CONSTRUCTION NOTICE

FOR THE

Hillcrest Solar Interconnect
PUCO Case No. 20-938-EL-BNR

Submitted to:

The Ohio Power Siting Board

Pursuant to O.A.C. 4906-06

Submitted by:

Duke Energy Ohio, Inc.

May 2020

CONSTRUCTION NOTICE

This Construction Notice has been prepared by Duke Energy Ohio, Inc., (hereafter Duke Energy Ohio) in accordance with Ohio Administrative Code (O.A.C.) Section **4906-6-05** for the review of Accelerated Certificate Application for the Duke Energy Ohio Hillcrest Solar Interconnect project. The following sections correspond to the administrative code sections for the requirements of a Construction Notice.

4906-06-05: ACCELERATED APPLICATION REQUIREMENTS

4906-6-05(B): General Information

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

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

Name of Project:

Duke Energy Ohio Hillcrest Solar Interconnect (Project)

Reference Numbers:

PUCO Filing Number:	The Project has been assigned Public Utilities Commission of Ohio (PUCO) Case Number 20-938-EL-BNR.
PJM Number:	PJM AB1-014 and AC2-066.; this is a PJM Generation Interconnection Queue project.
2020 LTFR:	The Project will be included in the 2020 Long-Term Forecast Report (LTFR) but was not in the previous LTFR.
Circuit Reference:	This is the Hillcrest (Circuit F8881) transmission line.

Brief Description of the Project:

The Project involves installing approximately 100 feet (0.02 miles) of 138 kV single circuit, electrical transmission line from the Hillcrest Solar Farm to the existing Duke Energy Ohio Hillcrest Substation. The Hillcrest Solar Farm is currently under construction and has been previously approved under the OPSB Case No. 17-1152-EL-BGN and 18-1267-EL-BGA. This Project is located entirely on Duke Energy Ohio property in Brown County, Ohio.

Construction Notice Requirement:

This Project qualifies as a Construction Notice filing because it meets the requirements outlined in O.A.C. 4906-6-05, Appendix A, item (1)(a). Item (1)(a) *Application Requirement Matrix for Electric Power Transmission Lines:*

1. *New construction, extension, or relocation of single or multiple circuit electric power transmission line(s) or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:*

   (a) Line(s) not greater than 0.2 miles in length.

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

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

The Hillcrest Solar Farm, one of the first utility-scale solar projects to receive its necessary Certificate of Environmental Compatibility and Public Need is currently under construction. The solar farm was originally scoped for a 125 Megawatts (MW) facility with the final project expected to generate up to 200 MW; however, the project currently lacks a connection to the electrical transmission system. The anticipated electricity generated at the Hillcrest Solar Farm will supply the existing transmission lines that exit the existing Duke Energy Ohio Substation. The proposed Hillcrest Solar Interconnect Project will provide a pathway for electric transmission from Hillcrest Solar Farm to the electrical transmission system by means of the Duke Energy Ohio Hillcrest Substation. The Project thus supports the previously submitted and approved OPSB filing 17-1152-EL-BGN and 18-1267-EL-BGA.

The 138 kV interconnection from Hillcrest Solar Farm to Duke Energy Ohio Hillcrest Substation will provide a means for transmission of the renewable electricity generated to existing transmission lines in the vicinity of the Hillcrest Solar Farm.

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

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

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, associated GIS layers, and additional details depicted on an aerial imagery map.

The location of the Project in relationship to existing transmission lines and substations is shown on Figure 3. Three existing transmission circuits (4569 – 345 kV, 4511 – 345 kV and 8887 – 138 kV) and electric distribution circuits are connected to Hillcrest Substation.

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

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

The proposed Project will occur entirely within existing Duke Energy Ohio property and easements. No long-term impacts to adjacent properties are anticipated as a result of the Project. Therefore, the current alignment is the only reasonable alternative available and no alternatives were considered.

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

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

The Hillcrest Project is located entirely on Duke Energy Ohio property (See Figure 2). Any impacted property owner(s) will be notified prior to construction activities by Duke Energy Ohio. Further information on the ongoing status of this project and other Duke Energy 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

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

Construction is scheduled to begin in August 2020 pending approval of this Construction Notice. The Project is anticipated to be completed and the line in-service by September 1, 2020.

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

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

Figures 1 and 2 in Attachment A – Figures, depict the general location of the Project. Figure 1 depicts the general Project vicinity depicted on United States Geological Survey (USGS) quadrangle topographic map. Attachment A, Figure 2 depicts the planned transmission line location on an aerial imagery, associated GIS layers, and additional features in the Project vicinity.

Figure 2 in Attachment A – Figures provide an aerial map of the existing and proposed facilities at 1:24,000.

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

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

The proposed Project includes the installation of 100 linear feet (0.02 mile) of new conductor transmission line located entirely within existing Duke Energy Ohio property and easements. The only earth disturbance anticipated by the Project is a communication line installed below ground between the Hillcrest solar structures and existing structure within the Duke Energy Ohio Hillcrest substation. Other alternative routes were not considered because the Project was able to take advantage of existing easements and avoid further impacts to ecological resources and the property owners along the Project corridor.

4906-6-05(B)(9): Technical Features of the Project

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

The proposed Project includes the installation of 100 linear feet (0.02 mile) of new conductor transmission line between the Hillcrest Solar Farm structures located outside of the Duke Energy Ohio Hillcrest Substation to the existing structures located within the substation that will supply electricity to the existing transmission lines exiting the substation. The Duke Energy Hillcrest Substation will receive the power generated at the Solar Farm to be distributed to the local electrical grid.

A communication line within an underground conduit will be installed between the existing take-off structures within the substation to the Hillcrest Solar Structures located outside of the Duke Energy Ohio Hillcrest. Duke Energy Ohio will bury and connect to the underground conduit being installed by Hillcrest Solar Farm to the structures outside the substation. Duke Energy Ohio's proposed conduit is located within an area previously disturbed by the development of the existing substation and will be located within the area disturbed by Hillcrest Solar Farm for the construction of an access road, the communication line conduit, and the structures outside the Duke Energy Ohio Hillcrest substation.

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

Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

Voltage:	138 kV
Conductors:	954 ACSR 45x7 "RAIL"
Insulators:	138 kV Polymer glass deadend insulators

ROW: Property owned entirely by Duke Energy Ohio

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

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

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

The estimated capital cost of the project.

The estimated cost for the Project is approximately $42,500.

4906-6-05(B)(10): Social and Ecological Impacts

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

4906-6-05(B)(10)(a): Land Uses
Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The Project is located north of the Village of Mount Orab in Brown County, Ohio. Mount Orab is located approximately 40 miles east of the City of Cincinnati. The Village of Mount Orab, which covers 8.89 square miles, has a population of 3,548 people based on 2016 census data. The land use immediately surrounding the Project is predominantly woodlot, undeveloped land, and agricultural.

4906-6-05(B)(10)(b): Agricultural Land
Provide the acreage and a general description of all agricultural land, and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.

The Project is located on developed property consisting of an existing substation owned by Duke Energy Ohio and undeveloped partially maintained property. No agricultural lands will be impacted by the proposed Project.

4906-6-05(B)(10)(c): Archaeological or Cultural Resources
Provide a description of the applicant's investigation concerning the presence or absence of significant archaeological or cultural resources that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

The Ohio History Connection, Ohio's Historic Preservation Office (OHPO) online mapping system, was consulted to identify previously recorded cultural resources within 1.6 km (1 mile) of the Project area (the Study Area). The OHPO records check indicates that one structure and one cemetery are located in the 1.6-km (1-mile) Study Area. Neither of these resources are located within the Project Area. See Attachment B, Cultural Resources Review.

The Project area has not been previously investigated for cultural resources however no earth disturbance is anticipated by construction activities associated with the Project. The Project setting consists of the adjacent agricultural fields, existing Duke Energy Substation, emergent wetland, and undeveloped partially maintained property.

Due to the minor anticipated ground disturbing activities related to the installation of the underground conduit that will be in a location already disturbed by an access road and structures constructed by the Hillcrest Solar Farm, no additional cultural resources investigation is recommended in order for the proposed Project to proceed as planned.

4906-6-05(B)(10)(d): Local, State, and Federal Requirements
Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

As the Project is expected to disturb less than one acre, a National Pollutant Discharge Elimination System (NPDES) for a General Permit for Storm Water discharges from the Ohio Environmental Protection Agency (Ohio EPA) will not be required.

No impacts to the emergent wetland (Wetland 1) are anticipated by the Project. The proposed construction access to the Project Area is currently under Nationwide Permit review on behalf of the Hillcrest Solar Farm (OPSB filings 17-1152-EL-BGN & 18-1276-EL-BGA). Duke Energy Ohio will utilize this permanent access to conduct the proposed Project activities. Therefore, no impacts to regulated wetlands, streams, or Rare, Threatened, and Endangered (RTE) habitat are anticipated by the Project.

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

4906-6-05(B)(10)(e): Endangered, Threatened, and Rare Species Investigation
Provide a description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

Several sources of information were consulted to further define the potential habitat of listed species that occur within the county of the Project. Attachment C – Agency Coordination Letters, contains a list of the RTE species known to occur within Brown 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 April 28, 2020. No response from the ODNR-DOW has been received as of the date of this Construction Notice; however, the entire Project area was previously reviewed under the Hillcrest Solar Farm OPSB filing (Case No.

17-1152-EL-BGN and 18-1267-EL-BGA). A copy of the ODNR-DOW data request letter is included in Attachment C – Agency Coordination Letters. The USFWS provided a response on May 4, 2020 indicating "Due to the project, type, size, and location, we do not anticipate adverse effects to federally endangered, threatened, proposed, or candidate species." A copy of the USFWS response is included in Attachment C – Agency Coordination Letters.

4906-6-05(B)(10)(f): Areas of Ecological Concern
Provide a description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

Duke Energy Ohio had Cardno conduct an investigation for areas of ecological concern within the Project Area. As a part of Cardno's investigation, a request was submitted to the ODNR Environmental Review Services and USFWS on April 28, 2020, to research the presence of any unique ecological sites, geological features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forest, national wildlife refuges, or other protected areas within one (1) mile of the Project, using the ODNR Natural Heritage Database. No response from the USFWS or ODNR-DOW has been received as of the date of this Construction Notice; however, the entire Project area was previously reviewed under the Hillcrest Solar Farm OPSB filing (Case No. 17-1152-EL-BGN and 18-1267-EL-BGA). A copy of the USFWS and ODNR-DOW data request letters are included in Attachment C – Agency Coordination Letters.

Cardno conducted a wetland delineation and stream assessment of the Project Area. Cardno's investigation included approximately 13.6 acres of Duke Energy Ohio Property. During the investigation, Cardno identified one emergent wetland (Wetland 1) and no streams or other surface waters within the Project Area. Limited earth disturbance (underground communications conduit) is anticipated by the Project and is anticipated only in the same location that has been disturbed by the Hillcrest Solar Farm. Therefore, no impacts to regulated waters or RTE habitats are expected by the Project. See Attachment D, Regulated Waters Determination Report.

The proposed construction access to the Project Area is currently under Nationwide Permit review on behalf of the Hillcrest Solar Farm (OPSB filings 17-1152-EL-BGN & 18-1276-EL-BGA). Duke Energy Ohio will utilize this permanent access to conduct the proposed Project activities therefore no impacts to regulated wetlands, streams, or RTE habitat are anticipated by the Project.

Cardno also identified 100-year floodplains using the FEMA National Flood Hazard Layer within the Project Area. No 100-year floodplains were identified within the Project Area, refer to Attachment A – Figures, Figure 2.

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

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

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 PUCO.

4906-6-07: Service and Public Distribution of Accelerated Certification Applications

Copies of this Construction Notice will be sent to Brown County officials as well as to the Brown County Public Library prior to construction activities. Information on how to request an electronic or paper copy of the Construction Notice as well as additional information on the ongoing status of this project and other Duke Energy Projects can be found at the following website: https://www.duke-energy.com/our-company/about-us/electric-transmission-projects.

Attachment A – Figures

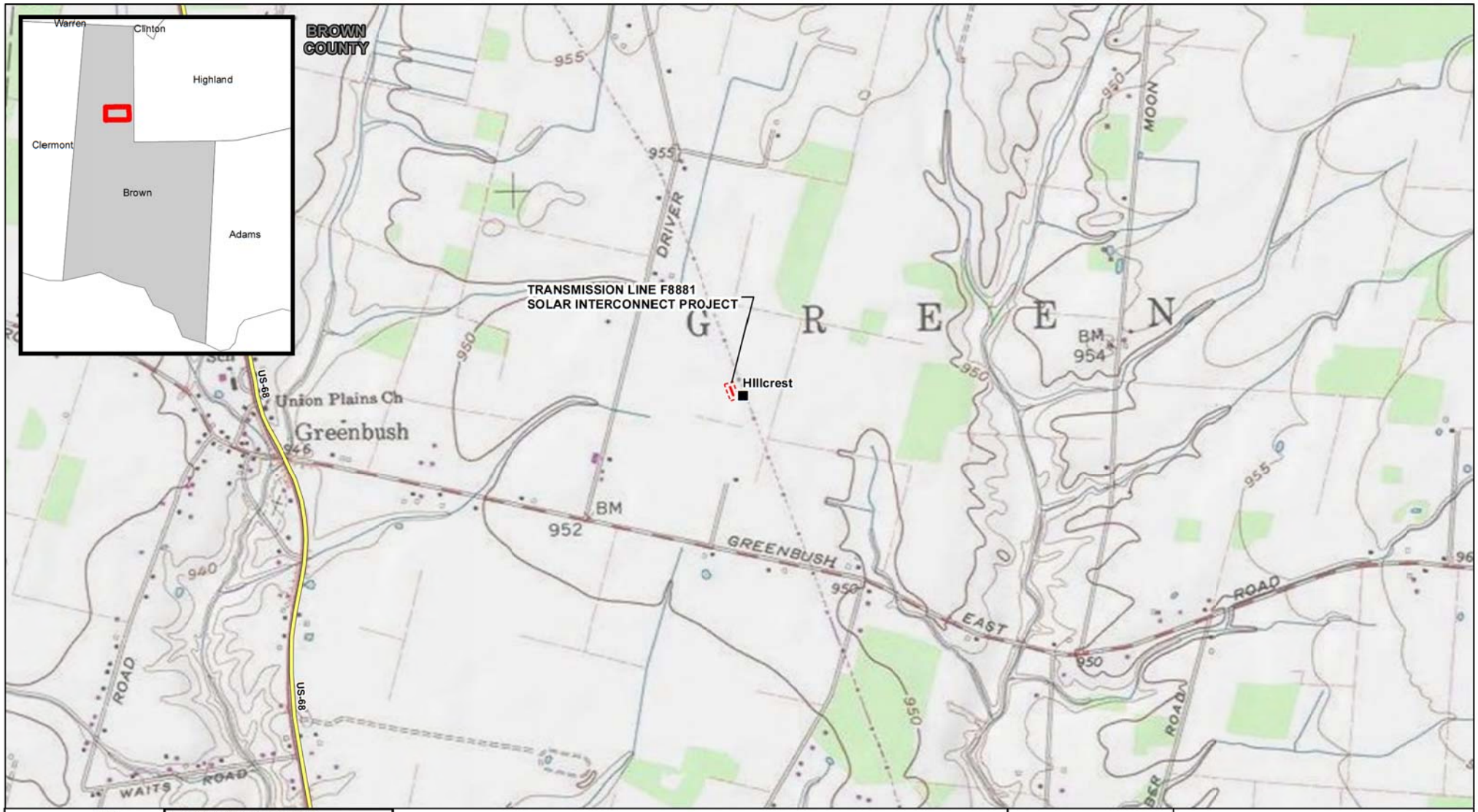

FIGURE 1
OPSB BLN FILING
TRANSMISSION LINE F8881
SOLAR INTERCONNECT PROJECT
DUKE ENERGY OHIO
PROJECT VICINITY MAP

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PROJECT LOCATION

BROWN COUNTY, OHIO

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

- Project Corridor
- Proposed Underground Communication Line
- Route Centerline
- Existing Facility
- Existing Structure
- Parcels
- Delineated Wetland
- Municipal Boundary
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetlands
- NHD Flowline
- 100Yr Floodplain
- 1' Contour Line
- County Boundary

DUKE ENERGY.

Cardno

0 50 100 Feet

FIGURE 2
OPSB BNR FILING
HILCREST SOLAR INTERCONECT PROJECT
PUCO CASE NO. 20-938-EL-BNR
DUKE ENERGY OHIO
ENVIRONMENTAL ACCESS PLAN

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PROJECT LOCATION

BROWN COUNTY, OHIO

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

- Line 4569 – 345kV
- Line 4511 – 345kV
- Line 8887 – 138kV
- Project Corridor
- Route Centerline
- Existing Facility
- Existing Structure
- Delineated Wetland
- Interstate
- State Highway
- US Highway
- Railroad

DUKE ENERGY.

Cardno

0 50 100 200 Feet

FIGURE 3
OPSB BNR FILING
HILCREST SOLAR INTERCONECT PROJECT
PUCO CASE NO. 20-938-EL-BNR
DUKE ENERGY OHIO
PROJECT LOCATION RELATIVE
TO OTHER LINES AND FACILITIES

DRAWN BY: COD DATE: 5/5/2020
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Attachment B – Cultural Resources Review

May 1, 2020

Cardno

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USA

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Dane Vandewater
Senior Permitting Specialist
Duke Energy Ohio
315 Main Street
Mail Code EX 0446-06
Cincinnati, OH 45202-4161

**Subject: Cultural Resources Literature Review,
Duke Energy Ohio Transmission Line F8881 Solar Interconnect Project,
Brown County, Ohio**

Dear Mr. Vandewater,

Cardno conducted a cultural resources literature review for the proposed Transmission Line (TL) F8881 Solar Interconnect Project located in Brown County, Ohio. Based on our understanding, the Project consists of installing approximately 100 feet (0.02 miles) of 138-kV single circuit, electrical transmission line between the exiting Duke Energy Ohio Hillcrest substation to the Hillcrest Solar Farm. The Project area has been previously reviewed under the Hillcrest Solar Farm Project (18-1267-EL-BGA) and anticipates minimal ground disturbance as a result of the Project. A below grade communication line will be installed within the existing substation property, which is assumed to consist entirely of previously disturbed soils. No other ground disturbance is anticipated for the Project. The Project is located in Green Township, Brown County, Ohio (Figure 1). Research focused on documenting known historic resources within 1.6 kilometers (km) (1 mile [mi]) of the project area to ascertain the likelihood for encountering unidentified cultural resources within Project 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.

1 Cultural Resource Literature Review

The cultural resources records check examined the following sources:

- National Historic Landmark List;
- National Register of Historic Places (NRHP) list;
- NRHP determination of eligibility (DOE) list;
- Ohio Historic Inventory (OHI) forms;
- Ohio Archaeological Inventory (OAI) forms;

- Ohio Genealogical Society (OGS) cemetery list;
- Cultural Resources Management Reports;
- Historic Atlas and Topographic Maps;
- Mills (1914) *Archaeological Atlas of Ohio;*

Results of the literature review indicate that the proposed Project area does not contain identified cultural resources and it has not been previously surveyed for cultural resources.

1.1 National Historic Landmark List

No National Historic Landmarks are located within 1.6 k (1 mi) of the Project area.

1.2 National Register of Historic Places (NRHP)

No resources listed in the NRHP are located within 1.6 km (1 mi) of the Project area.

1.3 NRHP Determination of Eligibility (DOE)

No NRHP DOE resources are located within the 1.6 km (1 mi) study area.

1.4 Ohio Historic Inventory

The OHI indicates that one structure is located in the 1.6 km (1 mi) study area; it consists of the former J. Morgan House. The house consists of a ca. 1870 Queen Anne style residence with minimal alterations. The property was identified in 2019 as part of the historic resources survey for the Hillcrest Solar Project (Lawson and Heaton 2019). A NRHP eligibility recommendation is not included in the OHI form for the property. This resource is located well outside of the Project area and will not be affected by the proposed Project (Figure 2).

1.5 Ohio Archaeological Inventory

The OAI database indicates that no previously recorded archaeological sites are located within the 1.6 km (1 mi) study area.

1.6 Ohio Genealogical Society Cemetery List

Records available through the Ohio History Connection (OHC) indicate that one cemetery is located within the 1.6 km (1 mi) study area. The Greenbush/Union Plains Cemetery (OGS ID 1089) is an active cemetery. The cemetery database available through the OHC lists no additional information for the cemetery. It is located near the edge of the 1.6 km (1 mi) study area and will not be affected by the proposed Project.

1.7 Cultural Resource Management Reports

The literature review indicates that the Project area has not been previously surveyed for cultural resources. No previous cultural resource investigations have been conducted within 1.6 km (1 mi) of the proposed Project area.

1.8 Historic Maps

Historic atlas and topographic maps from 1876, 1917, 1944, 1960, and 1982 were referenced to ascertain the historic use of the Project area through time (Lake, Griffing & Stevenson 1876; United State Geological Survey [USGS] 1917, 1944, 1960, 1982).

The Project area is located within the Virginia Military District, an early land division in Ohio. The Virginia Military District encompasses approximately 4.2 million acres and was set aside by the State of Virginia to use as payment (in lieu of cash) for its veterans of the American Revolutionary War (Ohio History Central [OHC] 2020). Numerous Virginian veterans claimed land under this system, and land titles were granted until 1855. At this point, all unclaimed land became the property of the United States, who ceded it back to Ohio in 1871. In 1872, the income from this land was used by the Ohio legislature to create an endowment for The Ohio State University (OHC 2020).

The 1876 atlas map of Brown County, Ohio illustrates land ownership pursuant to the Virginia Military District. Numerous individual property owners are depicted in proximity to the Project area, including J. Morgan, H. Wallace, John Waite, and C. Miller. No structures are depicted within the Project area, and specific land ownership of the Project area is unclear on this map (Lake, Griffing & Stevenson 1876) (Figure 3).

The 1917 1:62,500 scale topographic map indicates that the land is largely unchanged from 1876 (USGS 1917). Many of the houses depicted in 1876 appear to be extant in 1917, and in proximity to the Project area. The Project area itself remains undeveloped (USGS 1917) (Figure 4).

By 1944, residential development appears to have increased in the areas surrounding the Project; however, the Project area itself remains undeveloped (USGS 1944) (Figure 5). The 1962 USGS 1:24,000 scale topographic maps indicates that some buildings in proximity to the Project have been demolished. The area overall remains relatively rural and undeveloped (USGS 1960) (Figure 6). By 1982, the USGS 7.5' topographic map shows a largely unchanged Project area. A transmission line is now depicted running from northwest to southeast adjacent to the Project; however, this appears to be the only major development in and around the Project area (USGS 1982) (Figure 7).

1.9 Mills Archaeological Atlas of Ohio

In addition to the historic atlas and topographic maps, the Mills (1914) archaeological atlas was also consulted. This map provides an overview of possible mound locations throughout Ohio, organized by county. Its accuracy, however, is limited. The Mills (1914) atlas indicates one burial site located on the south side of Greenbush East Road, in proximity to but well outside of the proposed Project. This may indicate an increased probability for prehistoric sites in and around the Project area.

1.10 Summary and Recommendations

The literature review indicates that no previously identified archaeological sites are located within or adjacent to the proposed Project area. One cemetery and one historic structure are located within the 1.6 km (1 mi) study area and will not be affected by the proposed Project. There are no National Historic Landmarks and no NRHP listed or eligible properties within 1.6 km (1 mi) of the Project area. The results of the literature review indicate that the proposed Project area has not been previously surveyed for

cultural resources; however, minimal ground disturbing activities in previously disturbed soils are anticipated as a result of the proposed Project.

Due to the minimal amount of ground disturbing activities for the proposed (TL) F8881 Solar Interconnect Project and their location in previously disturbed soils, no additional cultural resources investigation is recommended in order for the proposed Project to proceed as planned. Please do not hesitate to contact me if you have any questions or require additional information regarding our findings.

Sincerely,

Veronica Parsell

Veronica Parsell
Senior Project Scientist
Cardno Inc.
Cell: (574) 229-8747
Email: veronica.parsell@cardno.com

Enc: Figures 1-7

References Cited

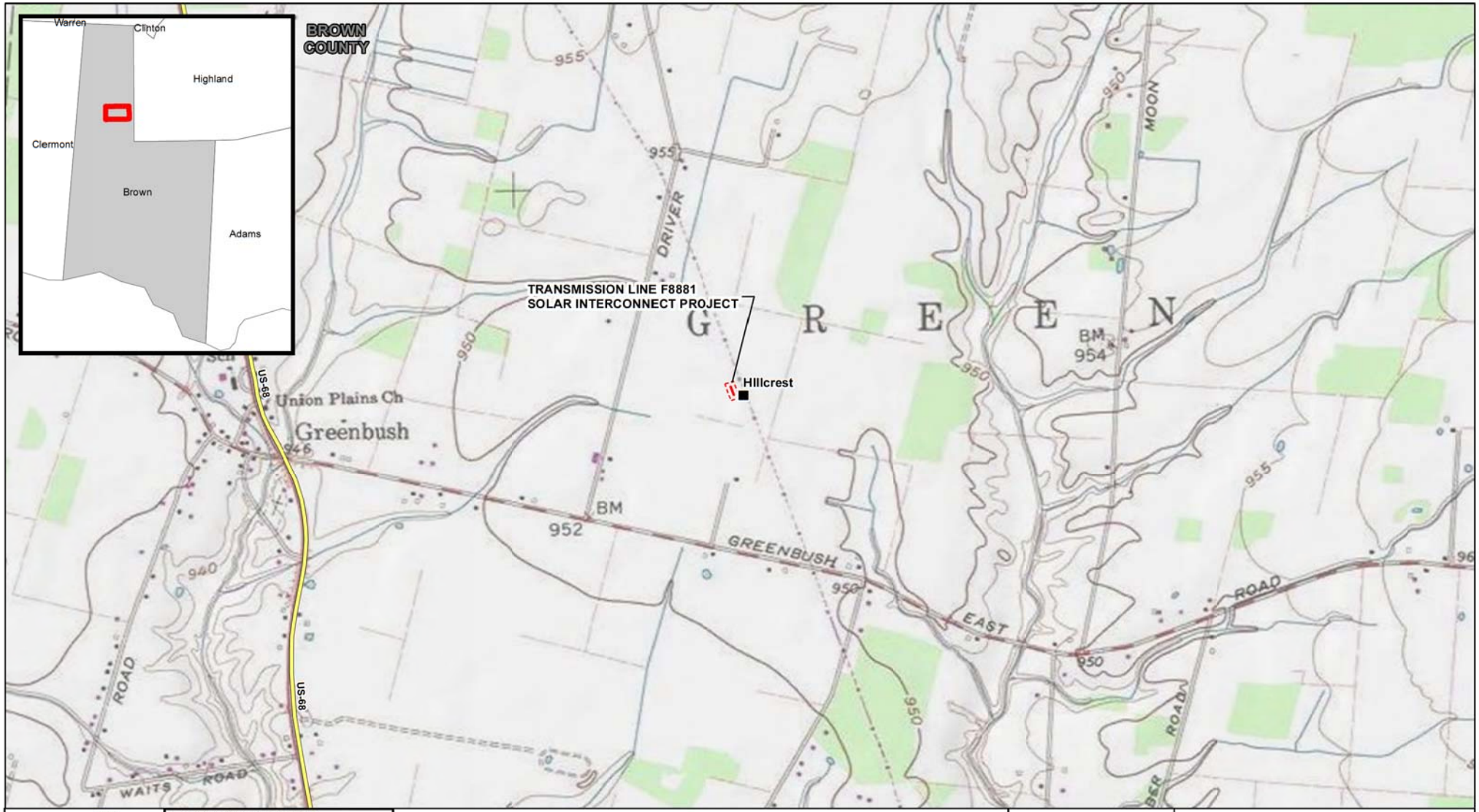
Lake, Griffing & Stevenson
1876 *Atlas of Brown County Ohio*. Lake, Griffing & Stevenson, Philadelphia. Electronic document, https://www.ohiohistory.org/OHC/media/OHC-Media/Documents/SHPO/Atlas/Lake-s_Atlas_of_Brown_County_Ohio_1876.pdf, accessed April 2020.

Lawson, Susan and Patrick Heaton
2019 *Reconnaissance-Level Historic Resources Survey: Hillcrest Solar Project.* Environmental Design, Landscape Architecture, Engineering & Environmental Services, D.P.C. Copy on file at the Ohio History Connection, Columbus.

Mills, William C.
1914 *Archaeological Atlas of Ohio*. The Ohio State Archaeological and Historical Society.

Ohio History Central [OHC]
2020 *Virginia Military District.* Electronic document, https://ohiohistorycentral.org/w/Virginia_Military_District, accessed May 2020.

United States Geological Survey [USGS]
1917 *Sardinia, Ohio*. Map, 1:62,500. Electronic Document, https://livingatlas.arcgis.com/topoexplorer/index.html, accessed May 2020.
1944 *Sardinia, Ohio*. Map, 1:62,500. Electronic Document, https://livingatlas.arcgis.com/topoexplorer/index.html, accessed May 2020.
1960 *Mount Orab, Ohio*. Map, 1:24,000. Electronic Document, https://livingatlas.arcgis.com/topoexplorer/index.html, accessed May 2020.
1982 *Mount Orab, Ohio*. Map, 1:24,000. Electronic Document, https://livingatlas.arcgis.com/topoexplorer/index.html, accessed May 2020.



PROJECT LOCATION

BROWN COUNTY, OHIO

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

N

0 500 1,000 2,000 Feet

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

DUKE ENERGY.

Cardno

FIGURE 1
CULTURAL RESOURCES LITERATURE REVIEW
TRANSMISSION LINE F8881
SOLAR INTERCONNECT PROJECT
DUKE ENERGY OHIO
PROJECT VICINITY MAP

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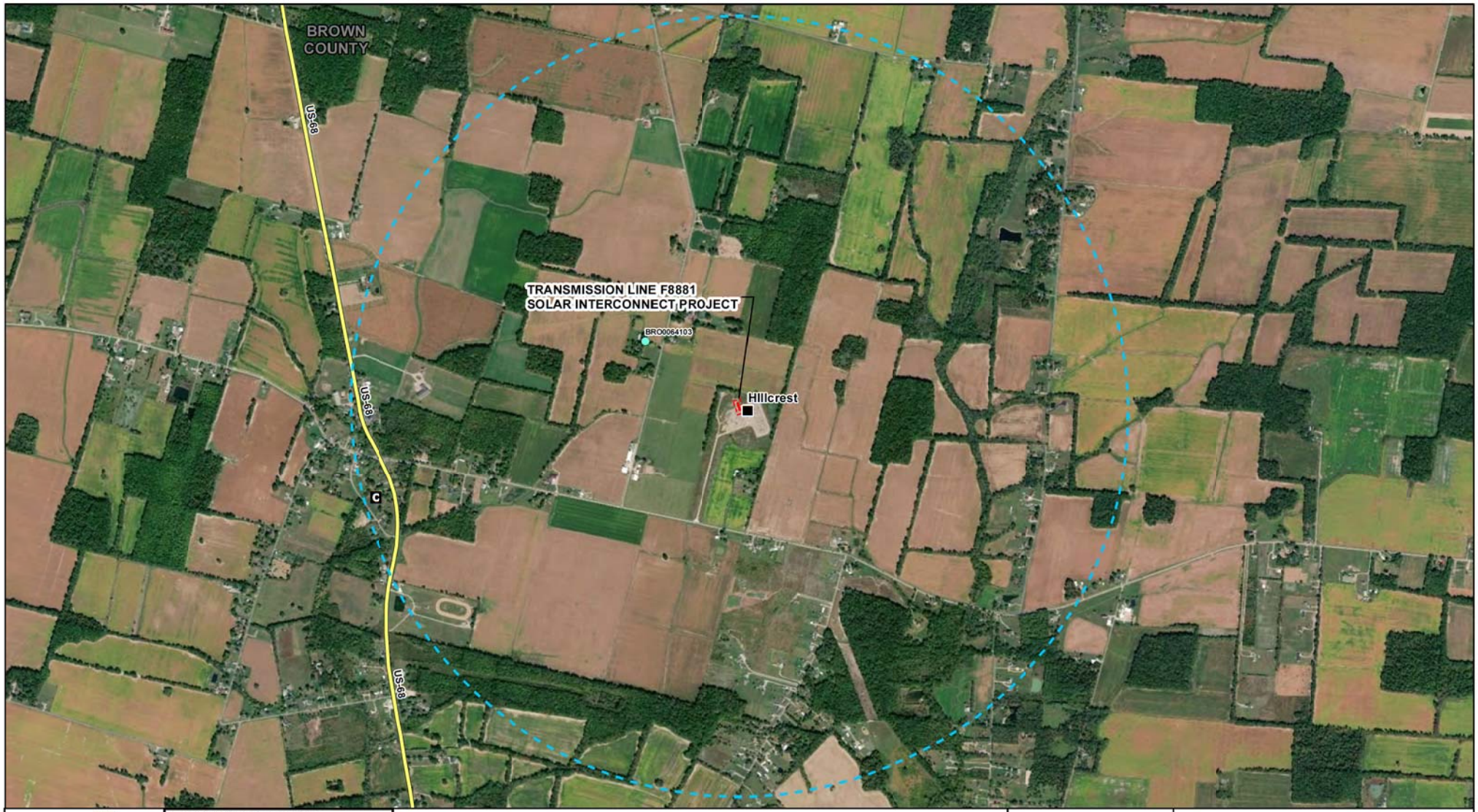

BROWN COUNTY
US-68
US-68
US-68
TRANSMISSION LINE F8881
SOLAR INTERCONNECT PROJECT
BRO0064103
Hillcrest
C
PROJECT LOCATION
BROWN COUNTY, OHIO
REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE MOUNT ORAB, OHIO,. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.
N
0 650 1,300 2,600
Feet
Existing Facility
1-Mile Radius
Project Corridor
Historical Structure
Cemetery
Route Centerline
Interstate
State Highway
US Highway
Railroad
Municipal Boundary
County Boundary
DUKE ENERGY.
Cardno
FIGURE 2
CULTURAL RESOURCES LITERATURE REVIEW
TRANSMISSION LINE F8881
SOLAR INTERCONNECT PROJECT
DUKE ENERGY OHIO
RECORDS CHECK MAP
DRAWN BY: COD
DATE: 5/5/2020
CHECKED: CAJ
APPROVED: CAJ
R:\Projects\15\156\156721M_DukeEnergy_9193\M28_SOW81_F8881_Hillcrest\GIS\MXD\RecordsCheck\M28_F2_RecChk_Site Map.mxd

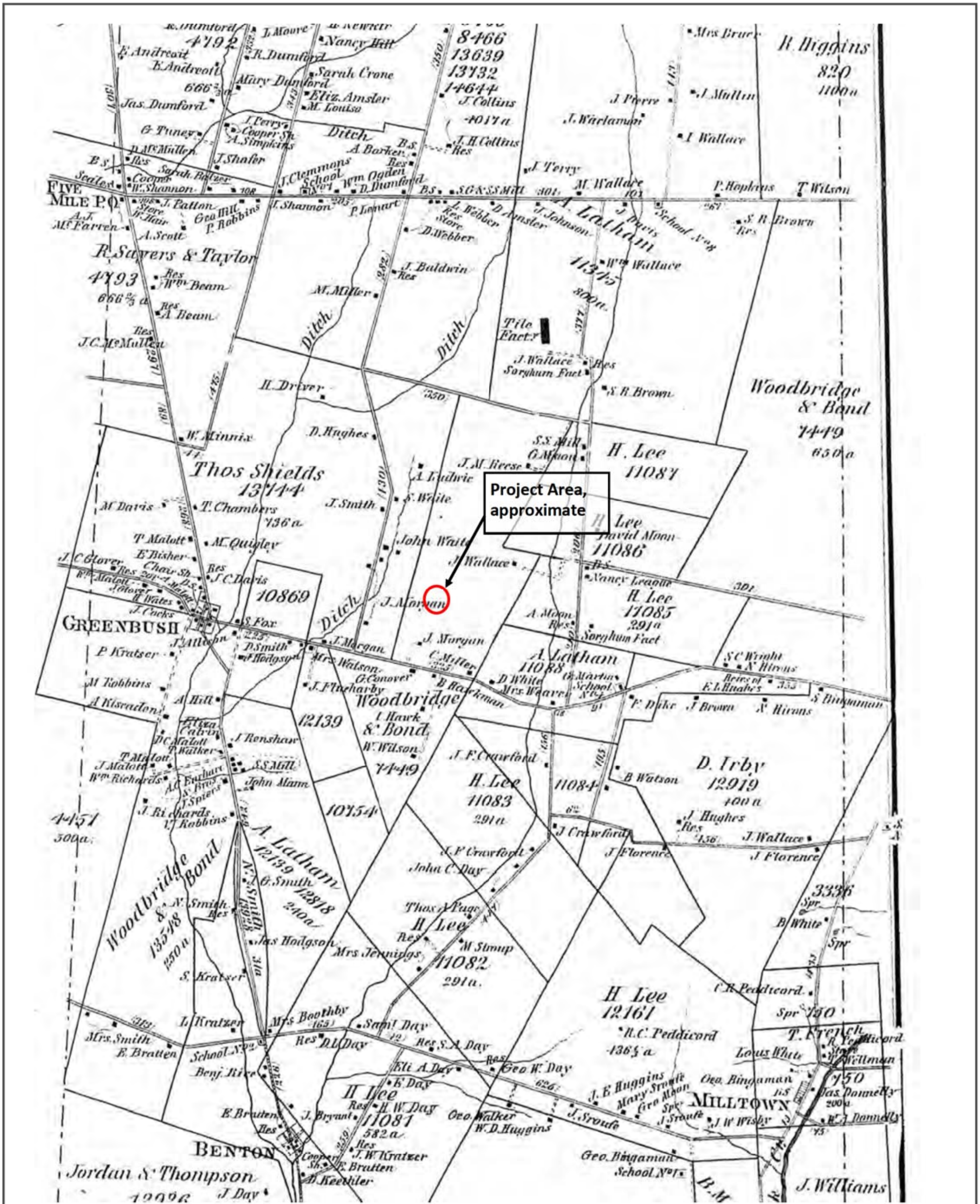


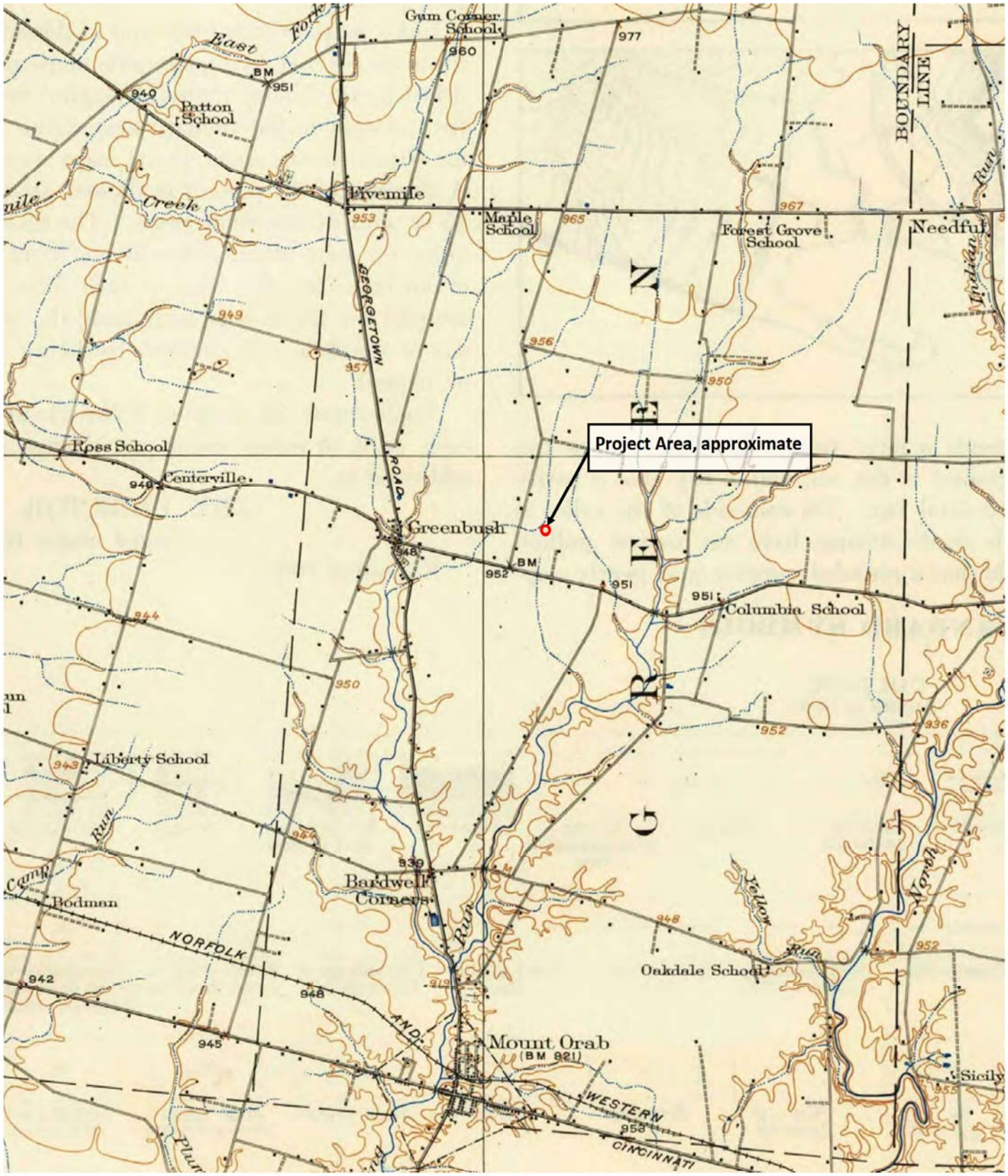
Figure 3: 1876 Atlas Map

Transmission Line F8881 Solar Interconnect Project
Cultural Resources Literature Review
Duke Energy Ohio
Brown County, Ohio

N
W E
S

Project Number: J156721M28

Cardno



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Project Number: J156721M28

Figure 4: 1917 Topographic Map

Transmission Line F8881 Solar Interconnect Project
Cultural Resources Literature Review
Duke Energy Ohio
Brown County, Ohio

Cardno

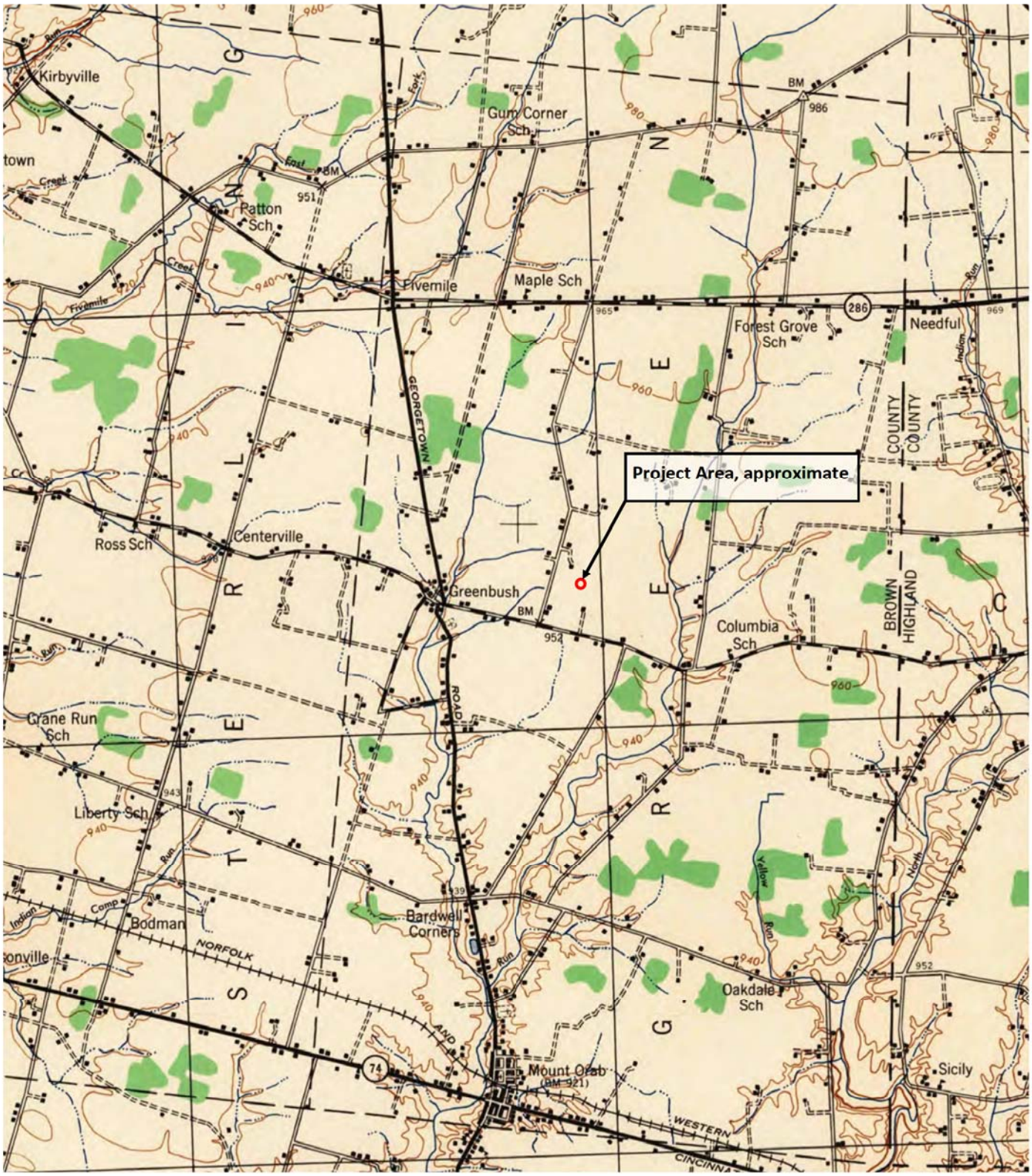
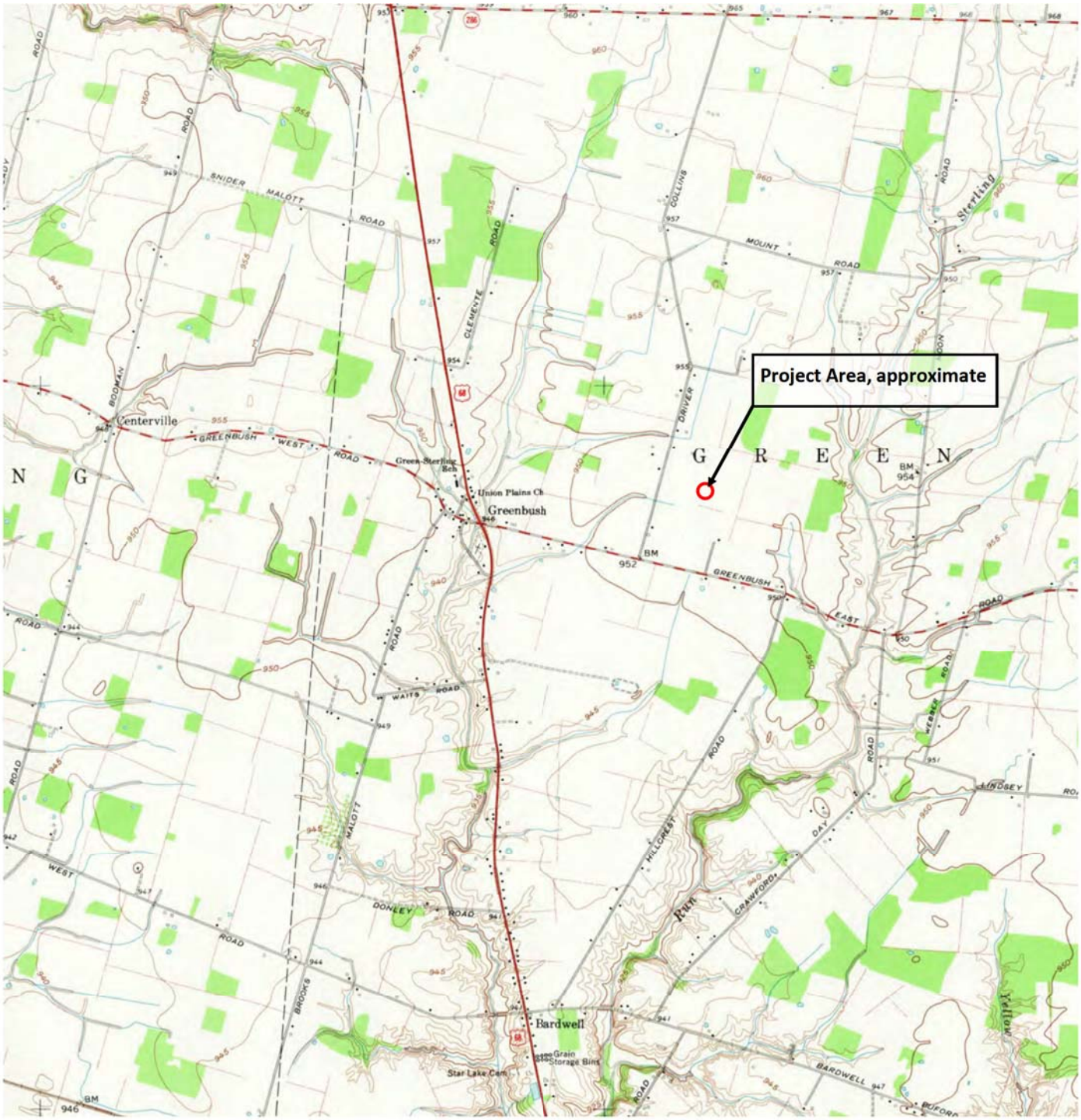


Figure 5: 1944 Topographic Map

Transmission Line F8881 Solar Interconnect Project
Cultural Resources Literature Review
Duke Energy Ohio
Brown County, Ohio

Project Number: J156721M28

Cardno



N
W E
S

Project Number: J156721M28

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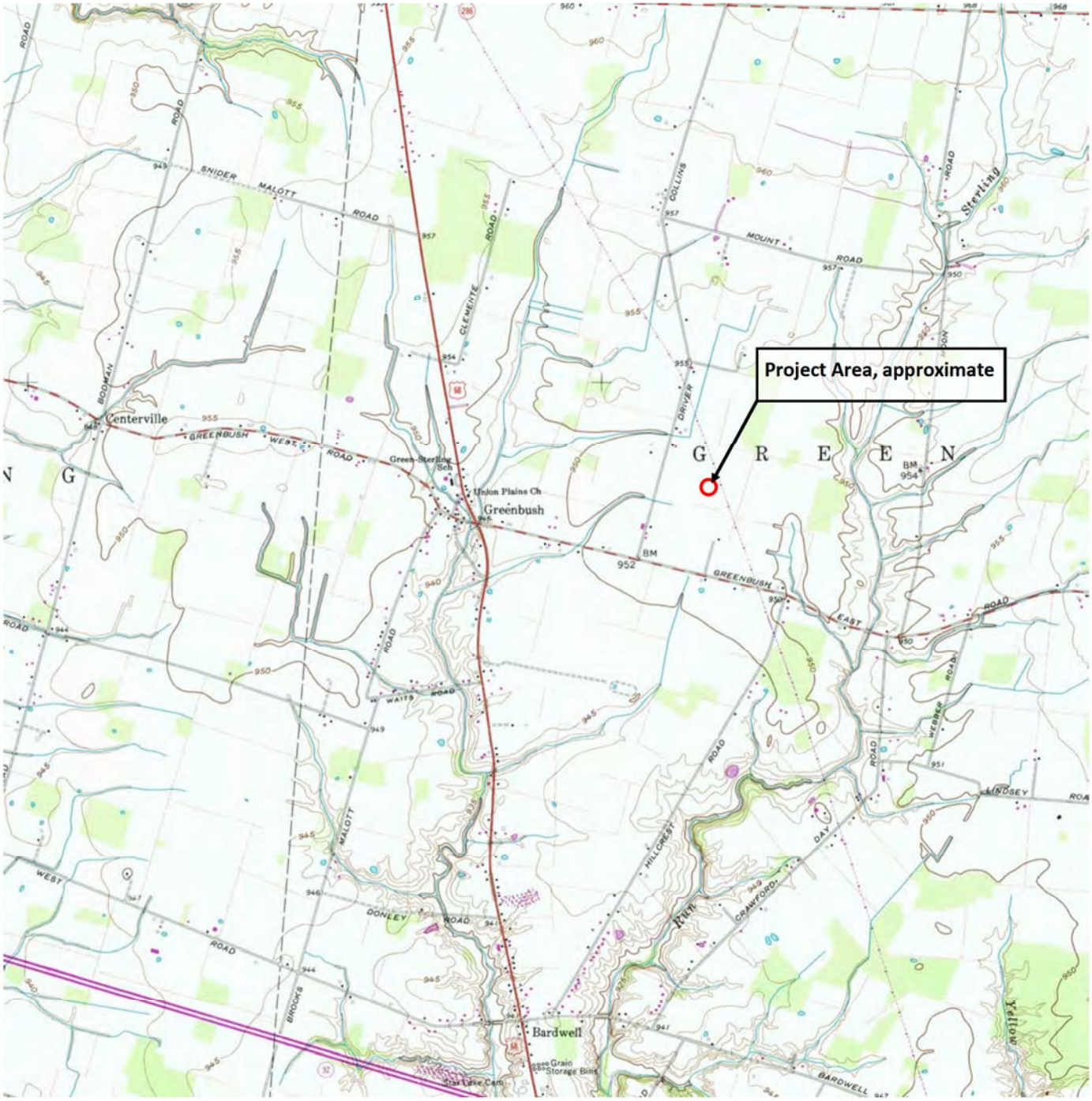
Figure 6: 1960 Topographic Map

Transmission Line F8881 Solar Interconnect Project
Cultural Resources Literature Review
Duke Energy Ohio
Brown County, Ohio

Cardno



N
W E
S

Project Number: J156721M28

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Figure 7: 1982 Topographic Map

Transmission Line F8881 Solar Interconnect Project
Cultural Resources Literature Review
Duke Energy Ohio
Brown County, Ohio

Cardno

Attachment C – Agency Coordination

April 28, 2020

Cardno

11121 Canal Road
Cincinnati, Ohio 45241
USA

Phone 513 489 2402
Fax 513 489 2404

Mr. John Kessler
Ohio Department of Natural Resources
Office of Real Estate
2045 Morse Road, Building E-2
Columbus, OH 43230

RE: Duke Energy Ohio
Transmission Line F8881 Solar Connect Project,
Rare, Threatened, and Endangered Species Consultation
Green Township, Brown County, Ohio

Dear Mr. Kessler:

Duke Energy Ohio (Duke Energy) is proposing to interconnect an existing Duke Energy Substation with the approved 200 megawatt (MW) solar photovoltaic Hillcrest Solar Project (currently under construction). The total Study Area includes approximately 13.6 acres of existing Duke Energy substation and property (Study Area). A field investigation of the Study Area was conducted on December 19, 2020.

The Study Area is located in Green Township, Brown County, Ohio. The location of the proposed Project is depicted on the attached Mt. Orab (OH) USGS 7.5-minute topographic map excerpt (Figure 1).

Cardno was contracted by Duke Energy Ohio to perform a boundary delineation and assessment of regulated waters, including wetlands, streams, ditches, and/or other federally regulated open waters, rare, threatened, endangered, and special habitat located within the 13.6 acre Study Area. The Study Area was dominated by emergent wetland and fallow field. Cardno botanists and ecologists conducted a habitat assessment to identify the presence of regulated waters, and potential Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and running buffalo clover *(Trifolium stoloniferum)* habitat.

In accordance with the ODNR-DOW Environmental Review coordination requirements the Study Area and its habitat characteristics has been summarized for you below.

1. Location data including latitude and longitude of the project area, site address, and county.

Green Township, Brown County, Ohio

Coordinates: 39.07654, -84.90789

2. A detailed project description, including layout of any new construction.

The proposed Duke Energy Ohio Hillcrest Project is necessary in order to interconnect the approved 200 MW Hillcrest Solar Project with the existing Duke Energy Ohio Substation in order to bring clean, renewable and sustainable power to current and future utility customers in the area.

Construction will be accomplished largely through the use of bucket trucks with truck-mounted augers for structure installation and other construction vehicles transporting cable spools to install the transmission cable along the route. Excavation will be restricted to the locations where the installation of updated engineered steel monopoles will occur. Earth moving activities are anticipated to be minimal. The extent of access disturbance can vary widely depending on many factors, including density and type of surface, vegetative cover, weather conditions, and the type of vehicles moving over the area. The existing vegetation will be preserved to the maximum extent practicable.

Project construction is expected to begin in Summer 2020.

3. A detailed description of onsite habitat, including the size, location, and quality of streams, wetlands, forested areas, and other natural areas, and proposed impacts.

The proposed Duke Energy Ohio Hillcrest Project is linear in scope and involves installing approximately 100 feet of new 138 kV transmission line from the existing Duke Energy Ohio Hillcrest Substation to the Hillcrest Solar Farm. The proposed Project will result in no ground disturbance will take place entirely within existing Duke Energy Ohio property (Figure 2). There is one potentially regulated waters identified within the Project's Study Area. Specific attention was given to the presence of habitat suitable for federally endangered and threatened species – specifically, the Indiana bat, the northern long-eared bat, and running buffalo clover. To evaluate the potential habitat for rare, threatened, and endangered species a general site reconnaissance of the Study Area was performed by Cardno botanists and ecologists. The result of these habitat assessments can be found below.

Emergent Wetland

One palustrine emergent wetland complex (Wetland 1) was located within the proposed Study Area. Understory vegetation was dominated by rice cut grass (*Leersia oryzoides*), wool grass (*Scirpus cyperinus*), hybrid cattail (*Typha X glauca*), and Dudley's rush (*Juncus dudleyi*). Although a formal study was not part of this scope, there was no potential habitat for listed species identified within this habitat.

Upland Fallow Field
Upland fallow field vegetation assemblage was located along the eastern boundary of the Study Area. Dominant species in this habitat type consisted of broomsedge bluestem (*Andropogon virginicus*), hairy white oldfield aster (*Symphyotrichum pilosum*), and Canada goldenrod (*Solidago canadensis*). Although, a formal study was not part of this scope, no potential habitat for listed species identified within this habitat.

Impervious surfaces
Impervious surfaces, pertaining to the 4.5 acre existing substation, are located within the central portion of the Study Area. Although, a formal study was not part of this scope, no potential habitat for listed species identified within this habitat.

Secondary Deciduous Forest
The Secondary Growth Forest vegetation assemblage was located along the eastern and western boundary of the Study Area. The scope of Transmission Line F8881 Solar Connect Project is not in the vicinity of the existing narrow tree line surrounding the existing Hillcrest substation and will not be impacted as a component of the Project. This habitat type is characterized by a dominance of canopy species including pin oak (*Quercus palustris*), red oak (*Quercus rubra*), shellbark hickory (*Carya laciniosa*), and shingle oak (*Quercus imbricaria*). Average diameter at breast height (DBH) for these canopy species was approximately fourteen (14) inches with a maximum of approximately twenty-four (24) inches. Understory vegetation was dominated by Amur honeysuckle (*Lonicera maackii*), Allegheny blackberry (*Rubus allegheniensis*), and saplings of the canopy species. Although a formal study was not part of this scope, there was low potential habitat for listed species identified within this habitat.

4. Proposed impacts (i.e. in-water work or tree clearing)

No tree trimming or clearing is anticipated to complete the transmission line installation Project. Additionally, based on the current Project alignment and scope no impacts to onsite wetlands or streams are anticipated by the Project.

5. Proposed Best Management Practices

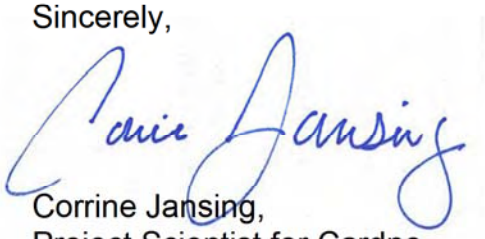
Best management practices will be followed for all potential stormwater impacts or runoff areas. These will include the use of fiber roll to collect any runoff/sediment. An Erosion and Sediment Control Plan will be prepared prior to Project construction and a Storm Water Pollution Prevention Plan and NPDES permit will also be obtained if it is determined that more than an acre of ground will be disturbed.

Conclusion
Based on the physical site characteristics, the site contains poor quality habitat for the federally endangered Indiana bat and the federally threatened northern long-eared bat based on the woody species composition, size, and intensity of surrounding land use. No tree clearing or trimming is anticipated by the Project and therefore no impact to potential maternity roost trees is anticipated.

We are requesting a review by your office and a written response regarding effects on state listed threatened and/or endangered species and their critical habitat within the vicinity of the Project Area. Enclosed for your review are the location map, aerial map, and photograph log of the Study Area.

If you have any questions concerning this request or would like additional information, please do not hesitate to contact me at (513) 833-6392 or cori.jansing@cardno.com.

Sincerely,



Corrine Jansing,
Project Scientist for Cardno

Cc: Dane Vandewater, Duke Energy Ohio
Michael Merten, Duke Energy Ohio

Enc: USGS Map, Aerial Map, Photo Log, GIS Shapefile

Cori Jansing

From: Ohio, FW3 <ohio@fws.gov>
Sent: Monday, May 4, 2020 12:58 PM
To: Cori Jansing
Cc: Dane.Vandewater@duke-energy.com
Subject: Duke Energy Transmission Line F8881 Solar Connect Project, Brown 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# 03E15000-2020-TA-1338

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.

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

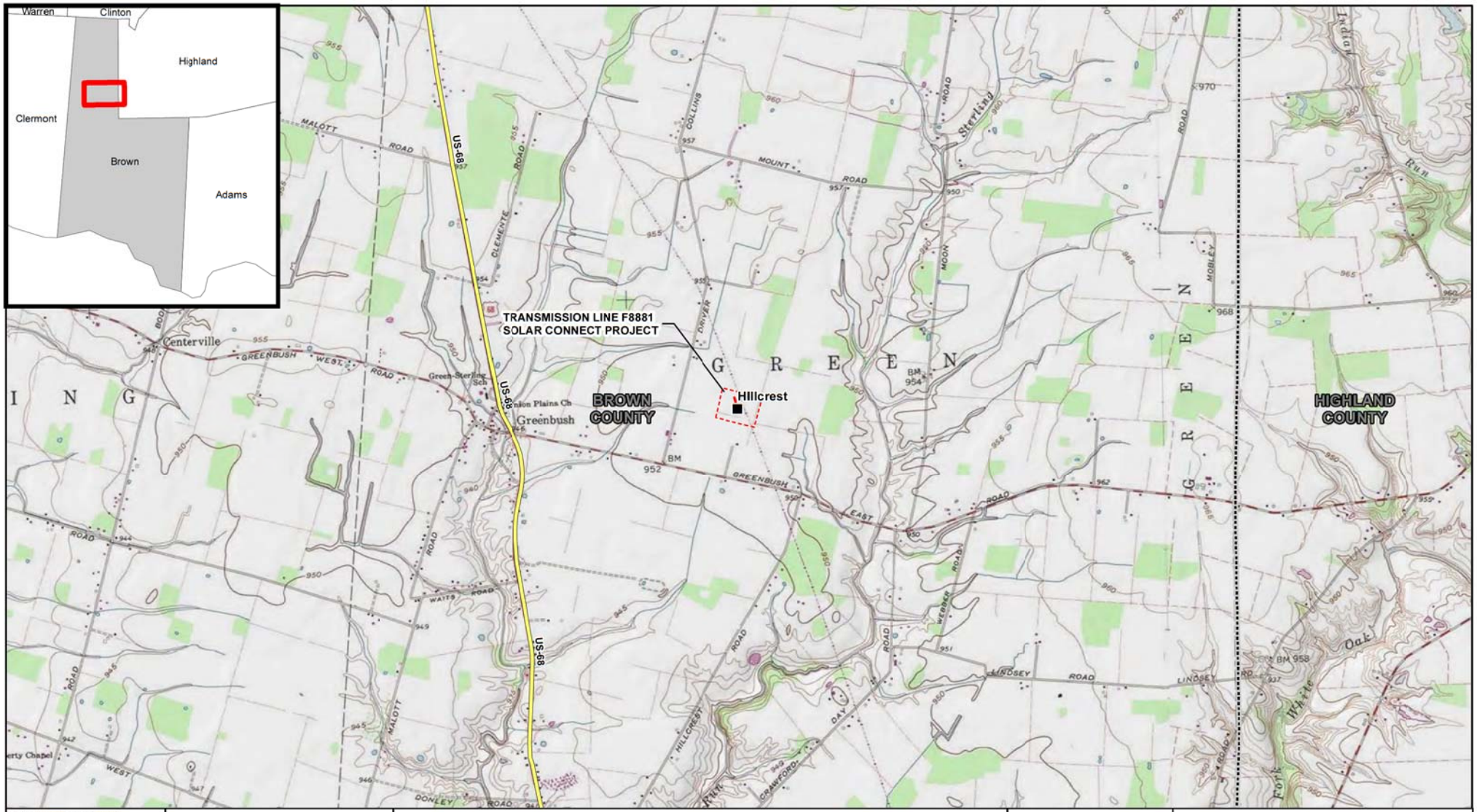
If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,

Patrice Ashfield
Ohio Field Office Supervisor

Attachments

USGS Map
Aerial Location Map
Photo Log



PROJECT LOCATION

BROWN COUNTY, OH

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

- Existing Facility
- Route Centerline
- Interstate
- State Highway
- US Highway
- Railroad
- Study Area
- Municipal Boundary
- County Boundary

DUKE ENERGY.

Cardno

0 500 1,000 2,000 Feet

FIGURE 1
PROJECT VICINITY MAP
TRANSMISSION LINE F8881 SOLAR CONNECT PROJECT
USFWS/ ODNR COORDINATION

DUKE ENERGY OHIO

DRAWN BY: COD
CHECKED: CAJ

DATE: 4/27/2020
APPROVED: CAJ

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PROJECT LOCATION

BROWN COUNTY, OH

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

- Existing Structure
- Existing Facility
- Route Centerline
- NWI Wetlands
- Interstate
- State Highway
- US Highway
- Railroad
- Study Area
- Municipal Boundary
- County Boundary

DUKE ENERGY

Cardno

0 50 100 200 Feet

FIGURE 2
PROJECT AERIAL MAP
TRANSMISSION LINE F8881 SOLAR CONNECT PROJECT
USFWS/ ODNR COORDINATION

DUKE ENERGY OHIO

DRAWN BY: COD
CHECKED: CAJ

DATE: 4/27/2020
APPROVED: CAJ

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Photo 1. View of the Wetland 1, east of the existing substation facing north.

Photo 2. Overview of the Duke Energy existing Hillcrest Substation and Wetland 1.

Photo 3. View of Study Area north of the existing Hillcrest Substation, facing south.

Photo 4. Overview of representative secondary deciduous forest located outside the Project construction area.

Attachment D – Regulated Waters Delineation Report

May 1, 2020

Cardno

11121 Canal Road
Cincinnati, Ohio 45241
USA

Phone **513 489 2402**
Fax 513 489 2404

www.cardno.com

Dane Vandewater
Duke Energy
139 E. 4th Street
Cincinnati, OH 45202

Subject: ***Regulated Waters Determination***
Duke Energy Ohio TL F8881 Solar Interconnect Project
Green Township, Brown County, OH

Dear Mr. Vandewater:

Cardno has completed a site visit (regulated waters determination) in support of the Duke Energy Transmission Line F8881 Solar Interconnect Project (herein "the Project") located in Green Township, Brown County, Ohio.

Methods and Summary

Cardno visited the proposed Transmission Line (TL) F8881 Solar Interconnect site on December 19, 2020. Cardno performed an abbreviated ecological survey (regulated waters reconnaissance) and rapid assessment regarding the presence/absence of potentially jurisdictional resources and to assess whether the existing site contains wetlands, streams or other potentially regulated 'Waters of the U.S.'. One wetland and no streams or open water bodies were identified on the Project site during the site investigation.

Wetland 1 (0.22-acre within the Study Area)
Wetlands 1 is a palustrine emergent wetland. No surface water connection with any "waters of the U.S." was observed. This wetland complex should be considered an isolated 'waters of the State.' The ORAM score for Wetland 1 was 36.0, categorizing it as a Category 2, or moderate quality wetland. A complete ORAM field data sheet is located in Appendix D.

Wetland Data Point
Data Point 01
Dominant vegetation in the vicinity of DP01 included rice cut grass (*Leersia oryzoides*, OBL), and Dudley's rush (*Juncus dudleyi*, FACW). In addition, non-dominant vegetation observed included chufa (*Cyperus esculentus*, FACW), large barnyard grass (*Echinochloa crus-galli*, FACW), Frank's sedge (*Carex frankii*, OBL), cottongrass bulrush (*Scirpus cyperinus*, OBL), swamp milkweed (*Asclepias incarnata*, OBL), and hybrid cattail

(*Typha X glauca*, OBL). The plants at this data point qualified as hydrophytic vegetation. The soil from 0 to 16 inches had a matrix soil color of 10YR 4/1 with concentrations in the matrix at 10 percent, and a texture of clay loam. The soil at the data point was mapped as Clermont silt loam, 0 to 1 percent slopes (Cle1A), and met the depleted matrix (F3) and redox depressions (F8) hydric soil criteria. Primary indicators of hydrology included surface water (A1), saturation (A3), and secondary indicators of hydrology observed included drainage patterns (B10), geomorphic position (D2), and the FAC-neutral test (D5). This data point qualified as a wetland.

Upland Data Point
Data Point 02
Dominant vegetation in the vicinity of DP02 included pin oak (*Quercus palustris*, FACW), green ash (*Fraxinus pennsylvanica*, FACW), Canadian goldenrod (*Solidago canadensis*, FACU), and Japanese honeysuckle (*Lonicera japonica*, FACU). In addition, non-dominant vegetation observed included broom-sedge (*Andropogon virginicus*, FACU) and white oldfield American-aster (*Symphyotrichum pilosum*, FACU). The plants at this data point did not qualify as hydrophytic vegetation. The soil from 0 to 16 inches had a matrix soil color of 10YR 4/2 with a texture of silty clay loam. The soil at the data point was mapped as Clermont silt loam, 0 to 1 percent slopes (Cle1A), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Summary of Findings

Cardno inspected the proposed TL F8881 Solar Interconnect Project study area on December 19, 2020. The study area included approximately 13.6 acres, comprised of impervious surfaces and palustrine emergent wetland. Cardno inspected the Study Area on December 19, 2019. Delineated features are shown on Figure 4 and summarized in Table 1.

Table 1. Features Identified within the TL F8881 Solar Interconnect Project Study Area

Feature Name	USGS/NWI Identified	Feature Class	Regulatory Status[1]	ORAM Score	Acreage (AC)	Acreage (AC) Within Project Corridor
Wetland 1	No	PEM	Jurisdictional	36	4.62	0.22

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

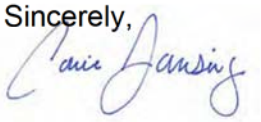
Recommendations

One emergent wetland and no streams or open water bodies were identified within the Project Study Area. Approximately 0.15 AC of impact to Wetland 1 are currently under review for authorization under the nationwide permit program for impacts associated with the Hillcrest Solar Farm Project (18-1267-EL-BGA). No earth disturbance activities will occur as a result of Duke Energy TL F8881 Solar Interconnect Project therefore no impacts to Wetland 1 are anticipated.

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 all wetlands and streams in this region. This correspondence shall be considered confidential for internal and site planning purposes only.

Thank you for this opportunity to provide regulated waters consultation in support of this Project. Please contact me if you have any comments or questions regarding these findings or recommendations.

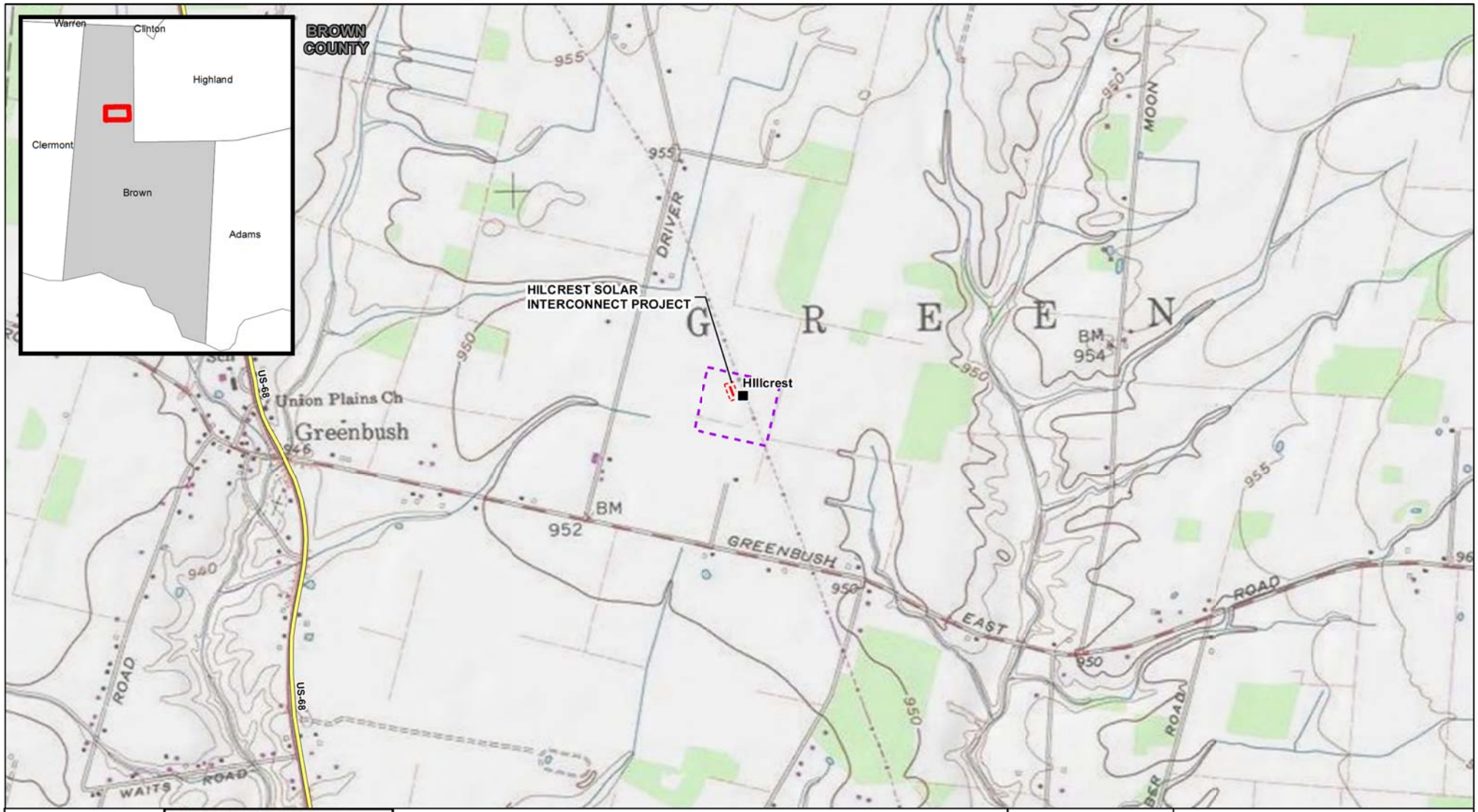
Sincerely,



Cori Jansing, PWS
Regulatory Specialist, Botanist
Cardno, Inc.
Phone: 513-833-6392
Email: cori.jansing@cardno.com

Exhibit 1: Figures
Exhibit 3: Photolog
Exhibit 2: USACE and ORAM Forms

File: J156721M28


Warren
Clinton
Highland
Clermont
Brown
Adams
BROWN COUNTY
HILCREST SOLAR INTERCONNECT PROJECT
Hillcrest
DRIVER
MOON
GREEN
BM 954
Union Plains Ch
Greenbush
946
BM 952
GREENBUSH EAST ROAD
US-68
WAITS ROAD
955
950
940
PROJECT LOCATION
BROWN COUNTY, OHIO
REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE MOUNT ORAB, OHIO., OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.
N
0 500 1,000 2,000 Feet
Existing Facility
Study Area
Project Corridor
Route Centerline
Interstate
State Highway
US Highway
Railroad
Municipal Boundary
County Boundary
DUKE ENERGY
Cardno
FIGURE 1
REGULATED WATERS DETERMINATION
HILCREST SOLAR INTERCONECT PROJECT
PUCO CASE NO. 20-938-EL-BNR
DUKE ENERGY OHIO
PROJECT VICINITY MAP
DRAWN BY: COD
DATE: 5/5/2020
CHECKED: CAJ
APPROVED: CAJ
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PROJECT LOCATION

BROWN COUNTY, OHIO

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

- Study Area
- Project Corridor
- Proposed Underground Communication Line
- Route Centerline
- Existing Facility
- Existing Structure
- Parcels
- Delineated Wetland
- Municipal Boundary
- Interstate
- State Highway
- US Highway
- Railroad
- NWI Wetlands
- NHD Flowline
- 100Yr Floodplain
- 1' Contour Line
- County Boundary

DUKE ENERGY.

Cardno

0 50 100 Feet

FIGURE 2
REGULATED WATERS DETERMINATION
HILCREST SOLAR INTERCONECT PROJECT
PUCO CASE NO. 20-938-EL-BNR
DUKE ENERGY OHIO
IDENTIFIED FEATURES MAP

DRAWN BY: COD DATE: 5/5/2020
CHECKED: CAJ APPROVED:CAJ

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Photo 1: Wetland 1, Eastern Portion, View Looking North.

Photo 2: Wetland 1, Eastern Portion, View Looking Southeast.

Photo 3: Wetland 1, Southeast Portion, View Looking East.

Photo 4: Duke Energy Substation, impervious surface.

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: TL F8881 Solar Interconnect | City/County: Green Township/Brown | Sampling Date: 12/19/2019

Applicant/Owner: Duke Energy Ohio | State: OH | Sampling Point: DP01

Investigator(s): Kaitlin Hillier and Jon Nellsen | Section, Township, Range:

Landform (hillslope, terrace, etc.): Toeslope | Local relief (concave, convex, none): concave

Slope (%): 0% | Lat: 39.077042 | Long: -83.908961 | Datum: NAD83 UTM16N

Soil Map Unit Name: Clermont silt loam, 0 to 1 percent slopes (Cle1A) | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Leersia oryzoides*	40%	Yes	OBL
2. *Juncus dudleyi*	25%	Yes	FACW
3. *Cyperus esculentus*	20%	No	FACW
4. *Echinochloa crus-galli*	15%	No	FACW
5. *Carex frankii*	10%	No	OBL
6. *Scirpus cyperinus*	5%	No	OBL
7. *Asclepias incarnata*	1%	No	OBL
8. *Typha X glauca*	1%	No	OBL
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	117%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species	57%	x1 =	0.57
FACW species	60%	x2 =	1.20
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	117% (A)		1.77 (B)

Prevalence Index = B/A = 1.51

Hydrophytic Vegetation Indicators:

X 1-Rapid Test for Hydrophytic Vegetation

X 2-Dominance Test is >50%

X 3-Prevalence Index is ≤3.0[1]

____ 4-Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 4/1	90	10YR 4/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators[3]:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2"

Water Table Present? Yes ___ No X Depth (inches): n/a

Saturation Present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: TL F8881 Solar Interconnect | City/County: Green Township/Brown | Sampling Date: 12/19/2019

Applicant/Owner: Duke Energy Ohio | State: OH | Sampling Point: DP02

Investigator(s): Kaitlin Hillier and Jon Nellsen | Section, Township, Range:

Landform (hillslope, terrace, etc.): Summit | Local relief (concave, convex, none): convex

Slope (%): 1% | Lat: 39.077368 | Long: -83.907106 | Datum: NAD83 UTM16N

Soil Map Unit Name: Clermont silt loam, 0 to 1 percent slopes (Cle1A) | NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Quercus palustris*	5%	Yes	FACW
2. *Fraxinus pennsylvanica*	5%	Yes	FACW
3.			
4.			
5.			
	10%	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Solidago canadensis*	75%	Yes	FACU
2. *Lonicera japonica*	60%	Yes	FACU
3. *Andropogon virginicus*	15%	No	FACU
4. *Symphyotrichum pilosum*	10%	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	160%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species		x1 =	
FACW species	10%	x2 =	0.20
FAC species		x3 =	
FACU species	160%	x4 =	6.40
UPL species		x5 =	
Column Totals:	170% (A)		6.60 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation
____ 2-Dominance Test is >50%
____ 3-Prevalence Index is ≤3.0[1]
____ 4-Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 4/2	100					Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators[3]:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Test Indicators of Hydric Soils:

- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	n/a
Water Table Present?	Yes ___ No X	Depth (inches):	n/a
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	n/a

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

Site: Wetland 1	Rater(s): K Hillier & J Nielsen	Date: December 19, 2019

Project: TL F8881 Solar Interconnect

4	4
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

1	5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

10	15
max 30 pts.	subtotal

Metric 3. Hydrology

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

16	31
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed

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

31
subtotal this page

Site: Wetland 1	Rater(s): K Hillier & J Nielsen	Date: December 19, 2019

Site: TL F8881 Solar Interconnect

5 subtotal this page

0 | 0 max 10 pts subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- [X] Not Applicable (0)

5 | 5 max 20 pts subtotal

Metric 6. Plant communities, interspersion, microtopograhy.

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

- [0] Aquatic bed
- [2] Emergent
- [1] Shrub
- [0] Forest
- [0] Mudflats
- [1] Open water
- [0] Other

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

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

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

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

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

- [2] Vegetated hummocks/tussocks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [1] Amphibian breading pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but no always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

36 Grand Total (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Comments: