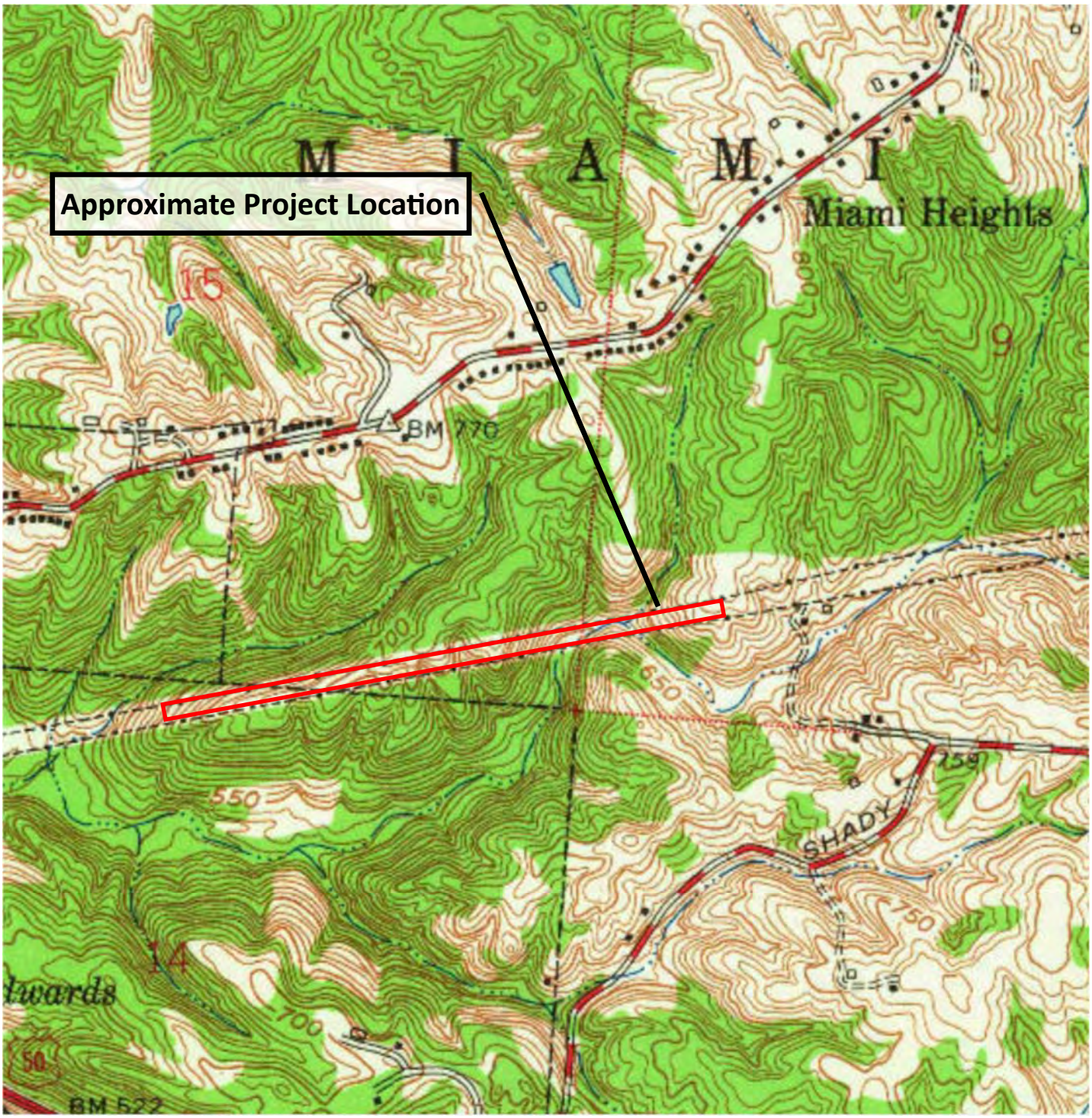
This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs.

## Appendix B: 1914 Map

Cultural Resources Literature Review
C10-X2-129 Emergent Tower Replacement Project

Duke Energy Ohio
Hamilton County, Ohio

Cardno
Shaping the Future
11121 Canal Road, Cincinnati, OH 45241 USA
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com




Project Number:
J156720M96

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs.

## Appendix B: 1963 Map

Cultural Resources Literature Review
C10-X2-129 Emergent Tower Replacement Project

Duke Energy Ohio
Hamilton County, Ohio

Cardno
Shaping the Future
11121 Canal Road, Cincinnati, OH 45241 USA
Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardno.com

Cultural Resources Literature Review
St. Annes Avenue Tower Replacement Project
Hamilton County, Ohio

# APPENDIX C

## PHOTOPAGES

Photo 1: Project area overview.

Photo 2: Project area overview.

Photo 3: Existing lattice tower in project area.

Photo 4: Overview of typical slope in project area.

Project Number:
J156720M96

These photographs and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of these photographs. It is the

**Project Area Photographs**

**Cultural Resources Literature Review**
**St. Annes Avenue Tower Replacement Project**
**Duke Energy Ohio**
**Hamilton County, Ohio**

Cardno
Shaping the Future
11121 Canal Road
Cincinnati, Ohio 45241

# Attachment C

# Agency Coordination

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

Jun 25, 2019

Duke Energy Ohio
Brian Catt
139 E. 4th Street
Cincinnati, OH 45202

Re: Approval Under Ohio EPA National Pollutant Discharge Elimination System (NPDES) - Construction Site Stormwater General Permit - OHC000005

Dear Applicant,

Your NPDES Notice of Intent (NOI) application is approved for the following facility/site. Please use your Ohio EPA Facility Permit Number in all future correspondence.

| | |
|---|---|
| **Facility Name:** | Duke Energy C10-X2-129 Emergent Tower Replacement |
| **Facility Location:** | 39.1567, -84.7270 |
| **City:** | Village of North Bend/ Miami Township |
| **County:** | Hamilton |
| **Township:** | Miami |
| **Ohio EPA Facility Permit Number:** | 1GC07271*AG |
| **Permit Effective Date:** | Jun 25, 2019 |

Please read and review the permit carefully. The permit contains requirements and prohibitions with which you must comply. Coverage under this permit will remain in effect until a renewal of the permit is issued by the Ohio EPA.

If more than one operator (defined in the permit) will be engaged at the site, each operator shall seek coverage under the general permit. Additional operator(s) shall submit a Co-Permittee NOI to be covered under this permit. There is no fee associated with the Co-Permittee NOI form.

Please be aware that this letter only authorizes discharges in accordance with the above referenced NPDES CGP. The placement to fill into regulated waters of the state may require a 401 Water Quality Certification and/or Isolated Wetlands Permit from Ohio EPA. Also, a Permit-To-Install (PTI) is required for the construction of sanitary or industrial wastewater collection, conveyance, storage, treatment, or disposal facility; unless a specific exemption by rule exists. Failure to obtain the required permits in advance is a violation of Ohio Revised Code 6111 and potentially subjects you to enforcement and civil penalties.

To view your electronic submissions and permits please Logon in to the Ohio EPA's eBusiness Center at http://ebiz.epa.ohio.gov.

If you need assistance or have questions please call (614) 644-2001 and ask for Construction Site Stormwater General Permit support or visit our website at http://www.epa.ohio.gov.

Sincerely,
Laurie A Stevenson

Laurie A. Stevenson
Director

## Cori Jansing

**From:** susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
**Sent:** Tuesday, June 25, 2019 1:35 PM
**To:** Cori Jansing
**Cc:** nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
**Subject:** Duke Energy C10-X2-129 Emergent Tower Replacement, Hamilton Co.

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# 03E15000-2019-TA-1425

Dear Ms. Jansing,

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

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

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

Should the proposed site contain trees ≥3 inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, we recommend that removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is being recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see http://www.fws.gov/midwest/endangered/mammals/nleb/index.html), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

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

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

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

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

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

Sincerely,

Patrice M. Ashfield,
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW

Kate Parsons, ODNR-DOW

## Cori Jansing

**From:** EnvironmentalReviewRequest@dnr.state.oh.us
**Sent:** Thursday, June 13, 2019 9:36 AM
**To:** Cori Jansing
**Subject:** Thank you for contacting the Ohio Department of Natural Resources

Thank you for contacting the Ohio Department of Natural Resources. This email is your receipt that we have received your message and/or project review request. During normal business operations, we strive to respond to your request within 30 to 45 business days. However, during certain times of the year, due to large volumes of requests, our response time may be longer. If you have any questions please contact our office at 614-265-6397.

Sincerely,

Sarah Tebbe
Ohio Department of Natural Resources
Office of Real Estate
2045 Morse Road
Columbus, Ohio 43229
(614) 265-6397

**Construction Notice**
**Duke Energy Ohio St. Anne's Avenue Tower Replacement Project**
**Hamilton County, Ohio**

# Attachment D

# Regulated Waters Delineation Report

# Regulated Waters Delineation Report

St. Annes Avenue Tower Replacement Project

Hamilton County, Ohio

June 20, 2019

Cardno®

# Document Information

| | |
|---|---|
| **Prepared for** | Duke Energy Ohio |
| **Client Contact** | Dustin Geisler |
| **Project Name** | St. Annes Avenue Tower Replacement Project |
| **Project Number** | Cardno #J156720M96 |
| **Project Manager** | Cori Jansing (Cardno) |
| **Date** | June 20, 2019 |

Prepared for:

Duke Energy Ohio
139 E. 4th Street, Cincinnati, Ohio 45202

Prepared by:

Cardno
11121 Canal Road, Cincinnati, Ohio 45241

# Table of Contents

**1 Introduction ..... 1**

**2 Regulatory Definitions ..... 1**

2.1 Waters of the United States ..... 1
2.2 Waters of the State ..... 3
2.3 Wetlands ..... 3
2.4 Streams, Rivers, Watercourses & Jurisdictional Ditches ..... 5
2.5 Endangered Species Act ..... 6

**3 Background Information ..... 6**

3.1 Existing Maps ..... 6

**4 Methodology and Description ..... 7**

4.1 Regulated Waters Investigation ..... 7
4.2 Technical Descriptions ..... 8
4.3 Endangered, Threatened and Rare Species ..... 8

**5 Jurisdictional Analysis ..... 9**

5.1 U.S. Army Corps of Engineers ..... 9
5.2 Ohio Environmental Protection Agency ..... 10

**6 Summary and Conclusion ..... 10**

6.1 Summary ..... 10
6.2 Conclusion ..... 11

**7 References ..... 12**

# Appendices

Appendix A Site Photographs

Appendix B Ohio QHEI Data Sheets

Appendix C Endangered, Threatened, and Rare Species Agency Coordination

# Tables

Table 6-1 Features Identified within the St. Annes Avenue Tower Replacement Study Area ..... 10

# Figures

Figure 1 Project Location Map

Figure 2 National Wetland Inventory (NWI) Map

Figure 3 Soil Survey Map

Figure 4 Waters of the U.S. Delineation Map

# Acronyms

| | |
|---|---|
| APA | Administrative Procedure Act |
| BF | Bank Full |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| DBH | Diameter at Breast Height |
| DP | Data Point |
| EPA | U.S. Environmental Protection Agency |
| ETR | Endangered, Threatened, and Rare |
| FAC | Facultative Plant |
| FACU | Facultative Upland Plant |
| FACW | Facultative Wetland Plant |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| GIS | Geographical Information SystemAcronyms, continued |
| MS4 | Municipal Separate Storm Water Sewer Systems |
| NHD | National Hydrography Dataset |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | U.S. Department of Agriculture Natural Resources Conservation Service |
| NWP | Nationwide Permit |
| NWPL | National Wetland Plant List |

| | |
|---|---|
| OBL | Obligate Wetland Plant |
| OEPA | Ohio Environmental Protection Agency |
| ODNR | Ohio Department of Natural Resources |
| OHWM | Ordinary High Water Mark |
| PEM | Palustrine Emergent Wetland |
| PFO | Palustrine Forested Wetland |
| PLSS | Public Land Survey Section |
| PSS | Palustrine Shrub Scrub Wetland |
| RGP | Regional General Permit |
| SNE | Significant Nexus |
| SWANCC | Solid Waste Agency of Northern Cook County |
| TNW | Traditional Navigable Water |
| TOB | Top of Bank |
| UPL | Upland Plant |
| USDA | U.S. Department of Agriculture |
| USGS | U.S. Geological Survey |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| WOTUS | Waters of the United States |
| WQC | Water Quality Certification |

# 1 Introduction

Cardno was contracted to perform a water resource inventory, including wetlands and streams, which are located within the Duke Energy Ohio St. Annes Avenue Tower Replacement Study Area and potential access points (total 13.9 acres) in the Village of North Bend and Miami Township, Hamilton County, Ohio. The fieldwork for this task was performed on June 5, 2019.

The total size of the Study Area was approximately 13.9 acres. The Study Area consisted of three habitats; maintained Right-of-Way (ROW)/old field, maintained turf/recreational golf course, and secondary growth forest.

This report identifies the jurisdictional status of aquatic features identified within the Study Area based on Cardno's best professional understanding and interpretation of the *Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory, 1987) and U.S. Army Corps of Engineers' (USACE) guidance documents and regulations. Jurisdictional determinations for other "waters of the U.S." were made based on definitions and guidance found in 33 CFR 328.3, USACE Regulatory Guidance Letters, and the wetland delineation manual. The USACE administers Section 404 of the Clean Water Act (CWA), which regulates the discharge of fill or dredged material into all "waters of the U.S.," and is the regulatory authority that must make the final determination as to the jurisdictional status of the Study Area.

# 2 Regulatory Definitions

## 2.1 Waters of the United States

"Waters of the U.S." are within the jurisdiction of the USACE under the CWA. "Waters of the U.S." is a broad term, which includes waters that are used or could be used for interstate commerce. This includes wetlands, ponds, lakes, territorial seas, rivers, tributary streams including any definable intermittent waterways, and some ditches below the ordinary high water mark (OHWM). Also included are manmade water bodies such as quarries and ponds, which are no longer actively being mined or constructed and are connected to other "waters". Wetlands, mudflats, vegetated shallows, riffle and pool complexes, coral reefs, sanctuaries, and refuges are all considered special aquatic sites, which involve more rigorous regulatory permitting requirements. A specific, detailed definition of "waters of the U.S." can be found in the Federal Register (33 CFR 328.3).

On January 9, 2001, the U.S. Supreme Court issued a decision, Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers (No. 99-1178). The decision reduced the regulation of isolated wetlands under Section 404 of the CWA, which assigned the USACE authority to issue permits for the discharge of dredge or fill material into "waters of the U.S.". Prior to the SWANCC decision, the USACE had adopted a regulatory definition of "waters of the U.S." that afforded federal protection for almost all of the nation's wetlands. The Supreme Court decision interpreted that the USACE's jurisdiction was restricted to navigable waters, their tributaries, and wetlands that are adjacent to these navigable waterways and tributaries. The decision leaves the majority of "isolated" wetlands unregulated by the CWA. Therefore, most wetlands that are not adjacent to, or contiguous with, any other "waters of the U.S." via a surface drain such as a swale, ditch, or stream are considered isolated and thus no longer jurisdictional by the USACE.

On June 19, 2006, the U.S. Supreme Court issued decisions in regards to John A. Rapanos v. United States (No. 04-1034) and June Carabell v. United States (04-1384), et al. The plurality decision created two 'tests' for determining CWA jurisdiction: the permanent flow of water test (set out by Justice Scalia) and the "significant nexus" test (set out by Justice Kennedy). On June 5, 2007 the USACE and U.S. Environmental Protection Agency (EPA) issued joint guidance on how to interpret and apply the Court's ruling. According to this guidance, the USACE will assert jurisdiction over traditionally navigable waters, adjacent wetlands, and non-navigable tributaries of traditionally navigable waters that have "relatively permanent" flow, and wetlands that border these waters, regardless of whether or not they are separated by roads, berms, and similar barriers. In addition, the USACE will use a case-by-case "significant nexus" analysis to determine whether waters and their adjacent wetlands are jurisdictional. A "significant nexus" can be found where waters, including adjacent wetlands, alter the physical, biological, or chemical integrity of the traditionally navigable water based on consideration of several factors.

In January 2015 an EPA sponsored publication, *Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence* (EPA, 2015), emphasized how streams, nontidal wetlands, and open waters in and outside of riparian areas and floodplains effect downstream waters such as rivers, lakes, estuaries, and oceans.

On May 27, 2015 the EPA released a statement that a new Clean Water Rule typically referred to as, "The Waters of the United States (WOTUS) Rule" was finalized and that it would "not create any new permitting requirements and maintains all previous exemptions and exclusions" (epa.gov). The rule would only protect waters that have historically been covered by the Clean Water Act. The intent was to clearly define:

- Jurisdictional limits of tributaries of navigable waterways;
- Set boundaries on covering nearby waters;
- Identify specific national water treasures by name (prairie potholes, etc.);
- Clearly define when a ditch is jurisdictional, and when it is not;
- Maintain status that waters within Municipal Separate Storm Water Sewer Systems (MS4) are not jurisdictional; and
- Reduce the use of case-specific analysis of waters.

Also on May 27, 2015 a publication, *Technical Support Document for the Clean Water Rule: Definition of Waters of the United States* (EPA, 2105), was released discussing in detail why the significant nexus (SNE) between one water and another is important. It specifically ties distances to the various types of waters mentioned within the Code of Federal Regulations [33 CFR 328.3(a)(1) through (a)(8)]. For example, the document states "Waters located within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas and waters located more than 1,500 feet and less than 4,000 feet from the lateral limit of an (a)(1) or (a)(3) water may still be determined to have a significant nexus on a case-specific basis under paragraph (a)(8) of the rule and, thus, be a "water of the United States" (EPA 2015).

On June 29, 2015 the new Clean Water Rule was entered into the Federal Register (40 CFR Parts 110, 112, 116, et al. Clean Water Rule: Definition of ''waters of the United States''; Final Rule). This report will refer to this rule as "June 29, 2015 WOTUS Rule". This rule includes exact distances mentioned in the May 27, 2015 Technical Support Document as it relates to adjacent waters, including the following:

- Waters within 100 ft. of jurisdictional waters;

- Waters within the 100-year floodplain to a maximum of 1,500 feet from the ordinary high water mark (OHWM);
- Waters within the 100-year floodplain with a SNE to the Traditional Navigable Water (TNW); and
- Waters with a SNE within 4,000 ft. of jurisdictional waters.

On October 9, 2015 the U.S. Court of Appeals for the Sixth Circuit (Court) issued a nationwide stay against the enforcement of the June 29, 2015 WOTUS Rule. The Court stated, "…we conclude that…Justice Kennedy's opinion in *Rapanos* represents the best instruction on the permissible parameters of "waters of the United States" as used in the Clean Water Act, it is far from clear that the new Rule's distance limitations are harmonious with the instruction.

Moreover, the Court stated that the rulemaking process by which the distance limitations were adopted is facially suspect. Petitioners contend the proposed rule that was published, on which interested persons were invited to comment, did not include any proposed distance limitations in its use of terms like "adjacent waters" and "significant nexus." Consequently, petitioners contend, the Final Rule cannot be considered a "logical outgrowth" of the rule proposed, as required to satisfy the notice-and-comment requirements of the APA, 5 U.S.C. Section 553. As a further consequence of this defect, petitioners contend, the record compiled by respondents is devoid of specific scientific support for the distance limitations that were included in the Final Rule. They contend the Rule is therefore not the product of reasoned decision-making and is vulnerable to attack as impermissibly "arbitrary or capricious" under the APA, 5 U.S.C. Section 706(2)."

Until further notice, the June 29, 2015 WOTUS Rule is not in effect. Furthermore, this report does not attempt to include a professional opinion as it relates to the June 29, 2015 WOTUS Rule.

## 2.2 Waters of the State

"Waters of the State" are within the jurisdiction of the Ohio Environmental Protection Agency (OEPA). They are generally defined as surface and underground water bodies, which extend through or exist wholly in the State of Ohio, which includes, but is not limited to, streams and both isolated and non-isolated wetlands. Private ponds, or any pond, reservoir, or facility built for reduction of pollutants prior to discharge are not included in this definition. In addition to "waters of the U.S.", OEPA also regulates and issues permits for isolated wetland impacts.

OEPA relies on the USACE decision regarding wetland determinations and delineations including whether or not a wetland is isolated or non-isolated.

## 2.3 Wetlands

Wetlands are a category of "waters of the U.S." for which a specific identification methodology has been developed. As described in detail in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), wetland boundaries are delineated using three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. In addition to the criteria defined in the 1987 Manual, the procedures described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0* (Environmental Laboratory, 2012) were used to evaluate the Study Area for the presence of wetlands.

### 2.3.1 Hydrophytic Vegetation

On June 1, 2012, the National Wetland Plant List (NWPL), formerly called the National List of Plant Species that Occur in Wetlands (Reed 1988), went into effect after being released by the

U.S. Army Corps of Engineers (USACE) as part of an interagency effort with the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (Lichvar and Kartesz, 2009). The NWPL, along with the information implied by its wetland plant species status ratings, provides general botanical information about wetland plants and is used extensively in wetland delineation, restoration, and mitigation efforts. The NWPL consists of a comprehensive list of wetland plant species that occur within the United States along with their respective wetland indicator statuses by region. An indicator status reflects the likelihood that a particular plant species occurs in a wetland or upland (Lichvar et al. 2012). Definitions of the five indicator categories are presented below.

> **OBL** (Obligate Wetland Plants): almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.
>
> **FACW** (Facultative Wetland Plants): usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.
>
> **FAC** (Facultative Plants): occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
>
> **FACU** (Facultative Upland Plants): usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.
>
> **UPL** (Upland Plants): almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

According to the USACE's Eastern Mountains and Piedmont Regional Supplement, plants that are rated as FAC, FACW, or OBL are classified as wetland plant species. The percentage of dominant wetland species in each of the four vegetation strata (tree, shrub/sapling, herbaceous, and woody vine) in the sample area determines the hydrophytic (wetland) status of the plant community. Dominant species are chosen independently from each stratum of the community. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total.

For the purposes of determining dominant plant species, the four vegetation strata are defined. Trees consist of woody species 3 inches or greater in diameter at breast height (DBH). Shrubs and saplings are woody species that are over 1 meter in height and less than 3 inches DBH. Herbaceous species consist of all herbaceous (non-woody) plants, including herbaceous vines,

regardless of size, and woody plants less than 1 meter tall. Woody vines consist of vine species greater than 1 meter in height, such as wild grapes.

### 2.3.2 Hydric Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. In general, hydric soils are flooded, ponded, or saturated for a week or more during the growing season when soil temperatures are above 32 degrees Fahrenheit. The anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry, which are used to differentiate hydric from non-hydric soils.

In this report, soil colors are described using the Munsell notation system. This method of describing soil color consists of separate notations for hue, value, and chroma that are combined in that order to form the color designation. The hue notation of a color indicates its relation to red, yellow, green, blue, and purple; the value notation indicates its lightness, and the chroma notation indicates its strength or departure from a neutral of the same lightness.

The symbol for hue consists of a number from 1 to 10, followed by the letter abbreviation of the color. Within each letter range, the hue becomes more yellow and less red as the numbers increase. The notation for value consists of numbers from 0 for absolute black, to 10 for absolute white. The notation for chroma consists of numbers beginning with /0 for neutral grays and increasing at equal intervals. A soil described as 10YR 3/1 soil is more gray than a soil designated 10YR 3/6.

### 2.3.3 Wetland Hydrology

Wetland hydrology is defined as the presence of water for a significant period of time at or near the surface (within the root zone) during the growing season. Wetland hydrology is present only seasonally in many cases, and is often inferred by indirect evidence. Hydrology is controlled by such factors as seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage. Primary indicators of hydrology are inundation, soil saturation in the upper 12 inches of the soil, watermarks, sediment deposits, and drainage patterns. Secondary indicators such as oxidized root channels in the upper 12 inches of the soil, water-stained leaves, local soil survey data, and the FAC-neutral vegetation test are sometimes used to identify hydrology. A primary indicator or two or more secondary indicators are required to establish a positive indication of hydrology.

### 2.3.4 Wetland Definition Summary

In general, an area must meet all three criteria to be classified as a wetland. In certain problem areas such as seasonal wetlands, which are not wet at all times, or in recently disturbed (atypical) situations, areas may be considered a wetland if only two criteria are met. In special situations, an area that meets the wetland definition may not be within the USACE's jurisdiction due to a specific regulatory exemption.

## 2.4 Streams, Rivers, Watercourses & Jurisdictional Ditches

With non-tidal waters, in the absence of adjacent wetlands, the extent of the USACE's jurisdiction is defined by the OHWM. USACE regulations define the term "ordinary high water mark" for purposes of the CWA lateral jurisdiction at 33 CFR 328.3(e), which states:

> The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear,

natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Streams, rivers, watercourse, and ditches within the Study Area were evaluated using the above definition and documented. Waterways that did exhibit an OHWM were recorded and evaluated using the Ohio Environmental Protection Agency's Primary Headwater Habitat Evaluation (HHEI) or Qualitative Habitat Evaluation Index (QHEI) methodology. If applicable, the results of the HHEI and/or QHEI are presented in Section 3.2.

## 2.5 Endangered Species Act

Endangered, Threatened, and rare (ETR) species are protected at both the state and federal level (ORC 1531.25 and 50 CFR 17.11 through 17.12, respectively). The Ohio Revised Code defines "Take" as to harass, hunt, capture, or kill; or attempt to harass, hunt, capture, or kill.

The USFWS, under authority of the Endangered Species Act of 1973 (16 U.S. Code 1531), as amended, has the responsibility for federally listed species. The Ohio Department of Natural Resources (ODNR) has the responsibility for state listed species.

# 3 Background Information

## 3.1 Existing Maps

Several sources of information were consulted to identify potential wetlands and wetland soil units on the site. These include the USFWS's *National Wetland Inventory* (NWI), the USGS's *National Hydrography Dataset* (NHD), and the Natural Resources Conservation Service's (NRCS) *Soil Survey* for this county. These maps identify potential wetlands and wetland soil units on the site. The NHD maps are used to portray surface water. The NWI maps were prepared from high altitude photography and in most cases were not field checked. Because of this, wetlands are sometimes erroneously identified, missed, or misidentified. Additionally, the criteria used in identifying these wetlands were different from those currently used by the USACE. The county soil maps, on the other hand, were developed from actual field investigations. However, they address only one of the three required wetland criteria and may reflect historical conditions rather than current site conditions. The resolution of the soil maps limits their accuracy as well. The mapping units are often generalized based on topography and many mapping units contain inclusions of other soil types for up to 15 percent of the area of the unit. The USACE does not accept the use of either of these maps to make wetland determinations.

### 3.1.1 National Wetland Inventory

The NWI map of the area (Figure 2) did not identify any identified wetland features within the Study Area.

### 3.1.2 National Hydrography Dataset

The NHD map of the area (Figure 2) identified one (1) stream (Stream 1) within the Study Area.

#### 3.1.3 Soil Survey

The NRCS Soil Survey identified ten (10) soil types located within the Study Area (Figure 3). The following table identifies the soil unit symbol, soil unit name, and whether or not the soil type contains components that meet the hydric soil criteria.

**Table 3 – 2 Soil Map Units within the St. Annes Avenue Tower Replacement Project Area**

| Symbol | Description | Hydric |
|---|---|---|
| EdF | Eden flaggy silty clay loam, 40 to 60 percent slopes | N |
| PbC2 | Parke silt loam, 8 to 15 percent slopes, eroded | N |
| PbD | Parke silt loam, 15 to 25 percent slope | N |
| PbE | Parke silt loam, 25 to 35 percent slope | N |
| PfE | Pate silty clay loam, 25 to 35 percent slope | N |
| UcAXF | Urban land-Alfic Udarents complex, clayey substratum over bedrock, 25 to 60 percent slopes | N |
| UrUXC | Urban land-Udorthents, 0 to 10 percent slopes | N |
| UwAXC | Urban land-Alfic Udarents complex, loamy substratum over bedrock, 0 to 12 percent slopes | N |
| UwAXD | Urban land-Alfic Udarents complex, loamy substratum over bedrock, 12 to 25 percent slopes | N |
| UwAXF | Urban land-Alfic Udarents complex, loamy substratum over bedrock, 25 to 70 percent slopes | N |

# 4 Methodology and Description

## 4.1 Regulated Waters Investigation

The delineation of regulated waters within the Study Area was based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0* (Environmental Laboratory, 2012) as required by current USACE policy.

Prior to the fieldwork, the background information was reviewed to establish the probability and potential location of wetlands on the site. Next, a general reconnaissance of the Study Area was conducted to determine site conditions. The site was then walked with the specific intent of determining wetland boundaries. Data stations were established at locations within and near the wetland areas to document soil characteristics, evidence of hydrology and dominant vegetation. Note that no attempt was made to examine a full soil profile to confirm any soil series designations. However, when possible, soils were examined to a depth of at least 16 inches to assess soil characteristics and site hydrology. Complete descriptions of typical soil series can be found in the soil survey for these counties.

#### 4.1.1 Site Photographs.

Photographs of the site are located in Appendix A. These photographs are the visual documentation of site conditions at the time of inspection. The photographs are intended to provide representative visual samples of any wetlands or other special features found on the site.

#### 4.1.2 Delineation Data Sheets.

Where stations represent a wetland boundary point they are presented as paired data points (dp), one each documenting the wetland and upland sides of the wetland boundary. These forms are the written documentation of how representative sample stations met or did not meet each of the wetland criteria. For plant species included on the National Wetlands Plant List, nomenclature will follow their lead. For all other plants not listed in the NWPL, nomenclature will follow the USDA's Plants Database.

## 4.2 Technical Descriptions

The project included the review of a 150-ft wide survey corridor approximately 0.5 mile long (the "Study Area"), located in Village of North Bend and Miami Township, Hamilton County, Ohio (see Figure 1). The Study Area consists of approximately 13.9 acres, with an actual project earth disturbance potential of approximately 1.13 acre (based on a 20-foot wide vehicular path for 0.5 mile of proposed off-road construction access routes). The St. Annes Avenue Tower Replacement Project is located at Duke Energy Ohio structure C10-X2-129 (39.1567, -84.7270) situated north of St. Annes and south of Aston View Lane. The Study Area consisted of three habitats: maintained Right-of-Way (ROW)/old field, maintained turf/recreational golf course, and secondary growth.

### 4.2.1 Wetland and Stream Descriptions

**Stream 1 (Unnamed Tributary to the Ohio River) (427 linear feet within the study area)**

Stream 1 was a perennial stream located east of the proposed tower replacement. This stream was at base flow conditions at the time of the stream survey. The dominant substrates were cobble, gravel, and silt. The Ordinary High Water Mark (OHWM) width was 30 feet and depth was 3.5 feet. The maximum pool depth observed was approximately 2.5 feet. Stream 1 is a relatively permanent water (RPW) and flows into the Ohio River, a Traditional Navigable Water (TNW). Due to this connection, this stream should be considered a jurisdictional water of the United States. Stream 1 had a QHEI score of 72 (Attached). This stream is a designated Warmwater Habitat (WWH).

## 4.3 Endangered, Threatened and Rare Species

The potential for listed species known to occur within Hamilton County were evaluated based on the habitat observed within the Study Area. In addition, high quality natural communities and significant natural habitat areas were documented if encountered. A walking survey of the Study Area was performed in which all observed Endangered, Threatened and Rare (ETR) species or specific known special habitats were noted. Coordination with the U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR) Division of Wildlife occurred as it related to the Natural Heritage Database search results for the Study Area (Appendix C).

Tables summarizing the results of ETR species as they relate to the habitat observed within the Study Area are included with this report. Correspondence with the ODNR DOW and the USFWS regarding RTE located within a ½-mile of the Study Area were sent June 14, 2019. The ODNR-DOW and USFWS data request receipts are located in Appendix C.

**Bat Roost Habitat**

The Indiana bat (*Myotis sodalis*, federally endangered) and northern long-eared bat (*Myotis septentrionalis*, federally threatened) are protected under the Endangered Species Act, which is

overseen by the USFWS. Typical guidance from USFWS regarding potential bat roost trees is avoidance of cutting trees from April through October. The Study Area was assessed for potential bat roosting habitat with respect to any indicated clearing activities. Potential bat roost trees include dead or dying trees (including live shagbark hickories) with at least 10-percent exfoliating bark, a diameter at breast height (DBH) of at least 3 inches, and solar exposure for maternity roost trees (the tree is on a wooded edge or in a canopy gap). If applicable, correspondence from USFWS regarding Indiana bat and northern long-eared bat is included within Appendix C.

Suitable bat roost habitat was observed within wooded the areas bordering the actively maintain ROW adjacent to the St. Annes Avenue Tower Replacement Project Study Area.

**Running Buffalo Clover Habitat**

Running buffalo clover (*Trifolium stoloniferum*, federally endangered) is protected under the Endangered Species Act, which is overseen by the USFWS. Typical guidance from USFWS regarding potential running buffalo clover habitat is avoidance or relocation. Potential running buffalo clover habitat includes partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails. Periodic disturbance and a somewhat open habitat is needed for running buffalo clover to flourish but cannot tolerate full-sun, full-shade, or severe disturbance.

The Study Area was assessed by a USFWS qualified surveyor during the blooming period (May) of running buffalo clover for potential habitat. Based on our field inspection and our best professional judgment, no running buffalo clover habitat or individuals were observed within the St. Annes Avenue Tower Replacement Project Study Area. The secondary deciduous forest dominant understory vegetation contained a closed canopy and the maintained ROW contained full-sun.

# 5 Jurisdictional Analysis

## 5.1 U.S. Army Corps of Engineers

The USACE has authority over the discharge of fill or dredged material into “waters of the U.S.”. This includes authority over any filling, mechanical land clearing, or construction activities that occur within the boundaries of any “waters of the U.S.”. A permit must be obtained from the USACE before any of these activities occur. Permits can be divided into two general categories: Individual Permits and Nationwide Permits.

Individual Permits are required for projects that do not fall into one of the specific Nationwide Permits or are deemed to have significant environmental impacts. These permits are much more difficult to obtain and receive a much higher level of regulatory agency and public scrutiny and may require several months to more than a year for processing.

Nationwide Permits have been developed for projects that meet specific criteria and are deemed to have minimal impact on the aquatic environment. There are currently 52 Nationwide Permits for qualifying activities with 31 Nationwide Permit General Conditions that must be satisfied in order to receive NWP consideration from the USACE.

## 5.2 Ohio Environmental Protection Agency

The OEPA is responsible for issuing Clean Water Act (CWA) Section 401 permits known as Water Quality Certifications (WQC) for all impacts to "waters of the State of Ohio." This includes authority over any dredging, filling, mechanical land clearing, impoundments or construction activities that occur within the boundaries of any "waters of the State," including those isolated waters not otherwise regulated by the USACE.

The OEPA issues Section 401 WQC in conjunction with the USACE' Section 404 permits. A Section 401 Water Quality Certification must be received before the USACE can issue any Section 404 Department of the Army Permit. The OEPA must issue Individual Section 401 WQC for all Individual Section 404 Permits.

Water quality certification may be granted, without notification to the OEPA, if the project falls under the NWP limitations described above. In order to qualify for this granted certification, all prior-authorized and *de minimis* Ohio State Certification General Limitations and Conditions as published by the OEPA must be satisfied.

The OEPA also requires notification for all impacts to isolated wetlands, which includes a permit application and mitigation plan pursuant to Section 6111 of Ohio Revised Code (ORC).

# 6 Summary and Conclusion

## 6.1 Summary

Cardno inspected the St. Annes Avenue Tower Replacement Study Area on June 5, 2019.

### 6.1.1 Wetlands and Waterways

One (1) stream and no wetlands were identified within the St. Annes Avenue Tower Replacement Project Area.

**Table 6-1 Features Identified within the St. Annes Avenue Tower Replacement Study Area**

| Feature Name | USGS/ NWI Identified | Feature Class | Regulatory Status[1] | Riffles / Pools | Dimensions (ft) | | Substrate | HHEI / ORAM Score | Linear Footage (LF) | Acreage (AC) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Width | Depth | | | | |
| Stream 1 | USGS-INT | Perennial | Jurisdictional | Yes | 30 | 3.5 | G-Si-Sa | 72 | 427 | 0.29 |
| Totals | | | Streams | | Jurisdictional | | Perennial | | 427 LF | 0.29 |

[1] Regulatory Status is based on our "professional judgment" and experience; however, the USACE makes the final determination.

### 6.1.2 Endangered, Threatened, and Rare Species

Several sources of information were consulted to further define the potential habitat of listed species that occur within the county of the Study Area. The table presented in Appendix C contains the list of ETR species known to occur within Hamilton County and their potential to occur within the Study Area based on their habitat requirements and field observations.

Correspondence with the ODNR DOW and the USFWS regarding RTE located within a ½-mile of the Study Area were sent June 14, 2019. The ODNR-DOW and USFWS data request receipts are located in Appendix C.

### 6.1.3 Indiana Bat and Northern Long-eared Bat Roost Habitat

The entire Study Area was surveyed to identify potential Indiana bat and northern long-eared bat roost trees. Based on our field inspection and our best professional judgment, there are no potential roost or maternity roost trees suitable for harboring Indiana bats and northern long-eared bats within the Study Area.

In the event tree clearing activity becomes a work priority within the Study Area, it is recommended that a field inspection be performed within the clearing limits to ensure that potential bat habitat has not developed.

The USFWS is the regulatory authority that makes the final determination as to the status of the Indiana bat and northern long-eared bat in the Study Area. A letter based on the field observations was submitted to the USFWS for concurrence on June 14, 2019. The USFWS data request receipt is located in Appendix C.

## 6.2 Conclusion

A permit must be obtained from the USACE and the OEPA prior to any filling, dredging, or mechanical land clearing that occurs within the boundaries of any “waters of the U.S.” or “waters of the State”.

While this report represents our best professional judgment based on our knowledge and experience, it is important to note that the Huntington District of the U.S. Army Corps of Engineers has final discretionary authority over all jurisdictional determinations of ‘waters of the U.S.’ including wetlands under Section 404 of the CWA in this region. It is therefore, recommended that a copy of this report be furnished to the Huntington District of the U.S. Army Corps of Engineers to confirm the results of our findings.

# 7 References

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers' Wetland Delineation Manual*, Technical Report Y-87-1, U.S. Waterways Experiment Station, Vicksburg, MS.

Environmental Laboratory. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*, ERDC/EL TR-12-19, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. 2nd Edition. The New York Botanical Garden. Bronx, NY.

Lichvar, R.W. 2013. The National Wetland Plant List: 2013 Wetland Ratings. Phytoneuron 2013-49: 1-241. Published July 17, 2013. ISSN 2153 733X.

Lichvar, R.W., and John T. Kartesz. 2009. *North American Digital Flora: National Wetland Plant List, version 2.4.0* (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.

Lichvar, R., Melvin, N.C., Butterwick, M.L. and Kirchner, W.N. 2012. *National Wetland Plant List Indicator Rating Definitions.* ERDC/CRREL TN-12-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. http://www.fws.gov/wetlands/documents/National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf

Ohio Environmental Protection Agency, Division of Surface Water. 2009. Biological and Water Quality Study of the Lower Little Miami River and Selected Tributaries 2007 Including the Todd Fork Subwatershed.
(https://www.epa.state.oh.us/portals/35/documents/lowerlittlemiamirivertsd2007.pdf)

Reed, P. B., Jr. 1988. National List of Plant Species that Occur in Wetlands: 1988. Washington, DC: U.S. Fish and Wildlife Service.

United States Department of Agriculture, Natural Resource Conservation Service (NRCS). Web Soil Survey. Soil Survey of Hamilton County, OH.

United States Environmental Protection Agency (EPA). 2015. Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence (http://www.epa.gov/cleanwaterrule)

United States Environmental Protection Agency (EPA). 2015. Technical Support Document for the Clean Water Rule: Definition of Waters of the United States (http://www.epa.gov/cleanwaterrule)

DUKE ENERGY OHIO
ST. ANNES AVENUE TOWER
REPLACEMENT PROJECT
WETLAND DELINEATION REPORT

# FIGURES

PROJECT LOCATION

HAMILTON COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: HOODEN AND ADDYSTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 01/2017.

N

0 1,000 2,000 4,000 Feet

- Project Centerline
- State Highway
- Interstate
- US Highway
- Railroad
- County Boundary
- Existing Facility
- Municipal Boundary

DUKE ENERGY.

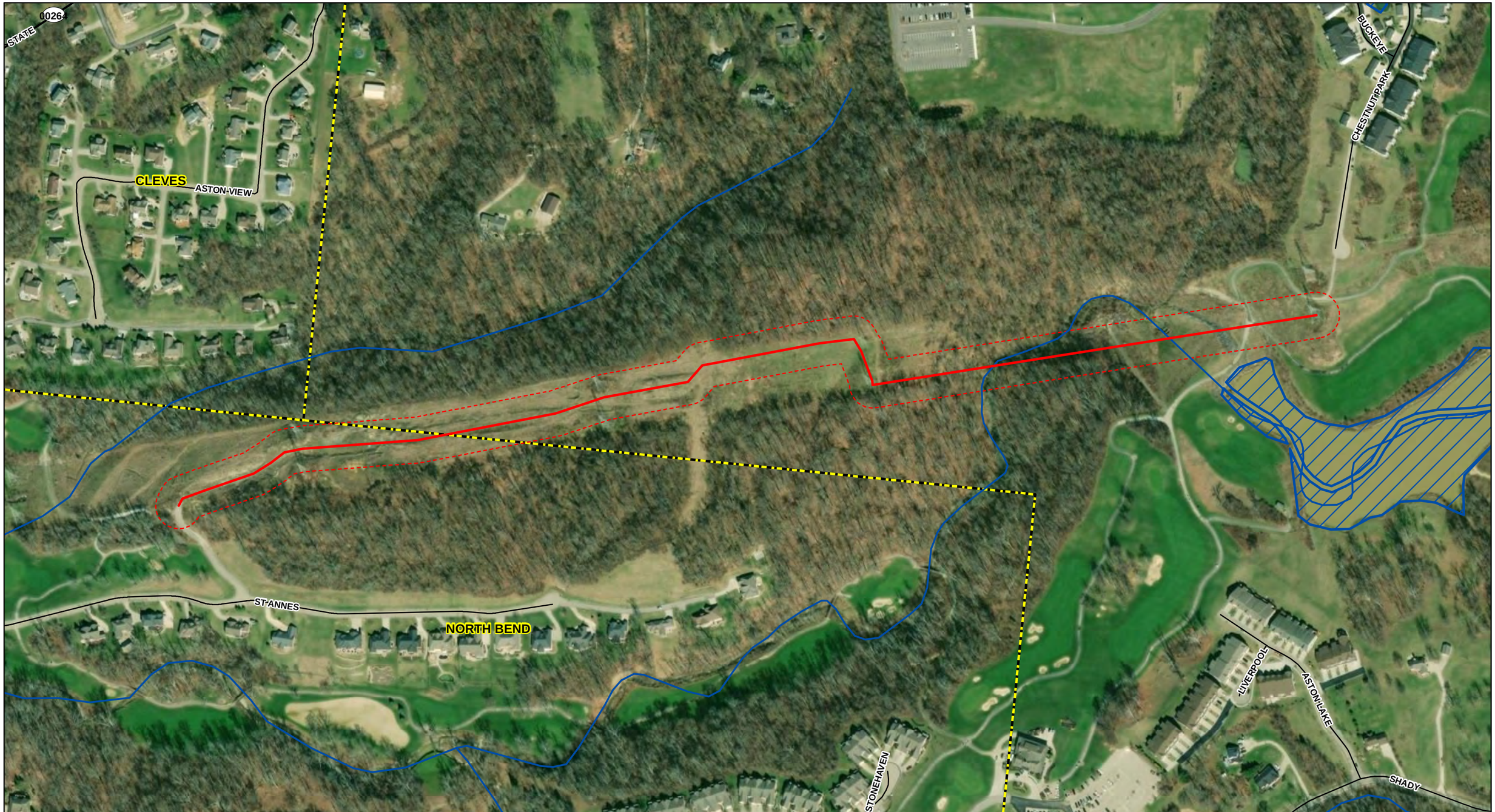
Cardno

FIGURE 1
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER
REPLACEMENT PROJECT
DUKE ENERGY. OHIO
PROJECT VICINITY MAP

DRAWN BY: COD
CHECKED: CJ

DATE: 7/1/2019
APPROVED: JT

\\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F1_Project Vicinity.mxd




PROJECT LOCATION

HAMILTON COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: HOODEN AND ADDYSTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 01/2017.

N

0 200 400 Feet

Project Centerline
NWI Wetland
NHD Flowline
150-ft Corridor
Local Road
Interstate
State Highway
US Highway
Railroad
Municipal Boundary
Existing Facility

DUKE ENERGY.

Cardno

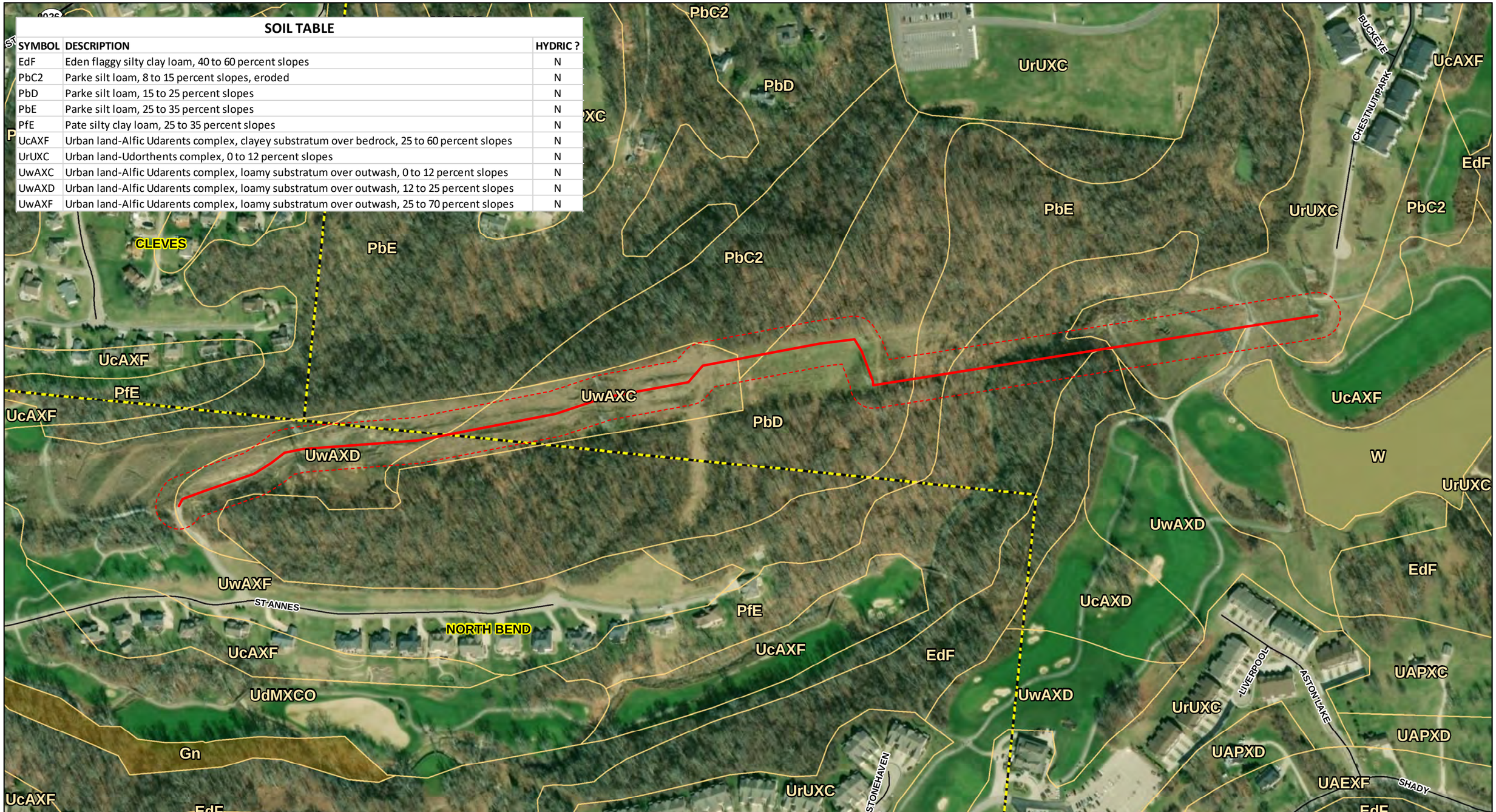
FIGURE 2
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
NATIONAL WETLAND INVENTORY (NWI) MAP

DRAWN BY: COD
CHECKED: CJ
DATE: 6/21/2019
APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F2_NWI.mxd

## SOIL TABLE

| SYMBOL | DESCRIPTION | HYDRIC ? |
|---|---|---|
| EdF | Eden flaggy silty clay loam, 40 to 60 percent slopes | N |
| PbC2 | Parke silt loam, 8 to 15 percent slopes, eroded | N |
| PbD | Parke silt loam, 15 to 25 percent slopes | N |
| PbE | Parke silt loam, 25 to 35 percent slopes | N |
| PfE | Pate silty clay loam, 25 to 35 percent slopes | N |
| UcAXF | Urban land-Alfic Udarents complex, clayey substratum over bedrock, 25 to 60 percent slopes | N |
| UrUXC | Urban land-Udorthents complex, 0 to 12 percent slopes | N |
| UwAXC | Urban land-Alfic Udarents complex, loamy substratum over outwash, 0 to 12 percent slopes | N |
| UwAXD | Urban land-Alfic Udarents complex, loamy substratum over outwash, 12 to 25 percent slopes | N |
| UwAXF | Urban land-Alfic Udarents complex, loamy substratum over outwash, 25 to 70 percent slopes | N |




PROJECT LOCATION

HAMILTON COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: HOODEN AND ADDYSTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 01/2017.

N

0 200 400 Feet

Project Centerline
150-ft Corridor
Soil Unit
Soil Unit - Hydric
Local Road
Interstate
State Highway
US Highway
Railroad
Municipal Boundary
Existing Facility

DUKE ENERGY.

Cardno

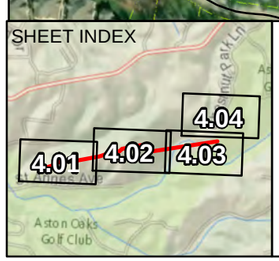
FIGURE 3
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
SOIL CLASSIFICATIONS

DRAWN BY: COD
CHECKED: CJ
DATE: 6/21/2019
APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F3_Soils.mxd

ROSEWYNNE
LAURELWOOD
COLEBERRY
JACKSON
STATE
BRIDGETOWN
CLEVES
ASTON VIEW
CHESTNUT PARK
HAZELNUT
BUCKEYE
ASTON WOODS
YORKSHIRE
4.04
4.03
4.02
4.01
C10-X2-129
VENETIAN
SHADY
ST ANNES
NORTH BEND
ASTON LAKE
LIVERPOOL
TURNBERRY
STONEHAVEN

SHEET INDEX




REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 165 330 660 Feet

Sheet Index
Proposed Structure
Existing Structure
150-ft Corridor
Potential Access
Project Centerline
Local Roads
Interstate
State Highway
US Highway
Railroad
NWI Wetland
NHD Flowline
100Yr Floodplain
Parcels
Municipal Boundary
Existing Facility

DUKE ENERGY.
Cardno

FIGURE 4.0
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
INDENTIFIED FEATURES KEY MAP

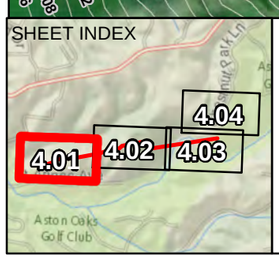
DRAWN BY: COD
CHECKED: CJ
DATE: 6/21/2019
APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F4_keymap.mxd

CLEVES

NORTH BEND

SHEET INDEX




REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

| | | |
|---|---|---|
| Pond Overflow | Project Centerline | NWI Wetland |
| Delineated Stream | Local Roads | NHD Flowline |
| Proposed Structure | Interstate | 100Yr Floodplain |
| Existing Structure | State Highway | Municipal Boundary |
| 150-ft Corridor | US Highway | 1' Contour Line |
| Potential Access | Railroad | Existing Facility |

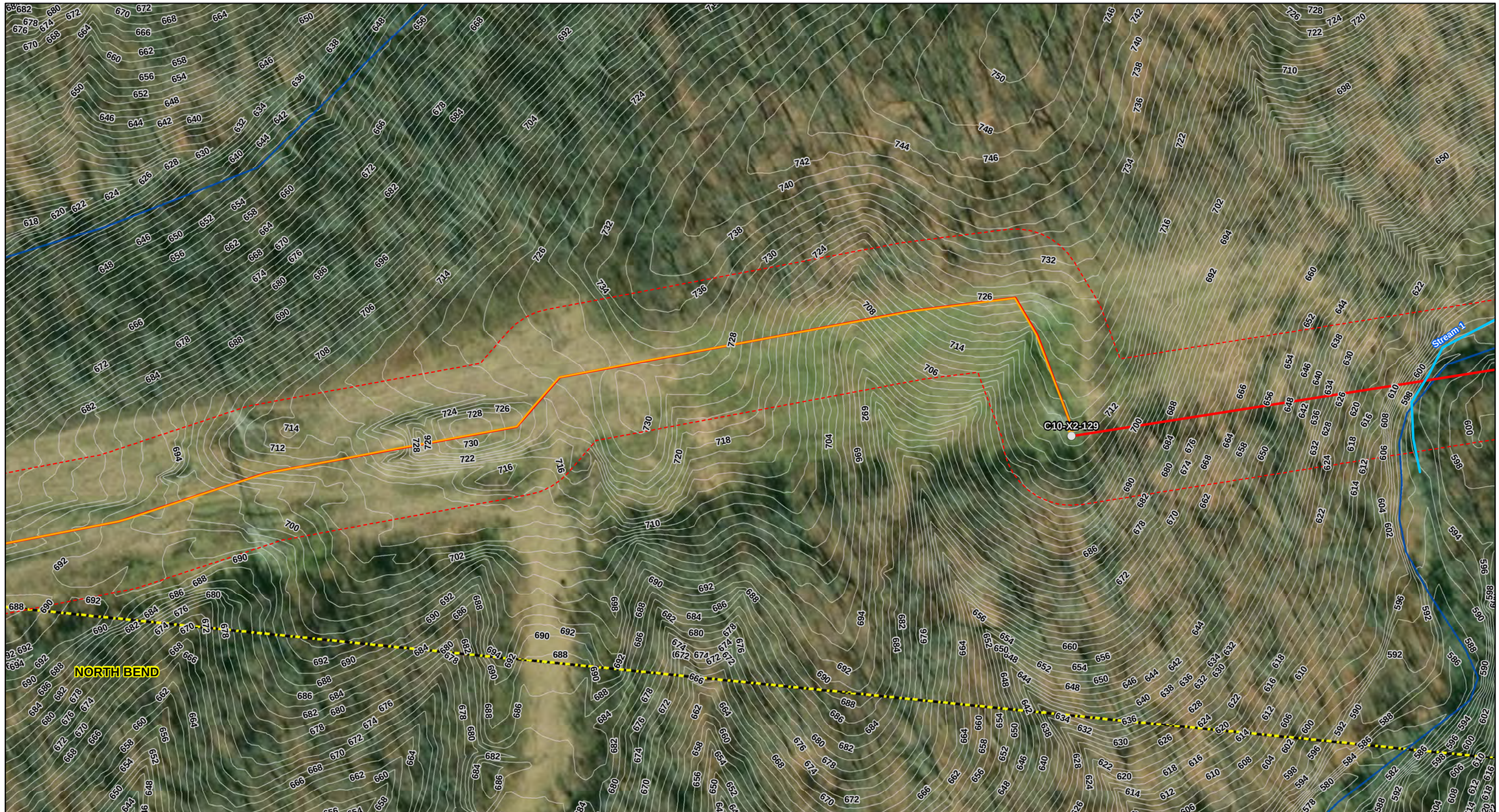
DUKE ENERGY.

Cardno

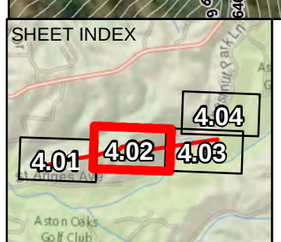
FIGURE 4.01
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
IDENTIFIED FEATURES MAP

DRAWN BY: COD
CHECKED: CJ
DATE: 6/21/2019
APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F4x_DELINEATION.mxd




SHEET INDEX




REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- 150-ft Corridor
- Potential Access
- Project Centerline
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- 1' Contour Line
- Existing Facility

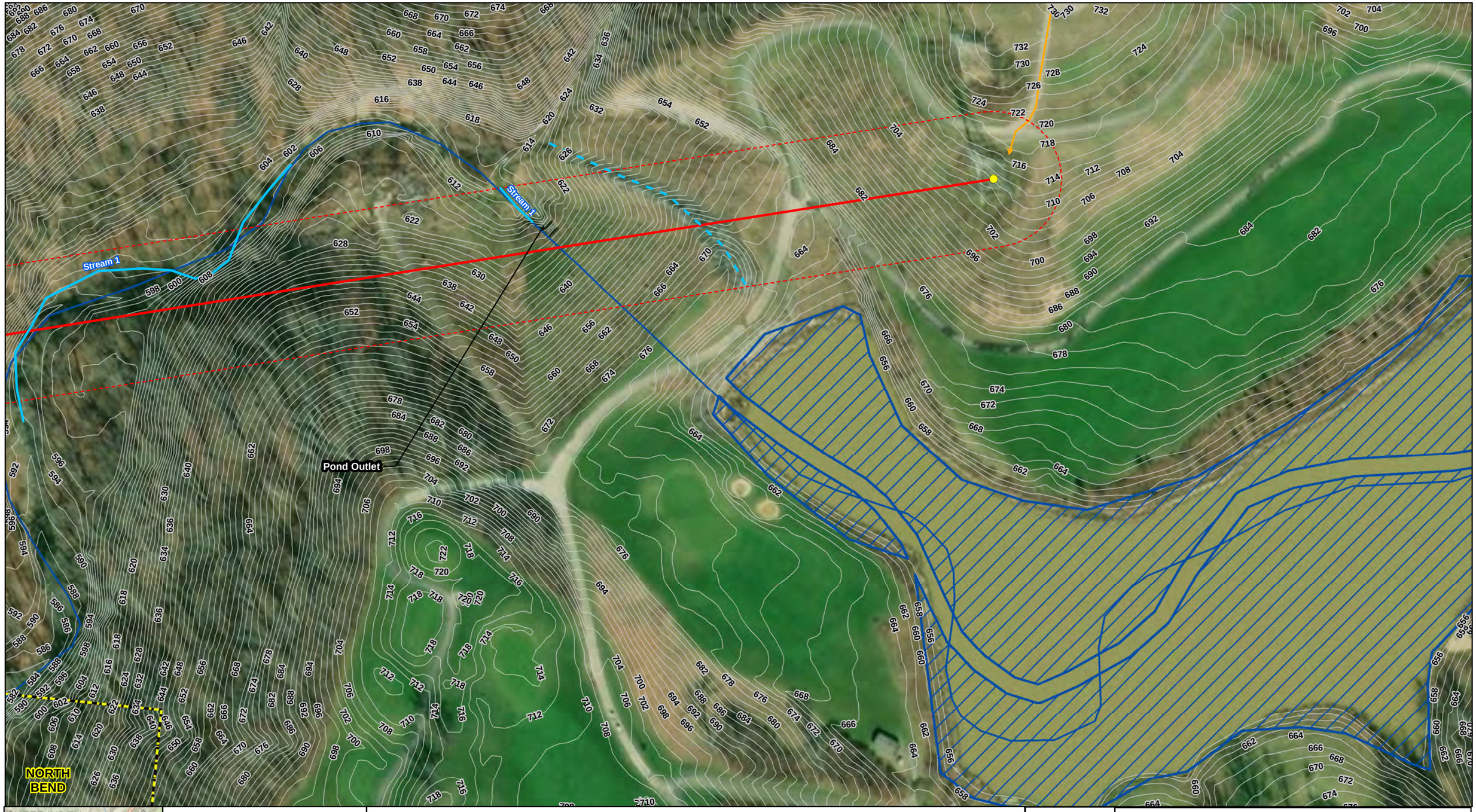
DUKE ENERGY.

Cardno

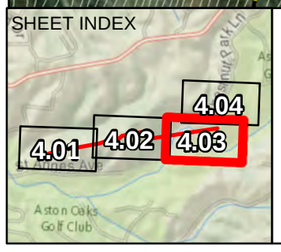
FIGURE 4.02
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
IDENTIFIED FEATURES MAP

DRAWN BY: COD
CHECKED: CJ
DATE: 6/21/2019
APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F4x_DELINEATION.mxd




SHEET INDEX




REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- 150-ft Corridor
- Potential Access
- Project Centerline
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- 1' Contour Line
- Existing Facility

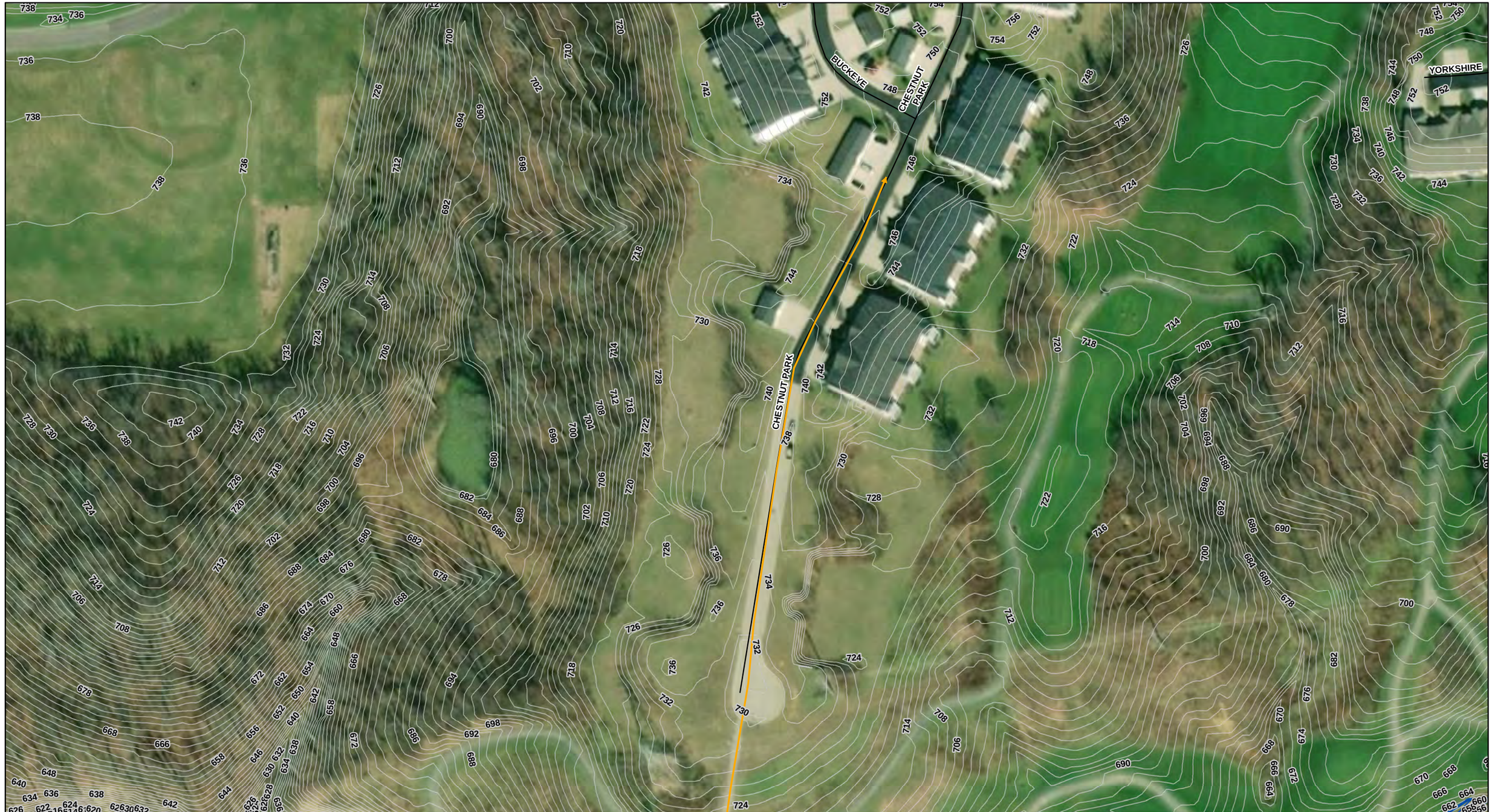
DUKE ENERGY.

Cardno

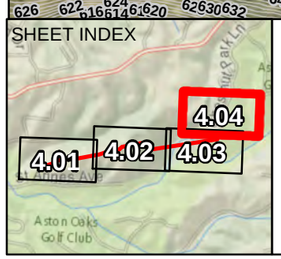
FIGURE 4.03
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
IDENTIFIED FEATURES MAP

DRAWN BY: COD DATE: 6/21/2019
CHECKED: CJ APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F4x_DELINEATION.mxd




SHEET INDEX




REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 40 80 160 Feet

- Pond Overflow
- Delineated Stream
- Proposed Structure
- Existing Structure
- 150-ft Corridor
- Potential Access
- Project Centerline
- Local Roads
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetland
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- 1' Contour Line
- Existing Facility

DUKE ENERGY.

Cardno

FIGURE 4.04
REGULATED WATERS DELINEATION REPORT
ST. ANNES AVENUE TOWER REPLACEMENT PROJECT
DUKE ENERGY, OHIO
IDENTIFIED FEATURES MAP

DRAWN BY: COD
CHECKED: CJ

DATE: 6/21/2019
APPROVED: JT

R:\Projects\15\156\156720M_DukeEnergy9193\M96_C10X2129_EmergentTowerReplacement\GIS\MXD\Delineation\M96_EmergentTower_WDR_F4x_DELINEATION.mxd

DUKE ENERGY OHIO
ST. ANNES AVENUE TOWER
REPLACEMENT PROJECT
WETLAND DELINEATION REPORT

# APPENDIX

# A

## SITE PHOTOGRAPHS

Photo 1: Representative overview of ROW looking west toward C10-X2-129.

Photo 2: View of structural damage to Structure C10-X2-129.

Photo 3: Stream 1 view facing upstream.

Photo 4: Stream 1 view facing downstream.

DUKE ENERGY OHIO
ST. ANNES AVENUE TOWER
REPLACEMENT PROJECT
WETLAND DELINEATION REPORT

APPENDIX

# B

OHIO QHEI DATA SHEETS

# Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

OhioEPA

*QHEI Score:* 72

*Stream & Location:* Stream 1,St. Annes Avenue Tower Replacement Project *RM:* _ _ _._ *Date:* 06/ 05 /19

Cori Jansing *Scorers Full Name & Affiliation:* Cardno Inc.

*River Code:* _ _ _- _ _ _- _ _ _ *STORET #:* _ _ _ _ _ _ *Lat./ Long.:* (NAD 83 - decimal º) 39 .156401 /84 . 725773 *Office verified location* ☐

## 1] *SUBSTRATE* Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

| BEST TYPES | | POOL | RIFFLE |
|---|---|---|---|
| ☐ | ☐ BLDR /SLABS [10] | | 5 |
| ☐ | ☐ BOULDER [9] | | |
| ☒ | ☐ COBBLE [8] | 40 | 60 |
| ☐ | ☒ GRAVEL [7] | 35 | 20 |
| ☐ | ☐ SAND [6] | 10 | 10 |
| ☐ | ☐ BEDROCK [5] | | |

| OTHER TYPES | | POOL | RIFFLE |
|---|---|---|---|
| ☐ | ☐ HARDPAN [4] | | |
| ☐ | ☐ DETRITUS [3] | | |
| ☐ | ☐ MUCK [2] | | |
| ☐ | ☐ SILT [2] | 15 | 5 |
| ☐ | ☐ ARTIFICIAL [0] | | |

(Score natural substrates; ignore sludge from point-sources)

**NUMBER OF BEST TYPES:** ☒ 4 or more [2] ☐ 3 or less [0]

Check ONE (*Or 2 & average*)

| ORIGIN | QUALITY |
|---|---|
| ☒ LIMESTONE [1] | ☐ HEAVY [-2] |
| ☐ TILLS [1] | ☐ MODERATE [-1] |
| ☐ WETLANDS [0] | ☒ NORMAL [0] |
| ☐ HARDPAN [0] | ☐ FREE [1] |
| ☐ SANDSTONE [0] | SILT |
| ☐ RIP/RAP [0] | ☐ EXTENSIVE [-2] |
| ☐ LACUSTURINE [0] | ☐ MODERATE [-1] |
| ☐ SHALE [-1] | ☒ NORMAL [0] |
| ☐ COAL FINES [-2] | ☐ NONE [1] |
| | EMBEDDEDNESS |

*Comments*

*Substrate* 18 *Maximum 20*

## 2] *INSTREAM COVER* Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

| | | | | | |
|---|---|---|---|---|---|
| 0 | UNDERCUT BANKS [1] | 1 | POOLS > 70cm [2] | 0 | OXBOWS, BACKWATERS [1] |
| 2 | OVERHANGING VEGETATION [1] | 1 | ROOTWADS [1] | 0 | AQUATIC MACROPHYTES [1] |
| 0 | SHALLOWS (IN SLOW WATER) [1] | 1 | BOULDERS [1] | 1 | LOGS OR WOODY DEBRIS [1] |
| 0 | ROOTMATS [1] | | | | |

**AMOUNT** Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☒ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

*Comments*

*Cover Maximum 20* 13

## 3] *CHANNEL MORPHOLOGY* Check ONE in each category (*Or 2 & average*)

| SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY |
|---|---|---|---|
| ☐ HIGH [4] | ☐ EXCELLENT [7] | ☒ NONE [6] | ☒ HIGH [3] |
| ☐ MODERATE [3] | ☒ GOOD [5] | ☒ RECOVERED [4] | ☐ MODERATE [2] |
| ☒ LOW [2] | ☐ FAIR [3] | ☐ RECOVERING [3] | ☐ LOW [1] |
| ☐ NONE [1] | ☐ POOR [1] | ☐ RECENT OR NO RECOVERY [1] | |

*Comments*

*Channel Maximum 20* 15

## 4] *BANK EROSION AND RIPARIAN ZONE* Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

| L | R | EROSION |
|---|---|---|
| ☒ | ☒ | NONE / LITTLE [3] |
| ☐ | ☐ | MODERATE [2] |
| ☒ | ☒ | HEAVY / SEVERE [1] |

| L | R | RIPARIAN WIDTH |
|---|---|---|
| ☒ | ☒ | WIDE > 50m [4] |
| ☐ | ☐ | MODERATE 10-50m [3] |
| ☐ | ☐ | NARROW 5-10m [2] |
| ☐ | ☐ | VERY NARROW < 5m [1] |
| ☐ | ☐ | NONE [0] |

| L | R | FLOOD PLAIN QUALITY |
|---|---|---|
| ☒ | ☒ | FOREST, SWAMP [3] |
| ☐ | ☐ | SHRUB OR OLD FIELD [2] |
| ☐ | ☐ | RESIDENTIAL, PARK, NEW FIELD [1] |
| ☐ | ☐ | FENCED PASTURE [1] |
| ☐ | ☐ | OPEN PASTURE, ROWCROP [0] |

| L | R | |
|---|---|---|
| ☐ | ☐ | CONSERVATION TILLAGE [1] |
| ☐ | ☐ | URBAN OR INDUSTRIAL [0] |
| ☐ | ☐ | MINING / CONSTRUCTION [0] |

*Indicate predominant land use(s) past 100m riparian.*

*Comments*

Erosion was significant within existing ROW. Outside ROW banks appeared stable.

*Riparian Maximum 10* 9

## 5] *POOL / GLIDE AND RIFFLE / RUN QUALITY*

**MAXIMUM DEPTH** Check **ONE** (*ONLY!*)

☐ > 1m [6]
☐ 0.7-<1m [4]
☒ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

**CHANNEL WIDTH** Check ONE (*Or 2 & average*)

☒ POOL WIDTH > RIFFLE WIDTH [2]
☐ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

**CURRENT VELOCITY** Check ALL that apply

☐ TORRENTIAL [-1]
☐ VERY FAST [1]
☐ FAST [1]
☒ MODERATE [1]
☒ SLOW [1]
☐ INTERSTITIAL [-1]
☐ INTERMITTENT [-2]
☐ EDDIES [1]

*Indicate for reach - pools and riffles.*

**Recreation Potential**
*Primary Contact*
*Secondary Contact*
(circle one and comment on back)

*Comments*

*Pool / Current Maximum 12* 6

**Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:** Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

| RIFFLE DEPTH | RUN DEPTH | RIFFLE / RUN SUBSTRATE | RIFFLE / RUN EMBEDDEDNESS |
|---|---|---|---|
| ☐ BEST AREAS > 10cm [2] | ☐ MAXIMUM > 50cm [2] | ☒ STABLE (e.g., Cobble, Boulder) [2] | ☐ NONE [2] |
| ☒ BEST AREAS 5-10cm [1] | ☒ MAXIMUM < 50cm [1] | ☐ MOD. STABLE (e.g., Large Gravel) [1] | ☒ LOW [1] |
| ☐ BEST AREAS < 5cm [metric=0] | | ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0] | ☐ MODERATE [0] |
| | | | ☐ EXTENSIVE [-1] |

*Comments*

*Riffle / Run Maximum 8* 5

## 6] *GRADIENT* ( 120 ft/mi)

**DRAINAGE AREA** ( 1.42 mi²)

☐ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☒ HIGH - VERY HIGH [10-6]

**%POOL:** 20 **%GLIDE:** 10
**%RUN:** 40 **%RIFFLE:** 30

*Gradient Maximum 10* 6

## A] SAMPLED REACH

Check ALL that apply

**METHOD**

- [ ] BOAT
- [ ] WADE
- [x] L. LINE
- [ ] OTHER

**STAGE**

| 1st -sample pass- | 2nd |
|---|---|
| [ ] HIGH | [ ] |
| [ ] UP | [ ] |
| [x] NORMAL | [ ] |
| [ ] LOW | [ ] |
| [ ] DRY | [ ] |

**DISTANCE**

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [ ] OTHER

50 meters

**CLARITY**

| 1st --sample pass-- | 2nd |
|---|---|
| [ ] < 20 cm | [ ] |
| [x] 20-<40 cm | [ ] |
| [ ] 40-70 cm | [ ] |
| [ ] > 70 cm/ CTB | [ ] |
| [ ] SECCHI DEPTH | [ ] |

**CANOPY**

- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [x] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass _____ cm

2nd _____ cm

*Comment RE: Reach consistency/* Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Assessment typical of reach. Within the existing ROW there is significant erosion however outside the ROW was stable with moderate to no signs of erosion. Stream 1 has very little sedimentation/embeddedness and contains both small fish and macroinvertebrates. IE- caddisfly nymph, stonefly nymphs, mayfly nymphs, water pennies, aquatic sow bugs, and midges were identified.

## B] AESTHETICS

- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

## C] RECREATION

| | AREA | DEPTH |
|---|---|---|
| POOL: | [ ] >100ft² | [ ] >3ft |

## D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

## E] ISSUES

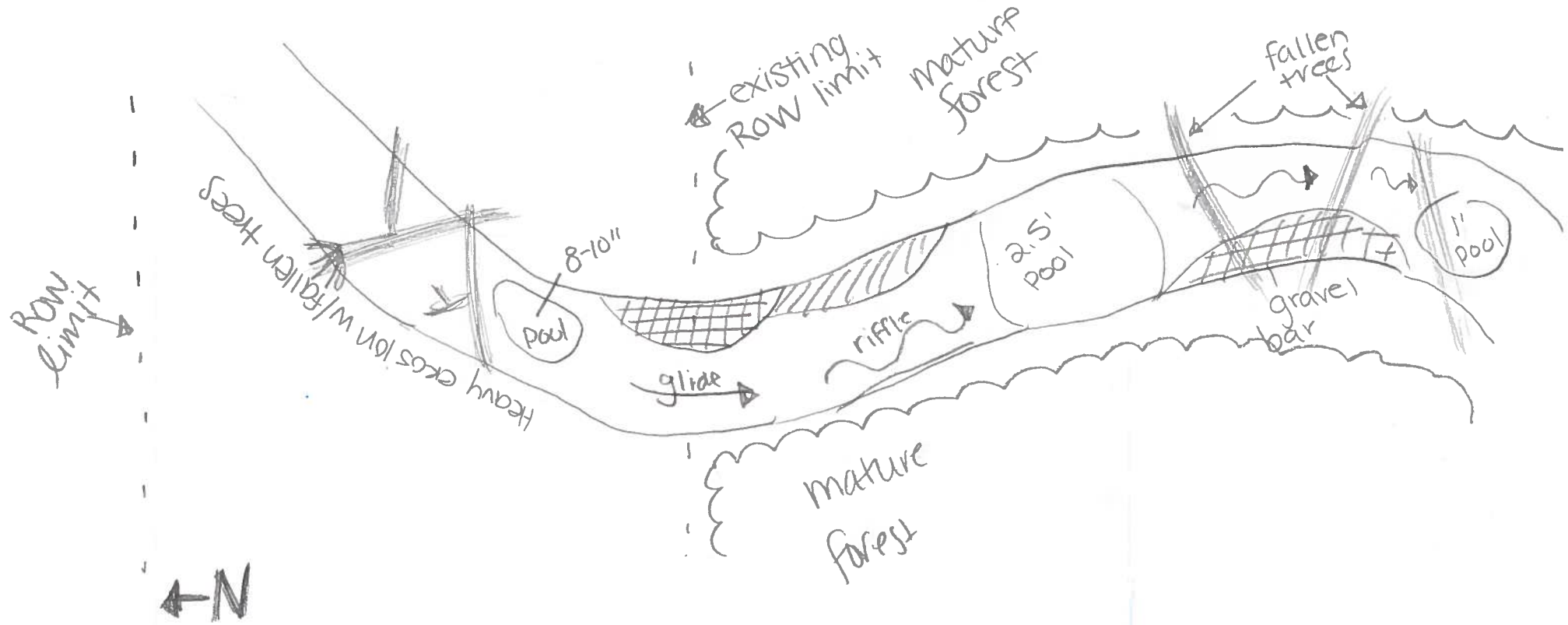
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH $H_20$ / TILE / $H_20$ TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

## F] MEASUREMENTS

$\bar{x}$ width
$\bar{x}$ depth
max. depth
$\bar{x}$ bankfull width 25-30'
bankfull $\bar{x}$ depth 3.5'
W/D ratio
bankfull max. depth 5'
floodprone $x^2$ width
entrench. ratio

*Legacy Tree:*

## Stream Drawing:



DUKE ENERGY OHIO
ST. ANNES AVENUE TOWER
REPLACEMENT PROJECT
WETLAND DELINEATION REPORT

# APPENDIX

# C

## ENDANGERED, THREATENED, AND RARE SPECIES AGENCY COORDINATION

## Cori Jansing

**From:** Ohio, FW3 <ohio@fws.gov>
**Sent:** Thursday, June 13, 2019 10:08 AM
**To:** Cori Jansing
**Subject:** Thank you for contacting the USFWS Re: [EXTERNAL] USFWS Data Request_C10-X2-129 Emergent Tower Replacement

Thank you for contacting the USFWS. This email is your notice that we have received your project, and you can expect a reply and/or a review of your project within 30 days from the date it was received.
Of course, general questions will be answered ASAP.

We also have a new **Field Office Supervisor, Ms. Patrice M. Ashfield.**
You can send your projects to her attention, but please continue to use this email box for expedited processing.

Sincerely,
Susan (614) 416-8993, Ext. 10

## Cori Jansing

**From:** EnvironmentalReviewRequest@dnr.state.oh.us
**Sent:** Thursday, June 13, 2019 9:36 AM
**To:** Cori Jansing
**Subject:** Thank you for contacting the Ohio Department of Natural Resources

Thank you for contacting the Ohio Department of Natural Resources. This email is your receipt that we have received your message and/or project review request. During normal business operations, we strive to respond to your request within 30 to 45 business days. However, during certain times of the year, due to large volumes of requests, our response time may be longer. If you have any questions please contact our office at 614-265-6397.

Sincerely,

Sarah Tebbe
Ohio Department of Natural Resources
Office of Real Estate
2045 Morse Road
Columbus, Ohio 43229
(614) 265-6397