EXHIBIT R: Surface Water Survey Report (Wetlands)

SURFACE WATERS REPORT

The Ohio State University

Combined Heat and Power Facility

Franklin County, Ohio

May 2019

TRC Project No. 314315.0000.0000

Prepared For:

Engie

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CONFIDENTIAL BUSINESS INFORMATION

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ACRONYM LIST

FEMA	Federal Emergency Management Agency
GPS	Global Positioning System
HUC	hydrologic unit code
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
Ohio EPA	Ohio Environmental Protection Agency
Project	Combined Heat and Power Facility
Report	Surface Waters Report
TRC	TRC Environmental Corporation
U.S.	United States
USACE	United States Army Corps of Engineers
USDA-NRCS	United States Department of Agriculture – Natural Resources Conservation Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

On behalf of ENGIE, TRC Environmental Corporation (TRC) has prepared this Surface Waters Report (Report) as part of the environmental studies conducted for the Combined Heat and Power Facility (Project) located in the City of Columbus, Franklin County, Ohio. This Report contains the methodology and results of the investigations performed by TRC. Mr. Justin Pitts (TRC), an environmental scientist who has been performing wetland delineations for over twelve years, was the lead field scientist and primary author of this Report.

The primary objective of the survey was to identify and evaluate wetlands and other waters of the U.S. within the Study Area, such that the resources could be considered in the planning, design, permitting, and installation of the proposed Project in accordance with Ohio Administrative Code (OAC) Chapter 4906-4-08 (B)(1)(a)(iv-v)-(b). In addition, TRC evaluated areas of potentially suitable wooded habitat for the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*).

The Study Area consists of the potential construction impact area and a 100-foot (30-meter) buffer totaling approximately 1,153 acres (467 hectares) of primarily mowed/maintained commercial properties, parking lots, sidewalks and local roadways. The Project Area is approximately 1.76 acres (0.71 hectare) in total size located on The Ohio State University (OSU) campus in the City of Columbus, Franklin County, Ohio (Appendix A, Figure 1). Of the 1.76 acres (0.71 hectare) to be disturbed, approximately 1.35 acres (0.54 hectare) is the existing Howlett Greenhouse in the northeast quadrant of the John H. Herrick Drive intersection with Vernon L. Tharp Street. The remaining 0.41 acre (0.17 hectare) is mowed/maintained urban lands, parking lots, sidewalk and local roadways. The final constructed footprint of the facility will be 1.35 acres (0.54 hectare)

The Study Area lies within the Eastern Corn Belt Plains, which typically have loamy and well-drained soils, and most commonly characterized by its rolling plains and local end moraines (Wilken, Jiménez Nava and Griffith 2011). The vegetation of the ecoregion was originally dominated by American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and American basswood (*Tilia americana*) forests. The proposed Project is located within the Ohio River drainage basin. The United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) maintains a classification system for identifying watersheds by hydrologic unit code (HUC). The Project is located within the Upper Scioto (HUC 05060001) river basin

(USDA-NRCS 2013). At the time of the Survey, the Study Area was located within a high intensity urban setting.

2.0 Methodology

Pursuant to the USACE wetlands and other waters of the U.S. delineation methodology, potential wetland and other waters of the U.S. located within the Study Area were identified, delineated, and mapped through the combined use of existing available public source information and field investigations.

2.1 Desktop Review Methodology

The sources utilized for desktop review included the following: the United States Geological Survey (USGS) Alger, Ohio (1994) 7.5 minute series topographical quadrangle map (USGS 2016) (Appendix A, Figure 1); soil datasets acquired from the NRCS Web Soil Survey (USDA 2019) for Franklin County, Ohio (Appendix A, Figure 2); the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory Map (NWI) for Ohio (USFWS 2019) (Appendix A, Figure 3); and the Federal Emergency Management Agency (FEMA) flood hazard risk map (FEMA 2019) (Appendix A, Figure 4). Sources were reviewed to identify conditions that may be present in the Study Area. These potential conditions are defined in Section 2.2. The results of the desktop review were used to aid in the field investigation.

2.2 Field Methodology

2.2.1 Surface Waters

Wetland resources within the Study Area were identified and their boundaries determined in accordance with the U.S. Army Corps of Engineers *Wetlands Delineation Manual (1987 Manual)* (USACE 1987), utilizing the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (Regional Supplement)* (USACE 2010). Consistent with the *1987 Manual*, wetland determinations were based on dominant plant species, soil characteristics, and hydrologic characteristics. In addition, wetlands and other waters of the U.S. were evaluated in accordance with the Ohio Environmental Protection Agency (Ohio EPA) as part of the State of Ohio's Water Quality Standards (OAC Chapter 3745-1). Field surveys were conducted on May 7, 2019. Areas that exhibited hydric soils, wetland hydrology, and a dominance of hydrophytic vegetation were considered potentially jurisdictional wetlands.

The Study Area was screened for the presence of WOTUS that met the criteria specified in the *1987 Manual*. Other waters of the U.S. consist of ephemeral, intermittent, and perennial streams, as well as open water features, such as ponds. Drainage channels that exhibited defined "bed and bank" and an ordinary high-water mark in the channel were identified and delineated as jurisdictional streams. Wetlands or other WOUS are considered potentially jurisdictional until verified by the USACE.

Potentially suitable wooded habitat for the Indiana bat and northern long-eared bat within the Study Area was evaluated. Individuals conducting the vegetative survey for the proposed Project familiarized themselves with the habitat requirements of the species identified through desktop review. Data developed from publicly available data sources were utilized during the vegetative survey to document areas where land cover types may provide suitable habitat for the Indiana bat, northern long-eared bat, and other state and federal listed species and species of concern. Land cover types were field-verified, and locations of suitable habitat were documented through the use of a Global Positioning System (GPS) receiver capable of sub-meter accuracy (Model R1, handheld, Trimble, Sunnyvale, California).

3.0 Results

During the investigations identified within this report, no wetlands or streams were identified within the area to be disturbed for the Project.

3.1 Background Resources

3.1.1 USGS Topographic Map

Based on the desktop review, the Study Area contained no wetland features according to the Southwest Columbus, Ohio USGS topographic quadrangle (Appendix A, Figure 1) (USGS 2016). The majority of the terrain is almost completely level, with the exception of the Olentangy River. The elevation ranges from approximately 720 feet to 750 feet (220 meters to 229 meters) above mean sea level.

3.1.2 Soils

According to the soil dataset acquired from the NRCS Web Soil Survey for Hardin County, Ohio, the Study Area is underlain by seven (7) different soil types. The soils are mapped as non-hydric and non-hydric with hydric inclusions. Hydric inclusions indicate the soils are inclined to contain

small areas of hydric soil. (USDA 2015) (Table 3.1.1 and Appendix A, Figure 2). Throughout the Study Area, soils and hydrology have been greatly influenced by urban development.

Table 3.1.1 Soils Mapped within the Study Area

Soil Code	Soil Name	Percent (%) in Study Area	Hydric Status
CfB	Celina-Urban land complex, 2 to 6 percent slopes	1.22	Non-hydric with Hydric Inclusions
EmB	Eldean-Urban land complex, 2 to 6 percent slopes	35.59	Non-hydric with Hydric Inclusions
MnC	Miamian-Urban land complex, 6 to 12 percent slopes	0.61	Non-hydric
Rs	Ross silt loam, 0 to 2 percent slopes, occasionally flooded	5.64	Non-Hydric with Hydric Inclusions
Ut	Udorthents-Urban land complex, gently rolling	10.50	Non-Hydric
Uw	Urban land-Genesee complex, occasionally flooded	46.44	Non-Hydric
Ux	Urban land-Ockley complex, 0 to 6 percent slopes	X.xx	Non-Hydric

3.1.3 National Wetland Inventory

According to the USFWS NWI (USFWS 2019), no wetlands or riverine systems are mapped within the Study Area, which was confirmed during field investigations. However, the Olentangy River is identified in close proximity to the area to be disturbed for utility lines.

3.1.4 FEMA Flood Hazard

According to the FEMA mapping, the Study Area is not located within a FEMA Special Flood Zone Hazard Area. (FEMA 2019) (Appendix A, Figure 3).

3.2 Detailed Delineations

TRC performed the surface waters survey at the beginning of the normal growing season in Ohio, on May 7, 2019. Weather conditions were normal for the time of year, between 72° and 75° Fahrenheit (22° and 24° Celsius), with no rain. The last date of precipitation was on Saturday, May 4, 2019. No wetlands or streams were identified within the Study Area. The Olentangy River

is located in close proximity to the proposed area to be disturbed; however, based on design considerations the Olentangy River is not located within the potential construction impact area.

4.0 References

FEMA. 2019. *FEMA Flood Map Service Center.* https://msc.fema.gov/portal.

USACE. 1987. *Corps of Engineers Wetlands Delineation Manual.* Vicksburg, MS: Environmental Laboratory U.S. Army Corps of Engineers, Waterways Experiment Station, Wetlands Research Program Technical Report Y-87-1.

USACE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).* U.S. Army Corps of Engineers, Vicksburg: U.S. Army Engineer Research and Development Center, 154, 176.

USDA. 2015. "National Hydric Soils List." Excel spreadsheet, Natural Resources Conservation Service, U.S. Department of Agricuture. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/.

—. 2019. *Web Soil Survey 3.0.* http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

USDA-NRCS. 2013. *Watershed Boundary Dataset.* Accessed May 2019. https://datagateway.nrcs.usda.gov/GDGOrder.aspx.

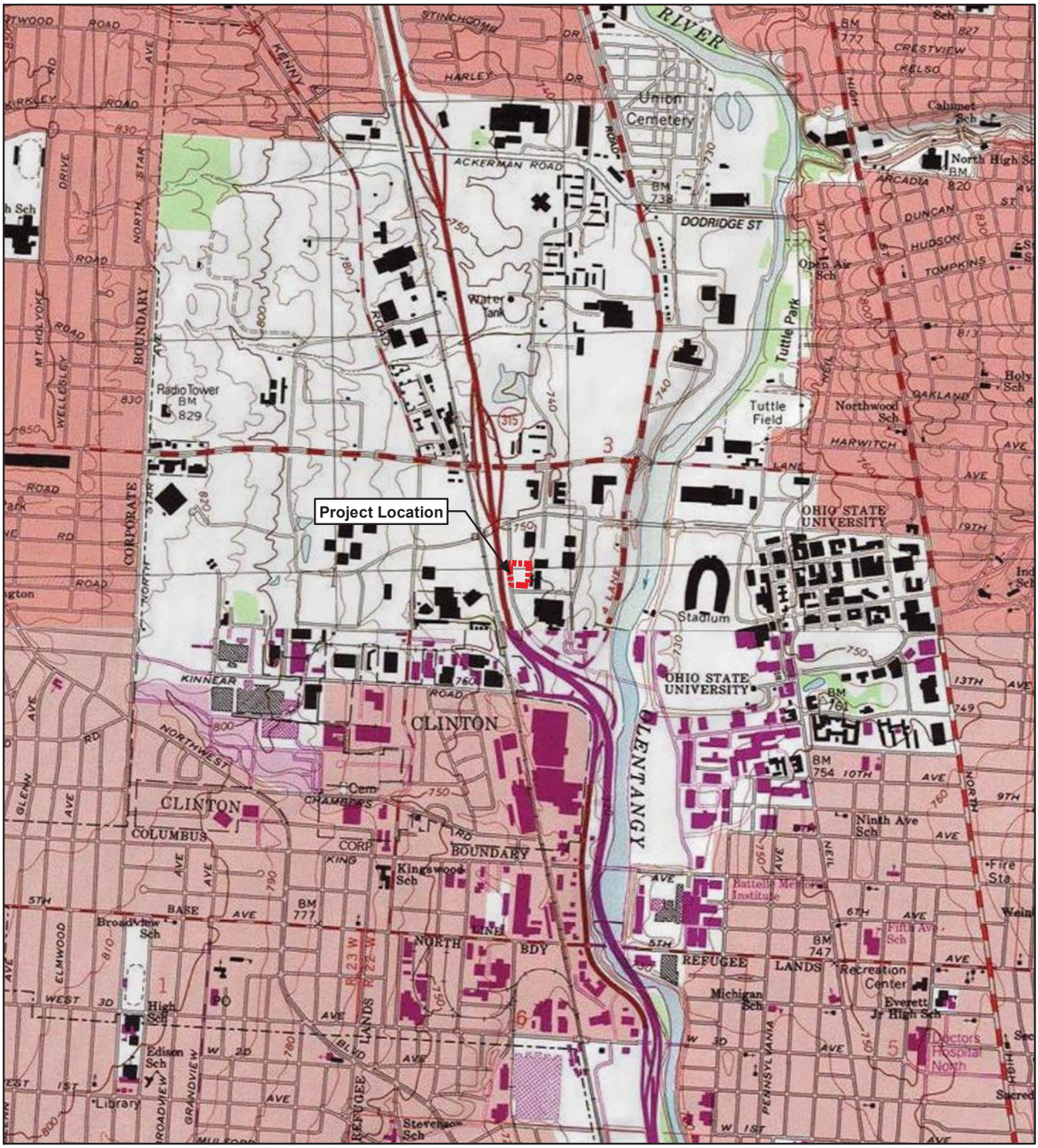
USFWS. 2019. *National Wetlands Inventory.* May 5. Accessed May 2019.

USGS. 1994. "Topographical Quadrangle Maps (7.5-minute series)." U.S. Geological Survey.

Wilken, Ed, Francisco Jiménez Nava, and Glenn Griffith. 2011. *North American Terrestrial Ecoregions Level III.* Commission for Environmental Cooperation, Canada. http://www.cec.org/Atlas/Files/Terrestrial_Ecoregions_L1/TerrestrialEcoregions_L1_GeoPDF.zip .

Appendix A

Figures



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

N

1 " = 2,000 '
1:24,000

0 2,000 4,000
FEET

LEGEND

PROPOSED PLANT PROJECT AREA

TRC
670 Morrison Rd
Suite 220
Gahanna, Ohio 43230
Phone: 614.655.5360

TRC - GIS

PROJECT:

THE OHIO STATE UNIVERSITY
COMBINED HEAT AND POWER PROJECT
COLUMBUS, OH

TITLE:

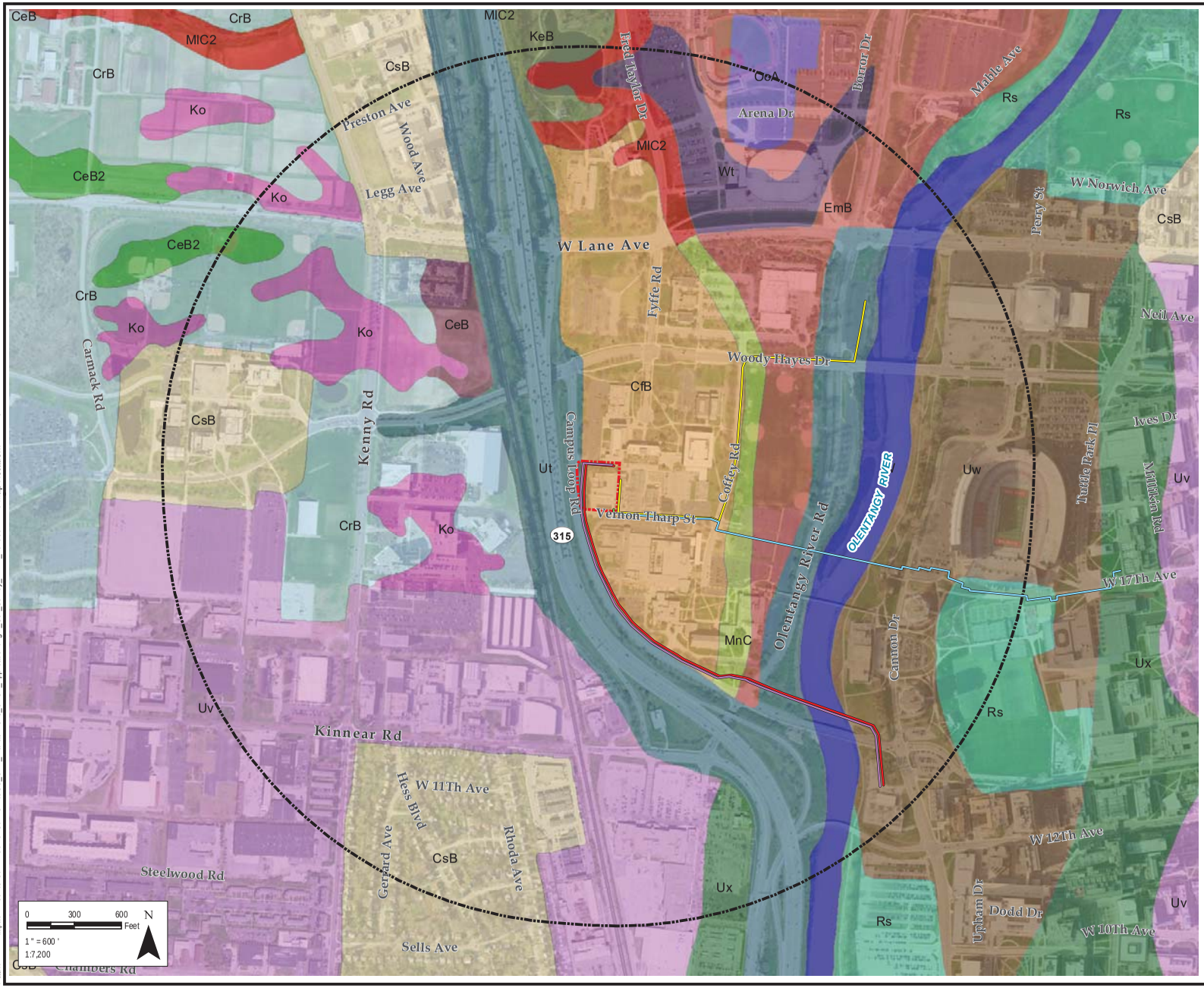
USGS TOPOGRAPHIC MAP

WORKING COPY

DRAWN BY:	S. MOTURI
CHECKED BY:	J. PAPEZ
APPROVED BY:	J. PITTS
DATE:	JUNE 2019
PROJ. NO.:	314315
FILE:	fIG 1 USGS_8.5x11.mxd

FIGURE 1

\\apaenvfile01\GIS\1-PROJECTS\ENGIE\OSU_CHP_Plant\314315_OPSB_Application\fIG 1 USGS_8.5x11.mxd -- Saved By: SMOTURI on 6/12/2019, 16:35:16 PM



LEGEND

- PROPOSED PLANT PROJECT AREA
- HALF-MILE BUFFER FROM PROPOSED PLANT
- CELINA SILT LOAM, 2 TO 6 PERCENT SLOPES (CeB)
- CELINA SILT LOAM, 2 TO 6 PERCENT SLOPES, ERODED (CeB2)
- CELINA-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES (CfB)
- CROSBY SILT LOAM, 2 TO 6 PERCENT SLOPES (CrB)
- CROSBY-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES (CsB)
- ELDEAN-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES (EmB)
- KENDALLVILLE SILT LOAM, 2 TO 6 PERCENT SLOPES (KeB)
- KOKOMO SILTY CLAY LOAM (Ko)
- MIAMIAN SILTY CLAY LOAM, 6 TO 12 PERCENT SLOPES, ERODED (MIC2)
- MIAMIAN-URBAN LAND COMPLEX, 6 TO 12 PERCENT SLOPES (MnC)
- OCKLEY SILT LOAM, 0 TO 2 PERCENT SLOPES (OcA)
- ROSS SILT LOAM, OCCASIONALLY FLOODED (Rs)
- UDORTHENTS-URBAN LAND COMPLEX, GENTLY ROLLING (Ut)
- URBAN LAND-CELINA COMPLEX, 2 TO 12 PERCENT SLOPES (Uv)
- URBAN LAND-GENESEE COMPLEX, OCCASIONALLY FLOODED (Uw)
- URBAN LAND-OCKLEY COMPLEX, 0 TO 6 PERCENT SLOPES (Ux)
- WATER (W)
- WESTLAND SILTY CLAY LOAM (Wt)

PROPOSED UTILITY ROUTES

- 13.8KV TRANSMISSION
- COMMUNICATIONS
- NATURAL GAS
- WATER
- SANITARY

NOTES

1. BASE MAP IMAGERY FROM 3-INCH ORTHOIMAGERY 2017 WEB SERVICE, CITY OF COLUMBUS.
2. SOIL SURVEY DATA FROM ODNR, 1999
3. PROPOSED PLANT BOUNDARY AND BUFFER CREATED BY TRC.

PROJECT: THE OHIO STATE UNIVERSITY COMBINED HEAT AND POWER PROJECT COLUMBUS, OH

TITLE: USDA SOIL SURVEY

WORKING COPY

DRAWN BY:	W. EVARTS	PROJ. NO.:	314315
CHECKED BY:			
APPROVED BY:			
DATE:	JUNE 2019		

FIGURE 2

TRC
670 Morrison Rd, Suite 220
Gahanna, OH 43230
Phone: 614.655.5360
www.trcsolutions.com

FILE NO.: Fig 2_Soil_Survey_17x11_20190612.mxd

Plot Date: 6/12/2019, 16:20:11 PM by SMOTURI -- LAYOUT: ANSI B(11"x17")
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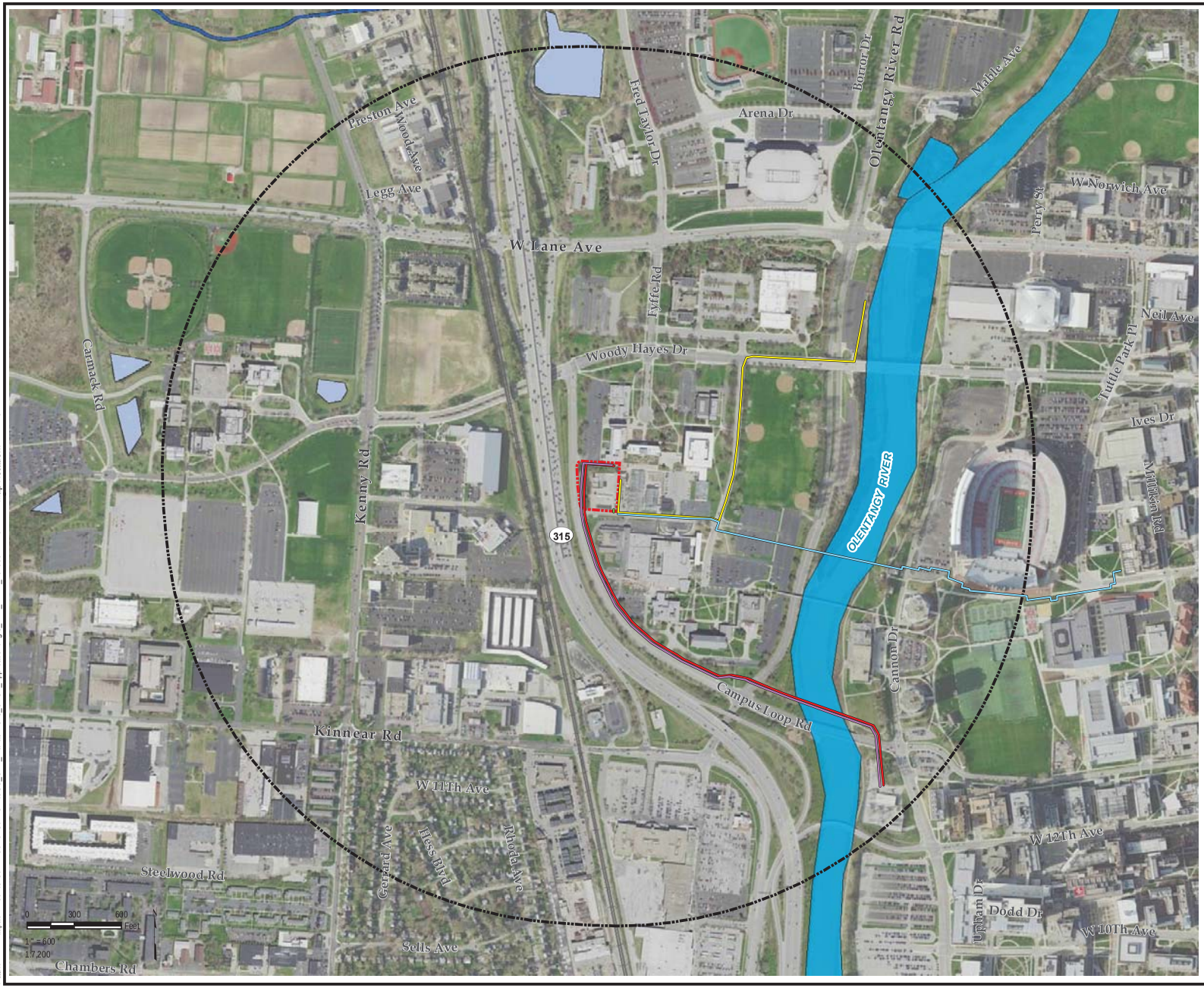
Map Rotation: 0

TRC - GIS



LEGEND

- PROPOSED PLANT PROJECT AREA
- HALF-MILE BUFFER FROM PROPOSED PLANT
- STREAM/RIVER (NHD)

NATIONAL WETLANDS INVENTORY

- FRESHWATER POND
- RIVERINE

PROPOSED UTILITY ROUTES

- 13.8KV TRANSMISSION
- COMMUNICATIONS
- NATURAL GAS
- WATER
- SANITARY

NOTES

1. BASE MAP IMAGERY FROM 3-INCH ORTHOIMAGERY 2017 WEB SERVICE, CITY OF COLUMBUS.
2. STREAM/RIVER DATA FROM NHD.USGS.GOV
3. NWI DATA FROM U.S. FISH & WILDLIFE, WETLANDS MAPPER, 2019.
4. PROPOSED PLANT BOUNDARY AND BUFFER CREATED BY TRC.

0 600 1,200 Feet

1" = 600'
1:7,200

PROJECT:

THE OHIO STATE UNIVERSITY
COMBINED HEAT AND POWER PROJECT
COLUMBUS, OH

TITLE:

WORKING COPY

NATIONAL WETLAND INVENTORY MAP

DRAWN BY:	S. MOTURI	PROJ. NO.:	314315
CHECKED BY:	J. PAPEZ		
APPROVED BY:	M. SPONSLER		**FIGURE 3**
DATE:	JUNE 2019		

TRC

670 Morrison Rd, Suite 220
Gahanna, OH 43230
Phone: 614.655.5360
www.trcsolutions.com

FILE NO.: Fig 3_NWI_17x11_20190612.mxd

Plot Date: 6/12/2019, 16:21:20 PM by SMOTURI -- LAYOUT: ANSI B(11"x17")
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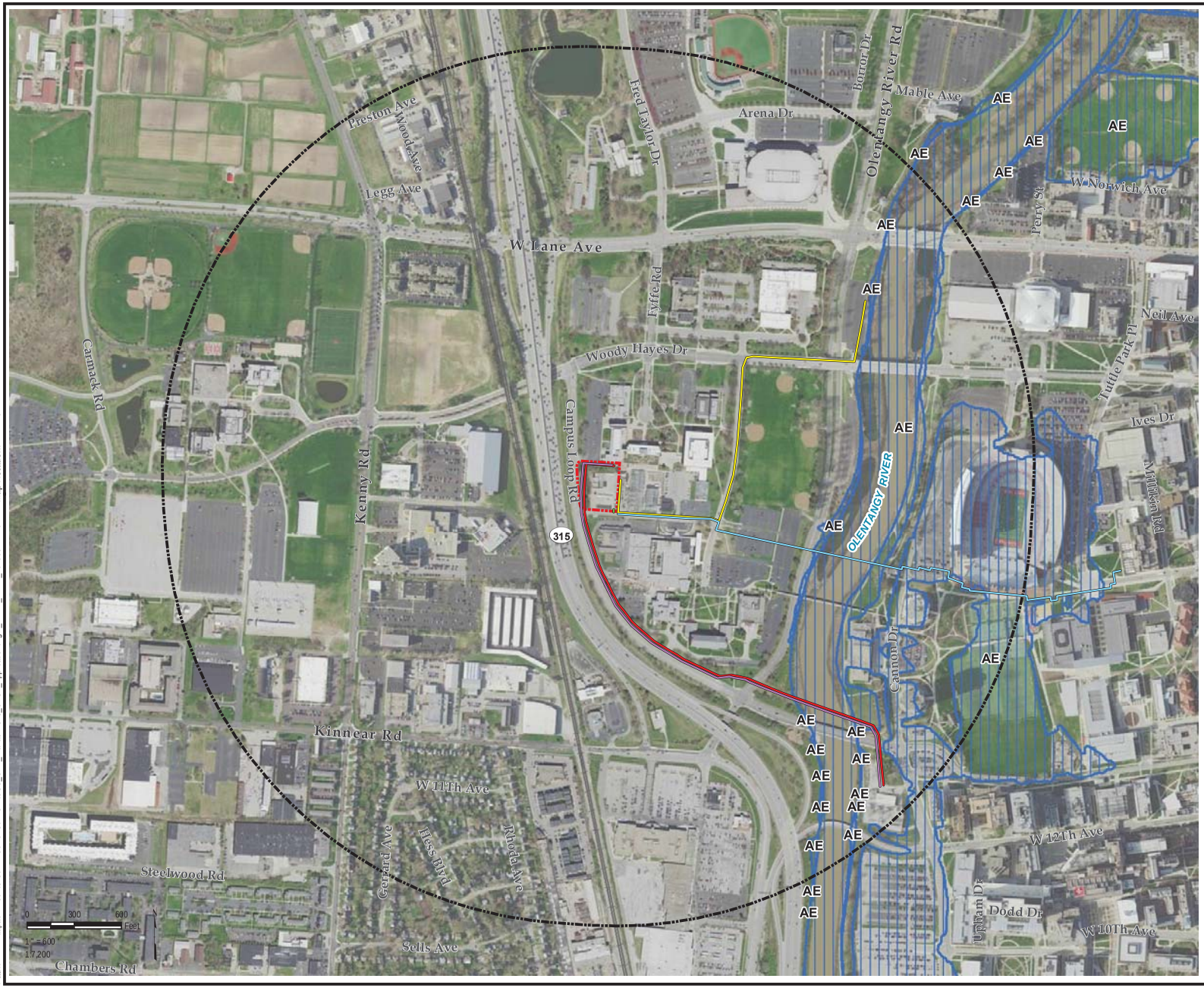
Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet (Foot US)
Map Rotation: 0

TRC - GIS



LEGEND

- PROPOSED PLANT PROJECT AREA
- HALF-MILE BUFFER FROM PROPOSED PLANT
- SPECIAL FLOOD HAZARD AREA (1% PROBABILITY OF FLOODING EVERY YEAR)

PROPOSED UTILITY ROUTES

- 13.8KV TRANSMISSION
- COMMUNICATIONS
- NATURAL GAS
- WATER
- SANITARY

NOTES

1. BASE MAP IMAGERY FROM 3-INCH ORTHOIMAGERY 2017 WEB SERVICE, CITY OF COLUMBUS.
2. SPECIAL FLOOD HAZARD AREA (SFHA) FROM FRANKLIN COUNTY AUDITOR WEBSITE, 2019.
3. PROPOSED PLANT BOUNDARY AND BUFFER CREATED BY TRC.

0 600 1,200 Feet

1" = 600'
1:7,200

PROJECT: THE OHIO STATE UNIVERSITY
COMBINED HEAT AND POWER PROJECT
COLUMBUS, OH

TITLE: FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD HAZARD MAP

WORKING COPY

DRAWN BY:	S. MOTURI	PROJ. NO.:	314315
CHECKED BY:	J. PAPEZ		FIGURE 4
APPROVED BY:	M. SPONSLER		
DATE:	JUNE 2019		

TRC

670 Morrison Rd, Suite 220
Gahanna, OH 43230
Phone: 614.655.5360
www.trcsolutions.com

FILE NO.: Fig 4_FEMA_17x11_20190612.mxd

Plot Date: 6/12/2019, 16:26:24 PM by SMOTURI -- LAYOUT: ANSI B(11"x17")
Path: \\apaenvfile01\GIS\1-PROJECTS\ENG\EOSU_CHP_Plant\314315_OPSB_Application\Fig 4_FEMA_17x11_20190612.mxd

Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet (Foot US)
Map Rotation: 0

TRC - GIS

Appendix B

Photographic Log

PROJECT AREA PHOTOGRAPHS

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID:
Photo 1

Date: May 7, 2019

Feature:

Comments:
Facing west along Vernon L Tharp Street. The area is highly disturbed from previous construction and maintenance activities.

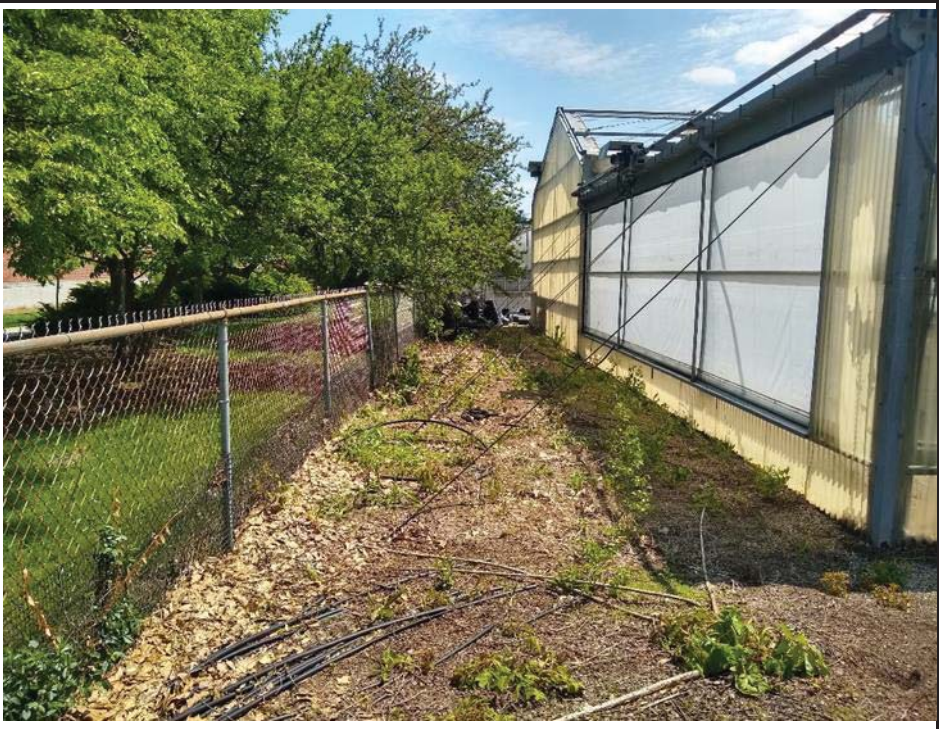
Photo ID:
Photo 2

Date: May 7, 2019

Feature:

Comments:
Facing north along the eastern limits of the Combined Heat and Power (CHP) Facility. The area is highly disturbed from previous construction and maintenance activities.

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 3 **Date:** May 7, 2019 **Feature:** **Comments:** Facing east along the northern limits of the CHP facility. The area is highly disturbed from previous construction and maintenance activities.	
Photo ID: Photo 4 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south along the western limits of the Combined Heat and Power (CHP) Facility. The area is highly disturbed from previous construction and maintenance activities.	

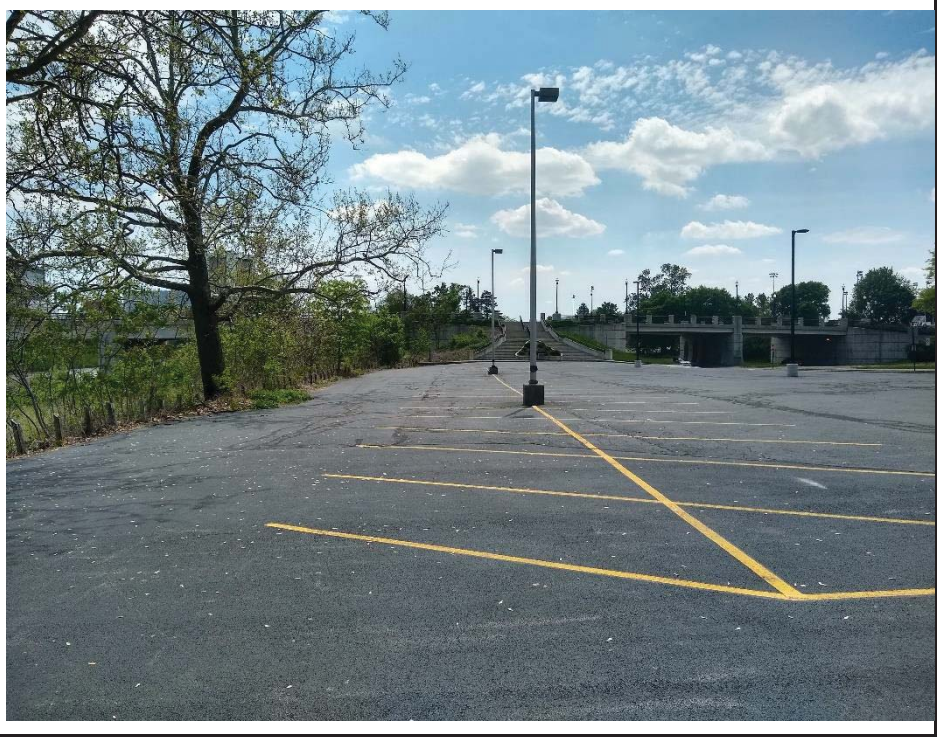
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 5 **Date:** May 7, 2019 **Feature:** **Comments:** Facing northeast; existing structures within the limits of the CHP Facility.	
Photo ID: Photo 6 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south; mowed and maintained area east of John H Herrick Drive. The existing vegetation will likely be removed as part of the CHP Project.	

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 7 **Date:** May 7, 2019 **Feature:** **Comments:** Facing north; mowed and maintained area east of John H Herrick Drive. The existing vegetation will likely be removed as part of the CHP Project.	
Photo ID: Photo 8 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west; mowed and maintained area north of John H Herrick Drive.	

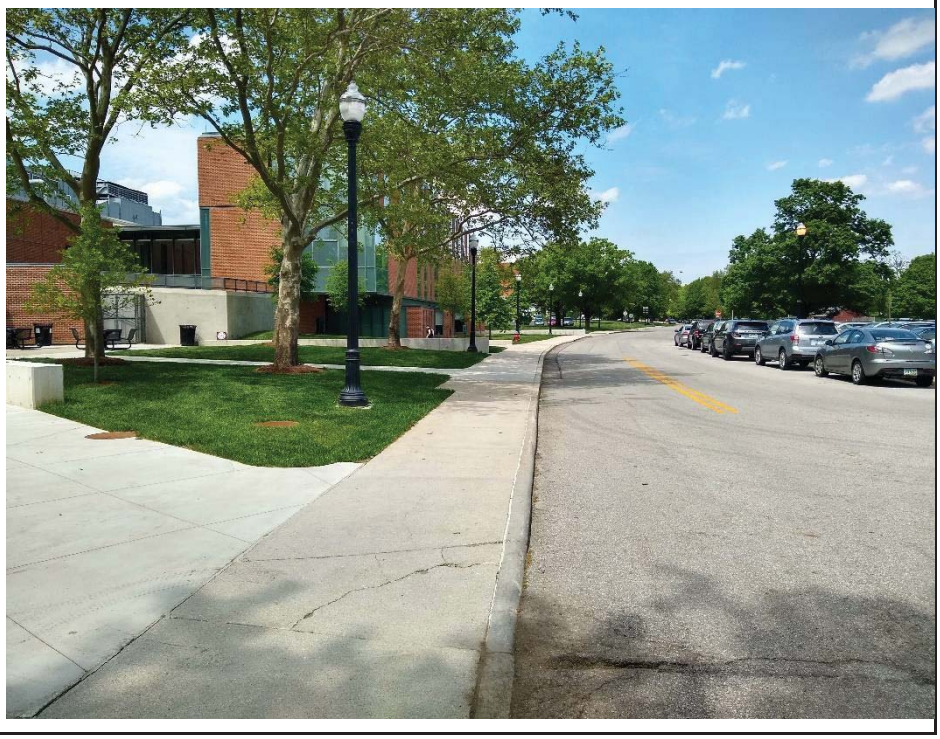
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 9 **Date:** May 7, 2019 **Feature:** **Comments:** Facing east; mowed and maintained utility right-of-way east of Olentangy River Road.	
Photo ID: Photo 10 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south; paved parking lot east of Olentangy River and north of Woody Hayes Drive.	

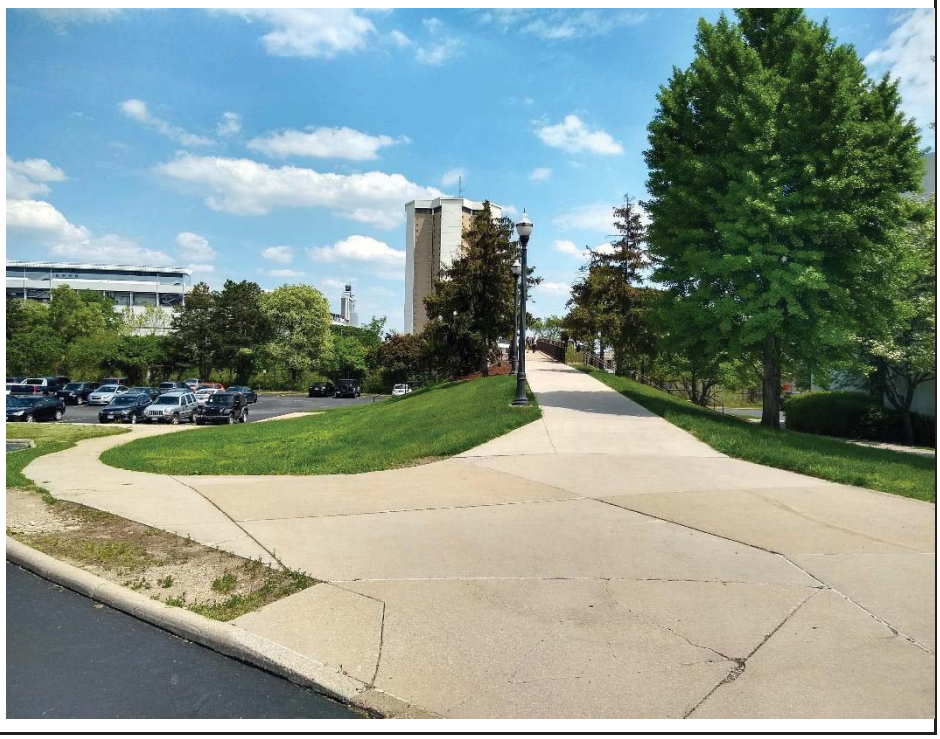
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 11 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west along Woody Hayes Drive; area is highly disturbed from previous construction and maintenance activities.	
Photo ID: Photo 12 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south along Coffey Drive; area is highly disturbed from previous construction and maintenance activities.	

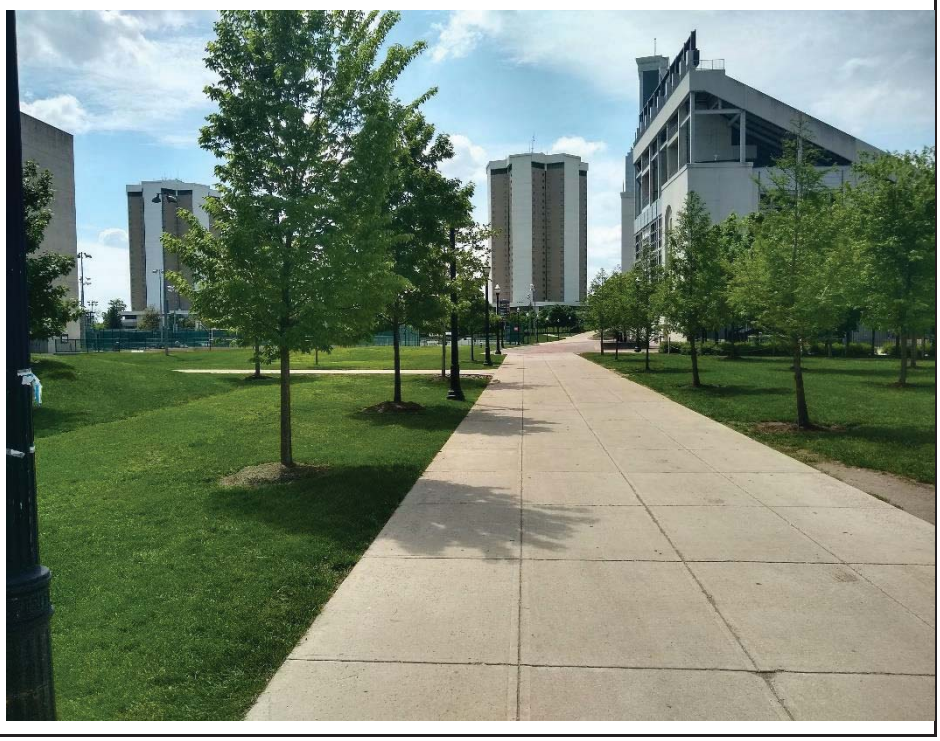
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 13 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west along Vernon L Tharp Street from Coffey Road. The area is highly disturbed from previous construction and maintenance activities.	
Photo ID: Photo 14 **Date:** May 7, 2019 **Feature:** **Comments:** Facing north along Coffey Drive; area is highly disturbed from previous construction and maintenance activities.	

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 15	
Date: May 7, 2019	
Feature:	
Comments: Facing east; highly disturbed area west of the pedestrian bridge over the Olentangy River.	
Photo ID: Photo 16	
Date: May 7, 2019	
Feature:	
Comments: Facing east; highly disturbed area west of the pedestrian bridge over the Olentangy River.	

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 17 **Date:** May 7, 2019 **Feature:** **Comments:** Facing east; highly disturbed area east of the pedestrian bridge over the Olentangy River.	
Photo ID: Photo 18 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west; highly disturbed area east of The Ohio Stadium.	

Engie	State: Ohio	County: Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID:
Photo 19

Date: May 7, 2019

Feature:

Comments:
Facing east along West 17th Avenue. Highly disturbed area east of The Ohio Stadium.

Photo ID:
Photo 20

Date: May 7, 2019

Feature:

Comments:
Facing northeast; mowed and maintained area north of West 17th Avenue.

EXHIBIT S: Ecological Resources Report Including Notification Letters to US Fish and Wildlife Service and Ohio Department of Natural Resources

SITE ECOLOGICAL STUDY REPORT

The Ohio State University
Combined Heat and Power Facility
Franklin County, Ohio

June 2019

TRC Project No. 314315.0000.0000

Prepared For:

TRC Environmental Corporation

Prepared By:

TRC Environmental Corporation

Mike Sponsler
Senior Project Manager

Justin Pitts
Ecological Project Manager

Results you can rely on

CONFIDENTIAL BUSINESS INFORMATION

Table of Contents

ACRONYMS II
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Acronyms

DOW	ODNR Division of Wildlife
GIS	Geographic Information System
GPS	Global Positioning System
IPaC	USFWS Information for Planning and Conservation
MW	Megawatt
NLCD	National Land Cover Database
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OAC	Ohio Administration Code
ODNR	Ohio Department of Natural Resources
OPSB	Ohio Power Siting Board
TRC	TRC Environmental Corporation
USACE	United States Army Corps of Engineers
USDA-NRCS	United States Department of Agriculture – Natural Resources Conservation Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

On behalf of TRC Environmental Corporation (TRC) has prepared this Site Characterization Report and Ecological Review as part of the environmental studies conducted for The Ohio State University (University) Combined Heat and Power Project (Project). The proposed facility will generate up to 105.5 megawatts (MW) of power.

The Project Area is the area in which the University will propose to include their Ohio Power Siting Board (OPSB) application for a certificate of environmental compatibility and public need. The land is entirely on an urban university campus owned by the University in Columbus, Franklin County, Ohio (Figure 1).

The study objectives were to provide information needed to address the requirements of the OPSB by identifying ecological features to be protected during project construction and operation.

Based on a review of regional geologic maps from the Ohio Department of Natural Resources (ODNR), the Project site is located in the Columbus Lowland Till Plain physiographic region of Ohio – a lowland with numerous broad streams and surrounded in all directions by relative uplands, with a regional slope toward the Scioto Valley; moderately low relief with elevations generally between 600 to 850 feet-MSL, or even higher near the Powell Moraine. The region is characterized by loamy, high-lime (west) to medium-lime (east) Wisconsinan-age till and extensive outwash in Scioto Valley that overlie Devonian- to Mississippian-age carbonate rocks, shales, and siltstones. According to web-based mapping from United States Department of Agriculture, Natural Resources Conservation Service, the Site contains Celina-Urban Land Complex (CfB), a loamy till with 2 to 6 percent slopes and urban land. The Celina-Urban land complex consists of a deep, moderately well drained, gently sloping Celina soil on broad upland areas between drainageways and areas of urban land.

The entire proposed disturbance area is comprised of previously disturbed urban lands for development of the University Project. Vegetation was comprised of urban lawns and sporadic ornamental trees. A total of 19 trees were identified for potential removal, two of which are potential bat roost trees located within 100 feet of John Herrick Drive. No NWI wetlands were found within the Project Area, however two (2) riverine wetlands (R2USA and R2UBH) and two (2) freshwater ponds were identified within a half-mile study radius. No NHD streams are located within the Project Area, however, the Olentangy River is located within the half-mile study radius (See Figure 2, Ecological Map). The river and its associated floodway will not be disturbed.

2.0 Methods

The preliminary site assessment and ecological site characterization were completed using a combination of a) existing information obtained from available public sources including reports, published literature, on-line databases, and geographic information system (GIS) data, b) field reconnaissance, and c) agency consultation.

2.1 Existing Information from Available Public Sources

TRC performed a literature review survey of plant and animal life within at least one-fourth mile of the Project Area. The following resources were utilized as part of this literature review:

- Google Earth™ ("Google Earth – Google Earth." Google Earth. Google, no date (n.d.) Web. 4 February 2019. https://earth.google.com/).
- Ohio Department of Natural Resources (ODNR), Division of Wildlife and USFWS, Ohio Ecological Services Field Office. "Ohio Mussel Survey Protocol." April 2018. https://wildlife.ohiodnr.gov/portals/wildlife/pdfs/licenses%20&%20permits/OH%20Mussel%20Survey%20Protocol.pdf
- ODNR Land Use/Land Cover Data (ODNR Division of Real Estate and Land Management. Web. 12 February 2019. https://apps.ohiodnr.gov/gims/response.asp?county=Franklin&category=Select
- ODNR National Heritage Database (ODNR Division of Wildlife. "Ohio.gov / search." ODNR Division of Wildlife (DOW). N.p., n.d. Web. 10 January 2019. http://wildlife.ohiodnr.gov/species-and-habitats/ohio-natural-heritage-database).
- U.S. Department of Agriculture (USDA), National Resource Conservation Service (NRCS), Web-Soil Survey (Web Soil Survey. N.p., n.d. Web. 17 May 2019. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx).
- USFWS Information for Planning and Conservation (IPaC) IPaC: Home. N.p., n.d. Web. 1 February 2019. https://ecos.fws.gov/ipac/).

- USFWS National Wetlands Inventory (NWI) (U.S. Fish and Wildlife Service (USFWS (2019a); National Wetlands Inventory; National Standards and Support Team. "Wetlands Mapper." Official Web page of the USFWS. N.p., n.d. Web. 21 May 2019. https://www.fws.gov/wetlands/data/Mapper.html).

2.2 Agency Correspondence

An environmental review request was sent to ODNR on December 13, 2018 (ODNR 2019). A response from ODNR was received on February 20, 2019. A Technical Assistance request was sent to USFWS on December 13, 2018. A response from USFWS was received on February 20, 2019 (Appendix C).

2.3 Field Reconnaissance

A field reconnaissance of the Study Area was conducted May 7, 2019 to complete the following:

- Ground-truth NLCD land cover types and locations;
- Document where land cover types provide habitat for species of concern;
- Ground-truth NWI mapped potential wetland locations;
- Document readily observable features that may serve to attract wildlife, if any; and
- Record incidental wildlife observations.

From these sources, TRC created a land cover map, a National Wetlands Inventory (NWI) wetlands map, and an Ecological Map for the OPSB application.

3.0 Results

3.1 Land Cover

Land Cover within the Project area is comprised entirely of previously disturbed urban lands developed for the University campus (Figure 1).

3.2 NWI Wetlands

Prior to conducting the field reconnaissance, in accordance with Ohio Administrative Code (OAC) 4906-4-08(B)(1)(c), a literature review of NWI maps (USFWSa NWI 2019) identified no wetlands.

3.3 Habitat Description

Correspondence also dated February 20, 2019, from the ODNR Natural Heritage Database (2019, indicates that the ODNR Division of Wildlife (DOW) is unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, or other protected natural areas on or within a 1.0-mile radius of the Study Area. Correspondence received from the USFWS (2019b) in a Technical Assistance Letter dated February 20, 2019, indicated that no federal wilderness areas, wildlife refuges or designated critical habitat were identified on or within a 1.0-mile radius of the Study Area.

Field surveys completed within the Study Area confirmed ODNR and USFWS results that no unique, sensitive or critical habitats were present. The facility disturbance area is 1.76 acres comprised of 1.35 acres of graveled lot and 0.41 acres of urban lawn. A total of 19 trees will be potentially removed for the project of which two have the characteristics of potential roost trees. No forest or woodlands will be removed. The two potential roost trees identified are in a single line along the west side of the existing greenhouse gravel pad and a busy street (John Herrick Drive). The remainder are urban lawn trees sporadically planted for landscaping. Removal of these trees and lawn grasses will cause negligible habitat impacts.

3.4 Wildlife Species

3.4.1 ODNR

The environmental review returned no rare or endangered species, unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, or other protected natural areas within a one-mile radius of the Project Area.

The Project is however, within the range of the Indiana bat (*Myotis sodalis*). If suitable habitat occurs within the Project Area and trees must be cut, the DOW recommended cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommended a mist net survey be conducted between June 1 and August 15, prior to any cutting.

The Natural Heritage Database has the following records at or within a one-mile radius of the project area:

- Elktoe (*Alasmidonta marginata*), SC, FSC
- Pocketbook (*Lampsilis ovat*a), E
- Kidneyshell (*Ptychobranchus fasciolaris*), SC
- Pondhorn (*Uniomerus tetralasmus*), T
- Rayed bean (*Villosa fabalis*), E, FE

The review was performed on the project area and additional one-mile radius. Records searched date from 1980. The Division of Wildlife (DOW) had the following comments. The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum)*, post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consist of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest

structure of surrounding roost trees. If suitable habitat within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31.

The Project is within the range of several aquatic species of mussels and fish (See Agency Correspondence in Appendix C). Due to the Project location, and the fact that no in-water work proposed in a perennial stream, this project is not likely to impact these species.

The project is within the range of the upland sandpiper (*Bartramia longicauda*), a state endangered bird. Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program (CRP).

3.4.2 USFWS

The USFWS (2019b) responded to queries that no federal wilderness areas, wildlife refuges or designated critical habitat exist within the vicinity of the Project Area.

Due to the project type, size, and location, the USFWS (2019b) does not anticipate adverse effects to any other federal endangered, threatened, proposed, or candidate species.

A USFWS (2019c) Information for Planning and Conservation (IPaC) search was completed for the Project Study Area on February 1, 2019. The IPaC search returned the following listings: two (2) mammal species, Indiana Bat (*Myotis sodalis*) and Northern Long-eared Bat (*Myotis septentrionalis*); one (1) fish species, Scioto Madtom (*Noturus trautmani*); five (5) freshwater mussel species, Clubshell (*Pleurobema clava*), Northern Riffleshell (*Epioblasma torulosa rangiana*), Rabbitsfoot (*Quadrula cylindrica cylindrica*), Rayed Bean (*Villosa fabalis*), and Snuffbox Mussel (*Epioblasma triquetra*); one (1) flowering plant, Running Buffalo Clover (*Trifolium stoloniferum*) as having ranges that overlap the Study Area. Several migratory Birds of Conservation Concern (BCC) were found with the Study Area: American bittern (*Botaurus lentiginosus*), Black-billed cuckoo (*Coccyzus erythropthalmus*), bobolink (*Dolichonyx oryzivorus*), Cerulean warbler (*Dendroica cerulea*), Eastern Whip-poor-will (*Antrostomus vociferus*), Kentucky Warbler (*Oporornis formosus*), Lesser Yellowlegs (*Tringa flavipes*), Prothonotary Warbler (*Protonotaria citrea*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Rusty Blackbird (*Euphagus carolinus*), and Wood Thrush (*Hylocichla mustelina*). Finally the Bald Eagle (*Haliaeetus leucocephalus*) was also listed in the IPaC, because of the Eagle Act or potential susceptibilities in offshore areas from certain types of development or activities. Impacts to any of the above listed species and/or their habitat is unlikely as the Project Area is not conducive to supporting these species. The Project Area is

located within an institutional development. In addition, the IPaC noted that there are no critical habitats at this location.

The Olentangy River is listed in the Ohio Mussel Survey Protocol as a Group 1 stream, which are small to mid-sized streams where federally listed species are not expected. The Olentangy River will be avoided and not be impacted by the construction of this Project, therefore impacts to freshwater mussel species are not expected.

Federally Threatened and Endangered Species

Indiana bat (*Myotis sodalis*)
Although Indiana bats have the potential to inhabit all counties in Ohio, based on data reviewed, the likelihood of occurrence of the Indiana bat within the Project Area is low. Only two potential roost tree were identified but they are not considered suitable habitat because they are isolated in a single tree line with no surrounding forest and are adjacent to a busy street and high human activity associated with the greenhouse operations and other campus activities.

Northern long-eared bat (*Myotis septentrionalis*)
The federally threatened northern long-eared bat range extends throughout most of southern Canada and the eastern and Midwestern United States (excluding parts of the southeast United States) and is primarily associated with North American forests (USFWS 2019b). Historically, the northern long-eared bat is found statewide in Ohio (USFWS 2019b). Although northern long-eared bat have the potential to inhabit all counties in Ohio, based on data reviewed, the likelihood of occurrence of the northern long-eared bat within the Project Area is low. Only two potential roost tree were identified but they are not considered suitable habitat because they are isolated in a single tree line with no surrounding forest and are adjacent to a busy street and high human activity associated with the greenhouse operations and other human campus activities.

Bald and Golden Eagle Protection Act
Bald eagle (*Haliaeetus leucocephalus*) habitat includes estuaries, large lakes, reservoirs, rivers and some seacoasts and marshes where they forage for fish. Bald eagles will also feed on waterfowl, turtles, rabbits, snakes, other small animals and carrion (USFWS 2017b). Bald eagles require a combination of readily available prey, perching areas, and nesting sites. In winter, bald eagles congregate near open water in tall trees for spotting prey and night roosts for shelter (USFWS 2017b).

Bald eagles nest along rivers in the Columbus area; however, none were identified by the agencies near to the Project. Due to the size and nature of the Project, it is not expected to

have an impact on bald eagles. Golden eagles (*Aquila chrysaetos*) are rare in Ohio and are not expected in the Study Area.

Based on the size, location and nature of the project on an urban campus, no impact to eagles are likely.

3.5 Special Status Lands

Agency correspondence and queries were based on the Project Area as well as the 1.0-mile (1.6-kilometer) radius of the surrounding area. Due to the size, location and nature of the Project, no impacts to special status lands are likely.

3.6 Plant Communities of Concern

No plant communities of concern were identified through agency queries (USFWS 2019b, ODNRa 2019) or data base reviews within the Study Area or the surrounding 1.0-mile radius. The Olentangy River is within 1,500 feet of the proposed facility. All areas to be disturbed have been previously disturbed by urban development (See Figure 3, Soil Survey). Utilities will cross beneath it as they will be inserted within existing conduits. No boring beneath the river will be conducted. No impacts to the river corridor below the Ordinary High Water line will occur. Plant communities and habitats of concern are unlikely to be affected due to the size, location and nature of proposed disturbance which will avoid high quality plant, animal and habitat resources.

4.0 Literature Cited

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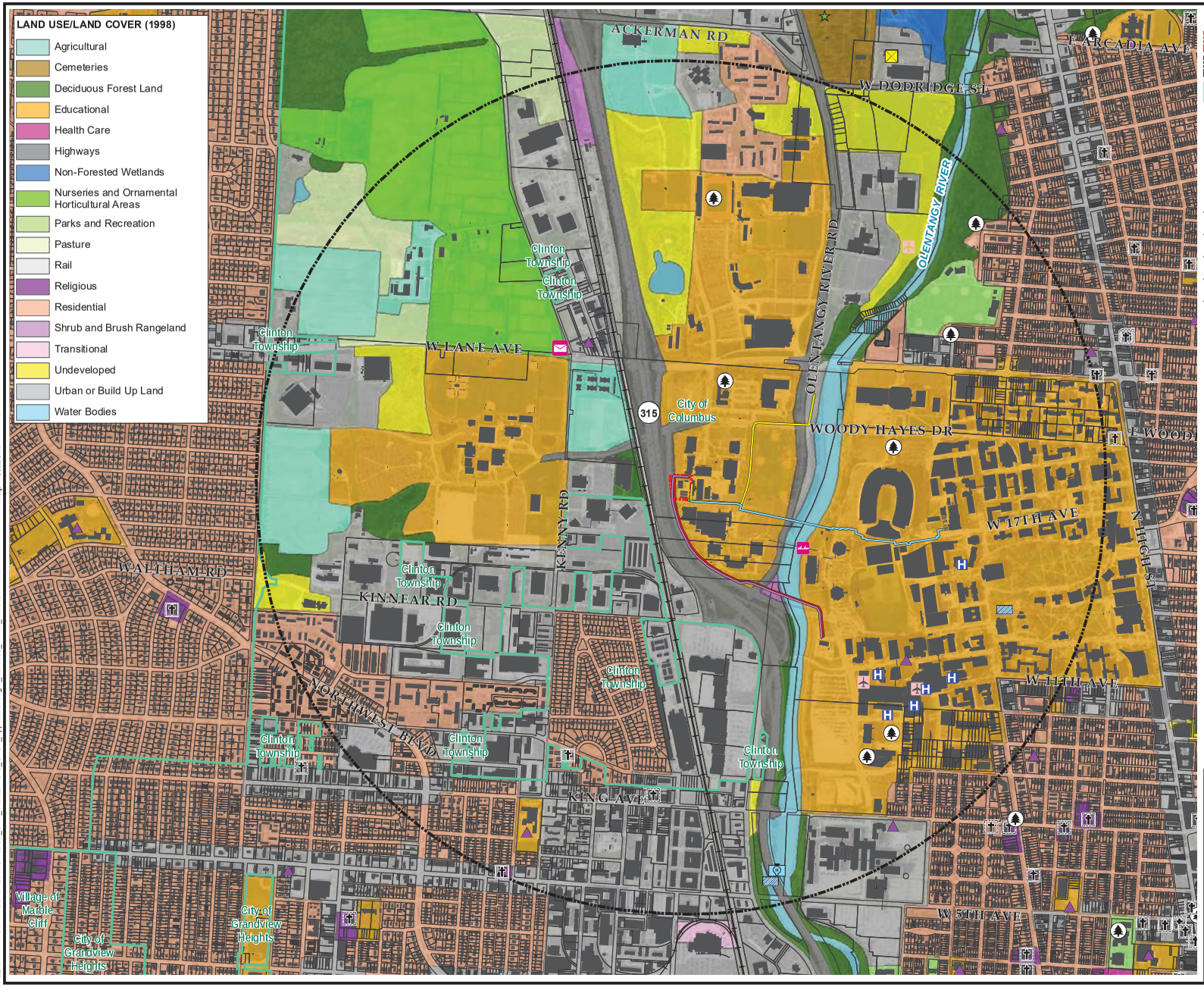
Appendix A

Figures



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TRC - GIS

LEGEND

- PROPOSED PLANT PROJECT AREA
- ONE-MILE BUFFER AROUND PROPOSED PLANT
- TOWNSHIP
- BUILDING FOOTPRINT
- PARCEL BOUNDARY
- RAILROAD

PROPOSED UTILITY ROUTES

- 13.8KV TRANSMISSION
- COMMUNICATIONS
- NATURAL GAS
- WATER
- SANITARY

POINTS OF INTEREST

- HELIPORT
- CANOE LAUNCH
- CEMETERY
- CHURCH
- DAM
- HOSPITAL
- PARK
- POST OFFICE
- RESERVOIR
- SCHOOL
- TOWER

NOTES

1. BASEMAP IMAGERY FROM 3-INCH ORTHOIMAGERY 2017 WEB SERVICE, CITY OF COLUMBUS.
2. LAND USE/ LAND COVER DATA FROM ODNR GIS SERVICES, DIVISION OF REAL ESTATE AND LAND MANAGEMENT,1998. DUE TO THE AGE OF THIS DATA, MORE RECENT DEVELOPMENT AND LAND USE CHANGES MAY NOT BE ACCURATELY REPRESENTED. A MORE CURRENT AND COMPLETE DATASET FOR THIS AREA WAS NOT AVAILABLE AT THE TIME OF MAPPING.
3. POINTS OF INTEREST DATA FROM USGS, THE NATIONAL MAP.
4. TOWNSHIP AND CITY BOUNDARIES, BUILDING FOOTPRINT DATA FROM FRANKLIN COUNTY AUDITOR WEBSITE.
5. UTILITIES DATA PROVIDED BY ENGIE.
6. PROPOSED PLANT PROJECT AREA AND BUFFER CREATED BY TRC.

0 600 1,200 Feet
1 " = 1,200 '
1:14,400

PROJECT:
THE OHIO STATE UNIVERSITYCOMBINED HEAT AND POWER PROJECT COLUMBUS, OH

TITLE:

DRAWN BY:	S. MOTURI	PROJ. NO.:	314315
CHECKED BY:	J. PAPEZ		
APPROVED BY:	M. SPONSLER		**MAP 1**
DATE:	JUNE 2019		

TRC

670 Morrison Rd, Suite 220
Gahanna, OH 43230
Phone: 614.655.5360
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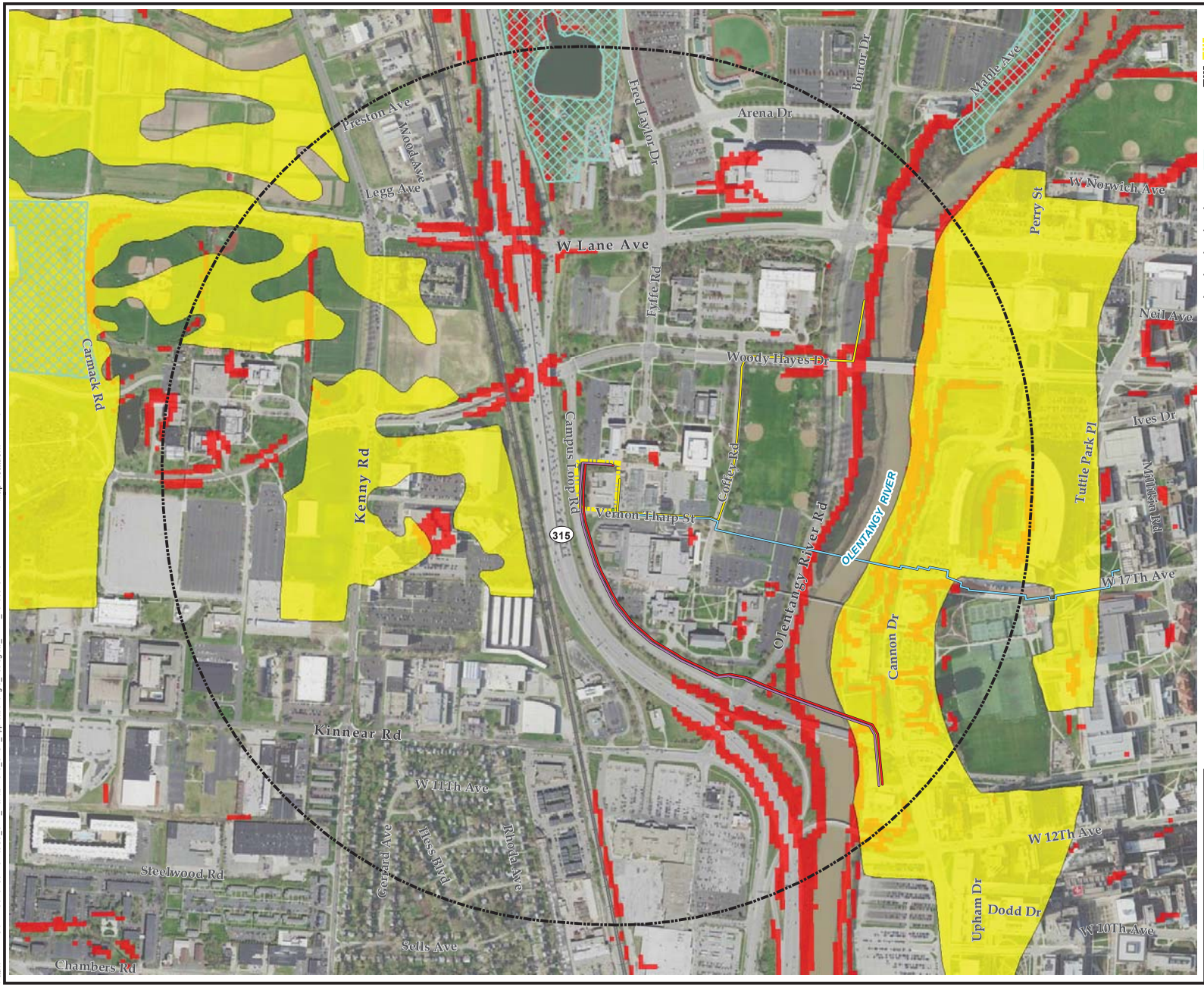
FILE NO.: Fig 4_Landuse_17x11_20190522.mxd



LEGEND

- PROPOSED PLANT PROJECT AREA
- HALF-MILE BUFFER FROM PROPOSED PLANT
- HIGHLY ERODIBLE SOIL
- SLOPE > 12%
- UNDEVELOPED LAND

PROPOSED UTILITY ROUTES

- 13.8KV TRANSMISSION
- COMMUNICATIONS
- NATURAL GAS
- WATER
- SANITARY

NOTE: NO WETLANDS OR WATER BODIES IDENTIFIED IN THE PROPOSED PROJECT AREA AND AREA OF ASSOCIATED FACILITIES.

NOTES

1. BASE MAP IMAGERY FROM 3-INCH ORTHOIMAGERY 2017 WEB SERVICE, CITY OF COLUMBUS.
2. SLOPE MAP IS GENERATED BY TRC FROM 2013 USGS 1/3 ARC-SECOND NED.
3. SOILS DATA ACQUIRED FROM NRCS SSURGO DATABASE. HIGHLY-ERODIBLE SOILS DEFINED AS THOSE WITH A DEFINED K FACTOR OF > 0.4.
4. UNDEVELOPED LAND IS FROM LAND USE/ LAND COVER DATA FROM ODNR GIS SERVICES, DIVISION OF REAL ESTATE AND LAND MANAGEMENT,1998. DUE TO THE AGE OF THIS DATA, MORE RECENT DEVELOPMENT AND LAND USE CHANGES MAY NOT BE ACCURATELY REPRESENTED. A MORE CURRENT AND COMPLETE DATASET FOR THIS AREA WAS NOT AVAILABLE AT THE TIME OF MAPPING.
5. PROPOSED PLANT PROJECT AREA AND BUFFER CREATED BY TRC.

0 300 600 Feet

1 " = 600 '

1:7,200

N

PROJECT:

THE OHIO STATE UNIVERSITY
COMBINED HEAT AND POWER PROJECT
COLUMBUS, OH

TITLE:

ECOLOGICAL MAP

DRAWN BY:	S. MOTURI	PROJ. NO.:	314315
CHECKED BY:	J. PAPEZ		
APPROVED BY:	M. SPONSLER		**MAP 2**
DATE:	JUNE 2019		

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FILE NO.: Fig 8_Ecological_17x11_20190523.mxd

Plot Date: 6/11/2019, 08:23:08 AM by JPAPEZ -- LAYOUT: ANSI B (11"x17")
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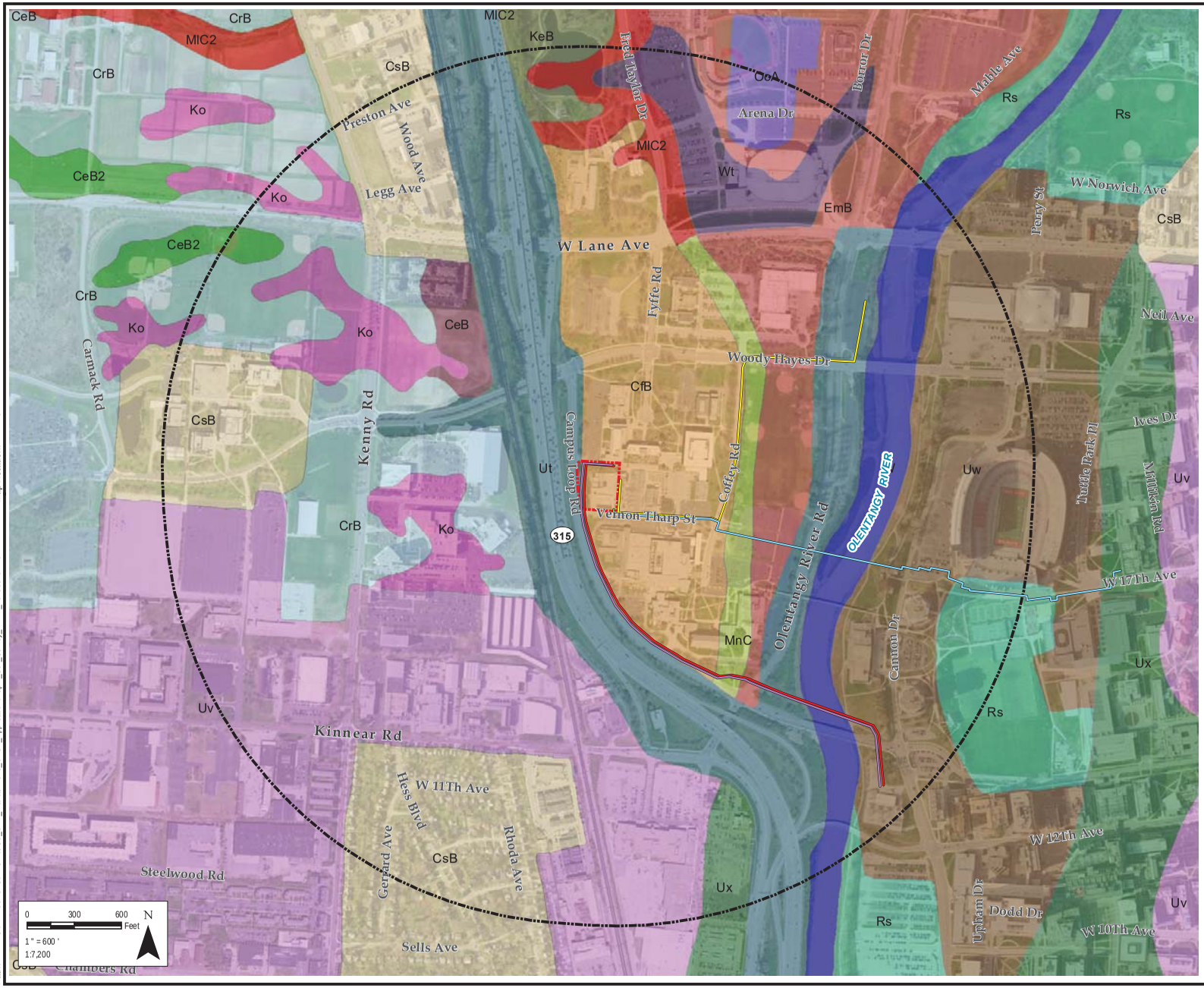
Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet (Foot US)
Map Rotation: 0

TRC - GIS



LEGEND

- PROPOSED PLANT PROJECT
- HALF-MILE BUFFER FROM PROPOSED PLANT
- CELINA SILT LOAM, 2 TO 6 PERCENT SLOPES
- CELINA SILT LOAM, 2 TO 6 PERCENT SLOPES, ERODED (CeB2)
- CELINA-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES (CfB)
- CROSBY SILT LOAM, 2 TO 6 PERCENT SLOPES
- CROSBY-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES (CsB)
- ELDEAN-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES (EmB)
- KENDALLVILLE SILT LOAM, 2 TO 6 PERCENT SLOPES
- KOKOMO SILTY CLAY LOAM (Ko)
- MIAMIAN SILTY CLAY LOAM, 6 TO 12 PERCENT SLOPES, ERODED (MIC2)
- MIAMIAN-URBAN LAND COMPLEX, 6 TO 12 PERCENT SLOPES (MnC)
- OCKLEY SILT LOAM, 0 TO 2 PERCENT SLOPES
- ROSS SILT LOAM, OCCASIONALLY FLOODED
- UDORTHENTS-URBAN LAND COMPLEX, GENTLY ROLLING (Ut)
- URBAN LAND-CELINA COMPLEX, 2 TO 12 PERCENT SLOPES (Uv)
- URBAN LAND-GENESEE COMPLEX, OCCASIONALLY FLOODED (Uw)
- URBAN LAND-OCKLEY COMPLEX, 0 TO 6 PERCENT SLOPES (Ux)
- WATER (W)
- WESTLAND SILTY CLAY LOAM (Wt)

PROPOSED UTILITY ROUTES

- 13.8KV TRANSMISSION
- COMMUNICATIONS
- NATURAL GAS
- WATER
- SANITARY

NOTES

1. BASE MAP IMAGERY FROM 3-INCH ORTHOIMAGERY 2017 WEB SERVICE, CITY OF COLUMBUS.
2. SOIL SURVEY DATA FROM ODNR, 1999
3. PROPOSED PLANT BOUNDARY AND BUFFER CREATED BY TRC.

PROJECT: THE OHIO STATE UNIVERSITY COMBINED HEAT AND POWER PROJECT COLUMBUS, OH

TITLE: SOIL SURVEY MAP

DRAWN BY:	W. EVARTS	PROJ. NO.:	314315
CHECKED BY:			MAP 3
APPROVED BY:			
DATE:	JUNE 2019		

TRC

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FILE NO.: Map 7_Soil_Survey_17x11_20190529.mxd

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Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet (Foot US)
Map Rotation: 0

TRC - GIS

Appendix B
Photographic Log

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID:
Photo 1

Date: May 7, 2019

Feature:

Comments:
Facing west along Vernon L Tharp Street. The area is highly disturbed from previous construction and maintenance activities.

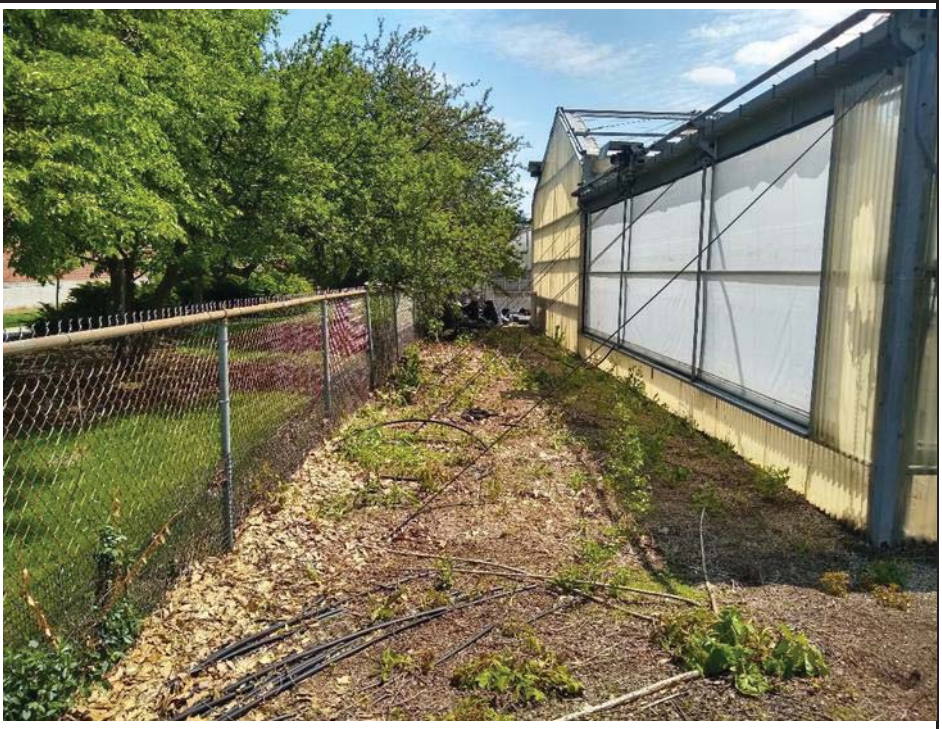
Photo ID:
Photo 2

Date: May 7, 2019

Feature:

Comments:
Facing north along the eastern limits of the Combined Heat and Power (CHP) Facility. The area is highly disturbed from previous construction and maintenance activities.

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 3 **Date:** May 7, 2019 **Feature:** **Comments:** Facing east along the northern limits of the CHP facility. The area is highly disturbed from previous construction and maintenance activities.	
Photo ID: Photo 4 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south along the western limits of the Combined Heat and Power (CHP) Facility. The area is highly disturbed from previous construction and maintenance activities.	

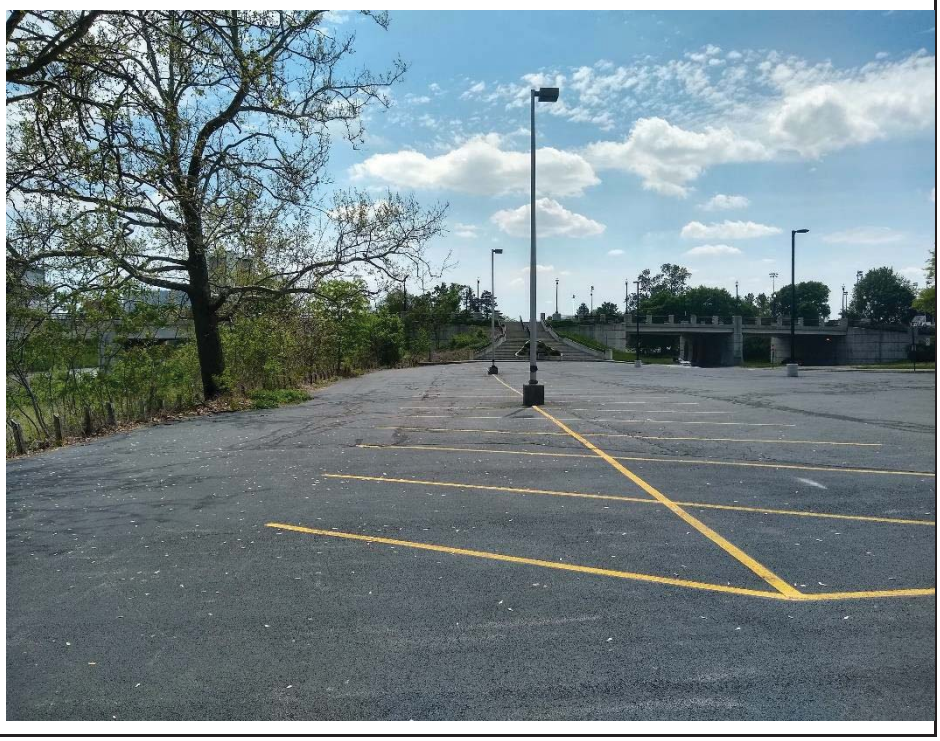
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 5 **Date:** May 7, 2019 **Feature:** **Comments:** Facing northeast; existing structures within the limits of the CHP Facility.	
Photo ID: Photo 6 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south; mowed and maintained area east of John H Herrick Drive. The existing vegetation will likely be removed as part of the CHP Project.	

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 7 **Date:** May 7, 2019 **Feature:** **Comments:** Facing north; mowed and maintained area east of John H Herrick Drive. The existing vegetation will likely be removed as part of the CHP Project.	
Photo ID: Photo 8 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west; mowed and maintained area north of John H Herrick Drive.	

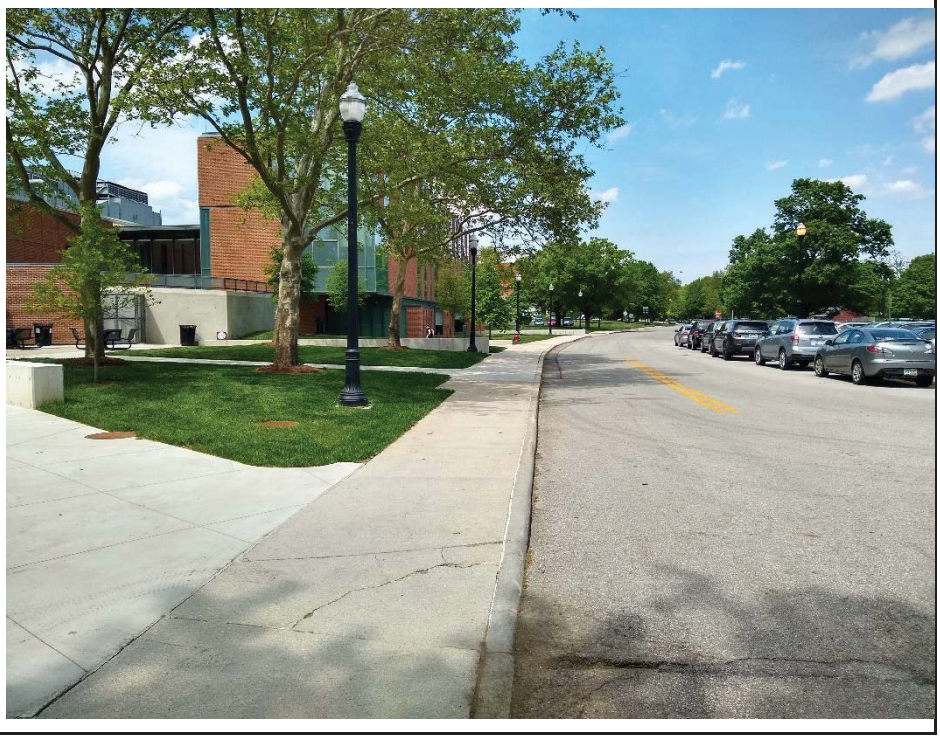
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 9 **Date:** May 7, 2019 **Feature:** **Comments:** Facing east; mowed and maintained utility right-of-way east of Olentangy River Road.	
Photo ID: Photo 10 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south; paved parking lot east of Olentangy River and north of Woody Hayes Drive.	

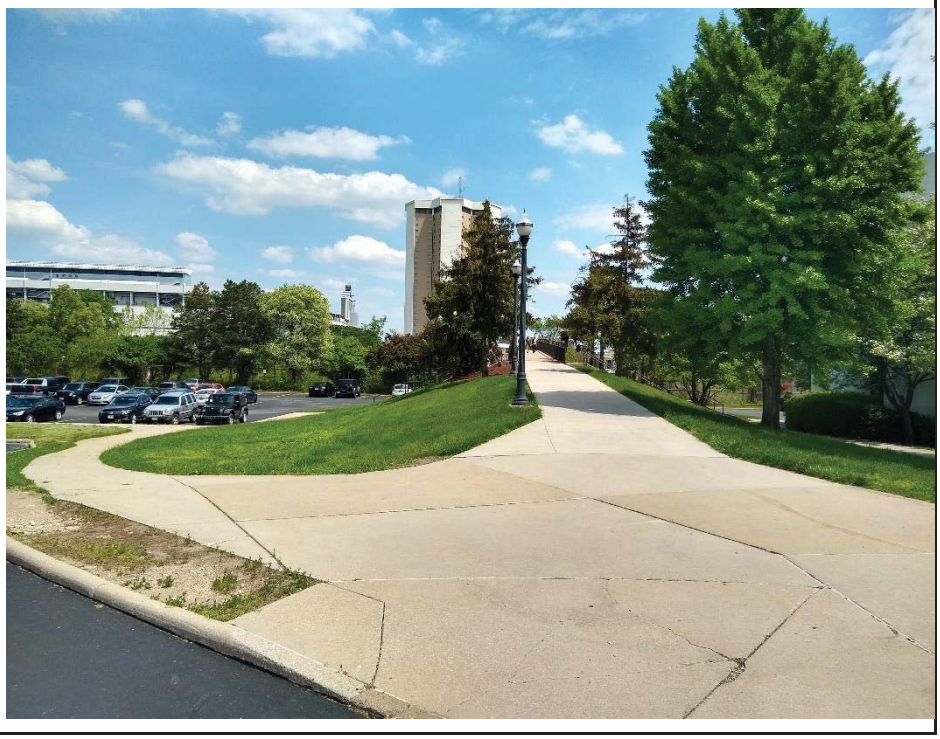
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 11 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west along Woody Hayes Drive; area is highly disturbed from previous construction and maintenance activities.	
Photo ID: Photo 12 **Date:** May 7, 2019 **Feature:** **Comments:** Facing south along Coffey Drive; area is highly disturbed from previous construction and maintenance activities.	

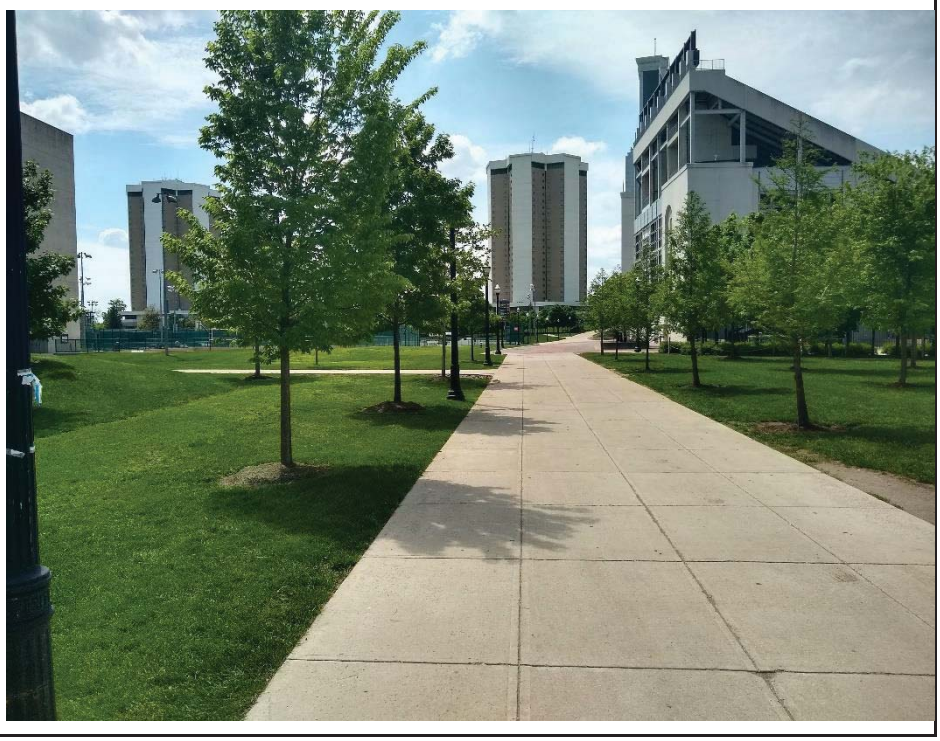
Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 13 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west along Vernon L Tharp Street from Coffey Road. The area is highly disturbed from previous construction and maintenance activities.	
Photo ID: Photo 14 **Date:** May 7, 2019 **Feature:** **Comments:** Facing north along Coffey Drive; area is highly disturbed from previous construction and maintenance activities.	

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 15	
Date: May 7, 2019	
Feature:	
Comments: Facing east; highly disturbed area west of the pedestrian bridge over the Olentangy River.	
Photo ID: Photo 16	
Date: May 7, 2019	
Feature:	
Comments: Facing east; highly disturbed area west of the pedestrian bridge over the Olentangy River.	

Engie	**State**: Ohio	**County:** Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID: Photo 17 **Date:** May 7, 2019 **Feature:** **Comments:** Facing east; highly disturbed area east of the pedestrian bridge over the Olentangy River.	
Photo ID: Photo 18 **Date:** May 7, 2019 **Feature:** **Comments:** Facing west; highly disturbed area east of The Ohio Stadium.	

Engie	State: Ohio	County: Franklin
Project Name: The Ohio State University Combined Heat and Power Project		

Photo ID:
Photo 19

Date: May 7, 2019

Feature:

Comments:
Facing east along West 17th Avenue. Highly disturbed area east of The Ohio Stadium.

Photo ID:
Photo 20

Date: May 7, 2019

Feature:

Comments:
Facing northeast; mowed and maintained area north of West 17th Avenue.

Appendix C
Agency Correspondence

921 Eastwind Drive
Suite 122
Westerville, OH 43081

614.423.6334 PHONE
614.423.6373 FAX

www.trcsolutions.com

January 10, 2019

Electronically Submitted to:

Dan Everson
Field Office Supervisor
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, OH 43230

RE: USFWS Endangered Species Act Section 7 Consultation

Dear Mr. Everson:

On behalf of The Ohio State University and Engie Services, TRC is requesting Technical Assistance regarding the Smart$_E$ Campus Combined Heat and Power (CHP) Project (Project) located in the City of Columbus, Franklin County, Ohio (40.002074, -83.29015). TRC is requesting assistance from the U.S. Fish and Wildlife Service (USFWS) for information regarding federally listed endangered, threatened and candidate species, or their habitats that may be impacted by the proposed project, as well as information regarding known eagle nest locations within 1-mile of the proposed project.

The proposed Project includes the siting of the approximate 0.9-acre CHP Facility with Interconnection System in Franklin County, Ohio. **See Project Area Maps in Attachment A**. The proposed Project area is located within an urbanized (developed) area approximately 700 feet (0.13 mile) southeast of the Woody Hayes Drive intersection with John H Herrick Drive. The proposed Project will include buried chilled water, heating hot water, and steam lines from the site to the interconnection points. The lines will be attached to the existing pedestrian footbridge that spans the Olentangy River. Buried electrical and communications lines will run along Herrick Road and beneath the Olentangy River inside an existing conduit to their interconnection points. Minimal tree clearing, if any, is anticipated. Construction of the proposed facility is anticipated to commence in January 2020 and be completed by April 2021.

TRC appreciates USFWS's assistance with this very important project. If you have any questions or wish to discuss further, please do not hesitate to contact me directly at 614.623.0485 or electronically at MSponsler@trcsolutions.com.

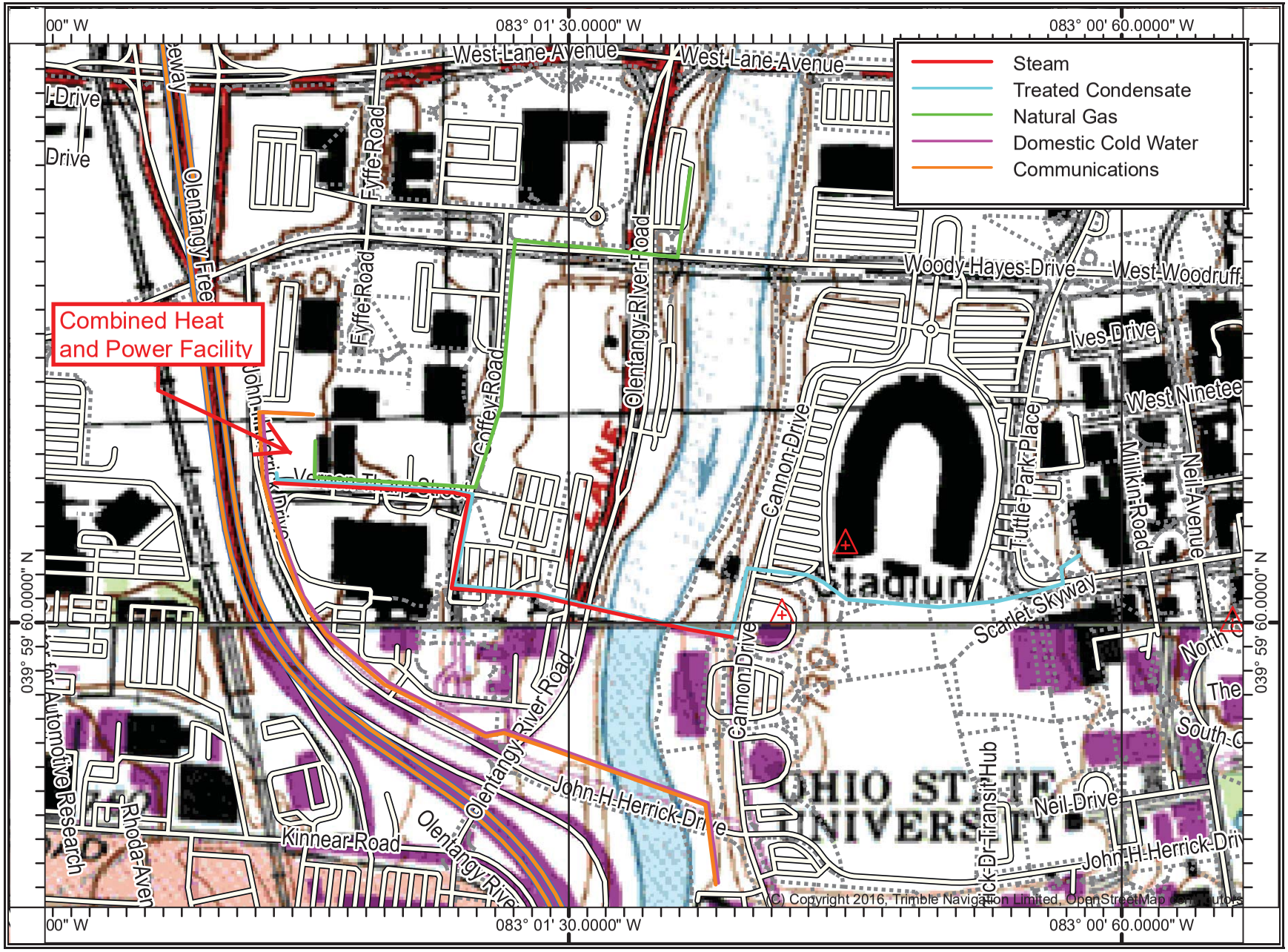
Kind Regards,

TRC Environmental Corporation

FOR: Mike Sponsler
Senior Project Manager

Attachments:

A: Project Area Maps
B: Project Area Photographs



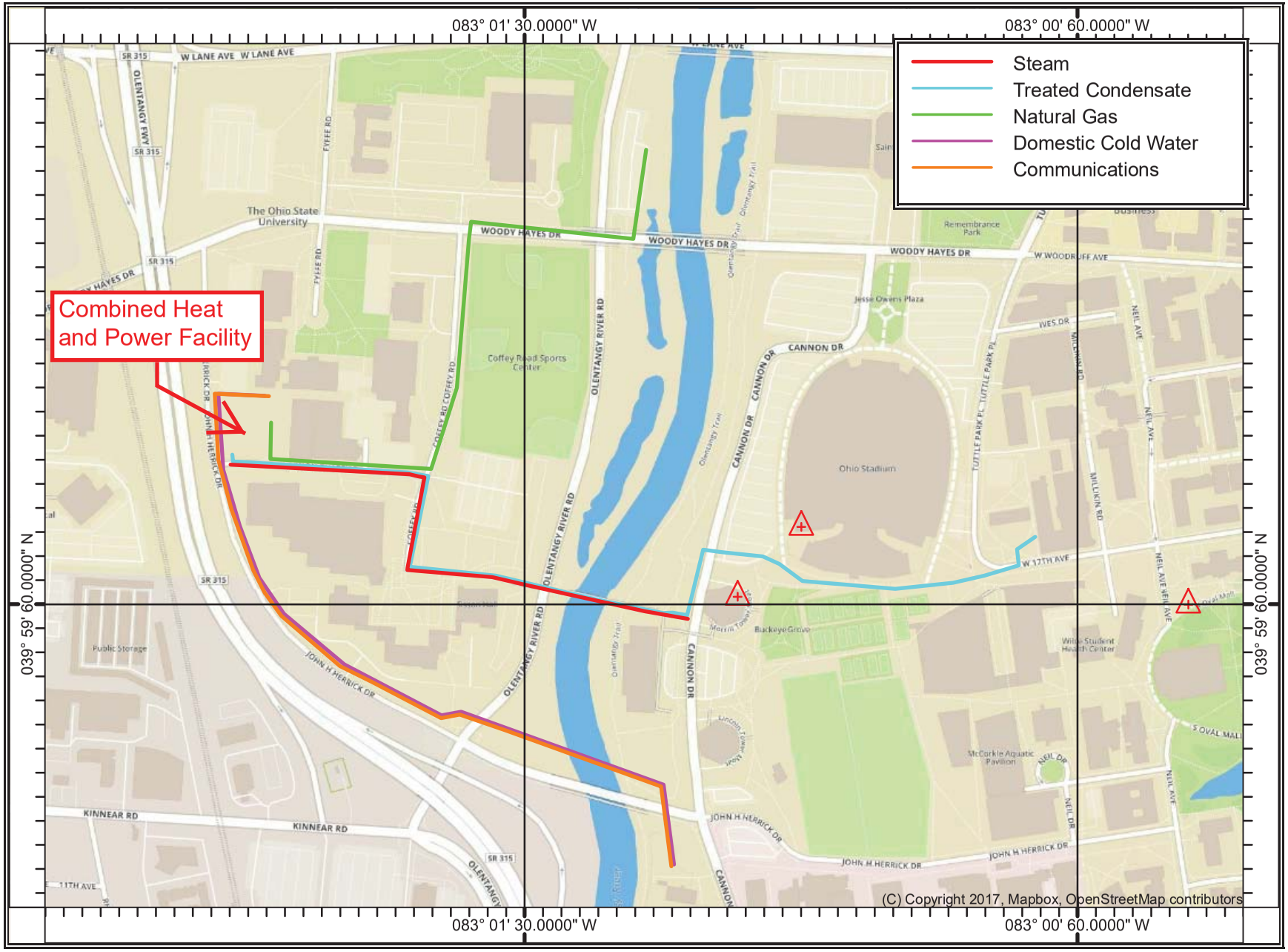
SCALE 1:7200

0 1000 2000

Feet

N

Project Area Map
Combine Heat and Power Project



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0 1000 2000

Feet

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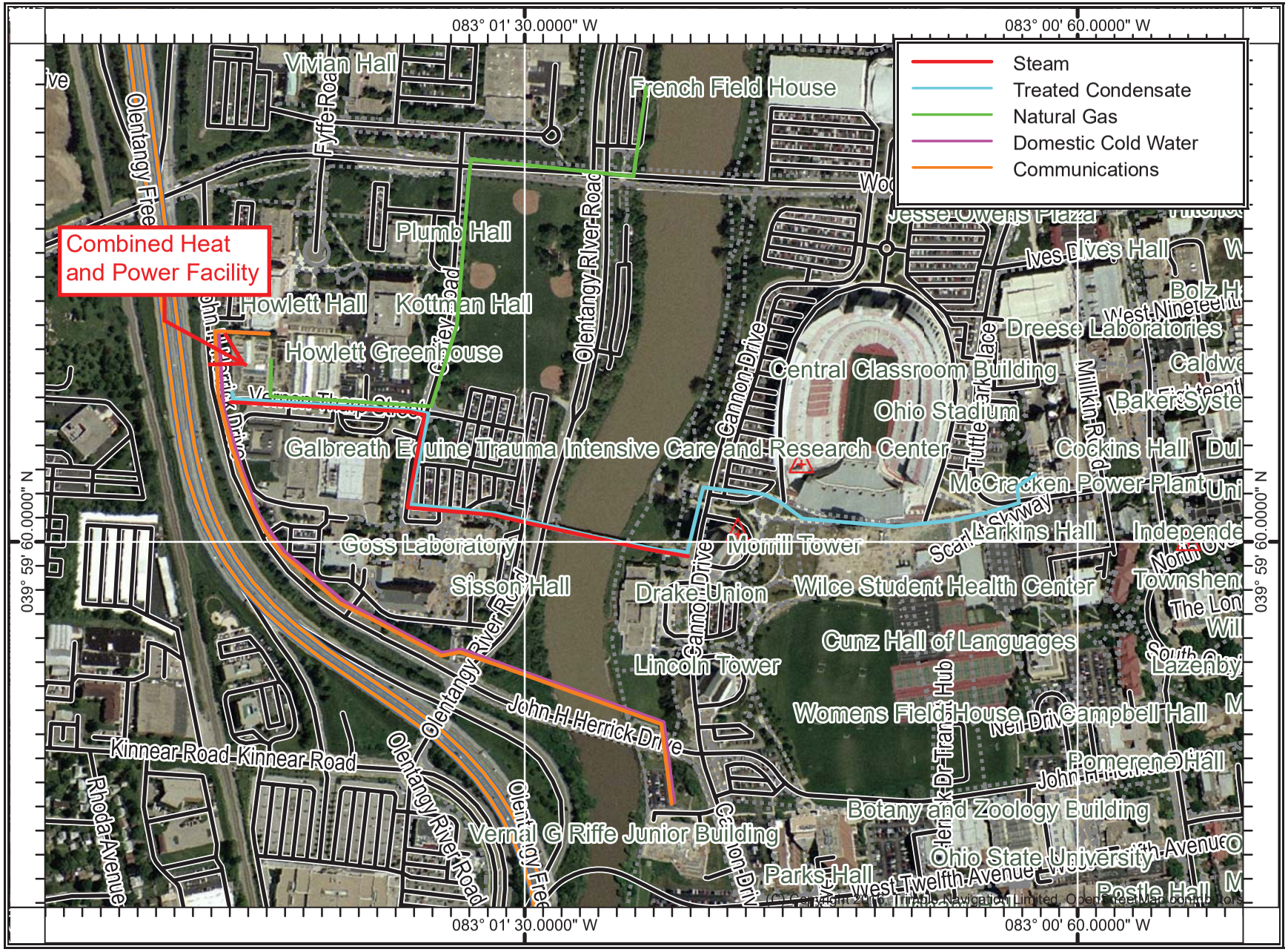
Project Area Map
Combine Heat and Power Project



SCALE 1:7200

0 1000 2000

Feet

N

Project Area Map
Combine Heat and Power Project

Attachment B
Project Area Photographs

PHOTOGRAPHIC RECORD
Combined Heat and Power

Client Name:	Site Location:	Project No.
Engie Services	Franklin County, Ohio	314315.0000.0000

Photo No. 1.

Date: January 7, 2019

Description: Facing northeast, view of the proposed Project area east of John H Herrick Drive. The existing structures will be removed for construction of the Combined Heat and Power Facility.

Photo No. 2.

Date: January 7, 2019

Description: Facing north, view of the area where the Combined Heat and Power Facility will be constructed.

Molnar, Maggie

From: Sponsler, Mike
Sent: Wednesday, February 20, 2019 3:39 PM
To: Molnar, Maggie
Subject: Fwd: Smart Campus Combined Heat and Power Project, OSU, Columbus Franklin County

Get Outlook for Android

From: susan_zimmermann@fws.gov <susan_zimmermann@fws.gov> on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Wednesday, February 20, 2019 1:34:24 PM
To: Sponsler, Mike
Subject: Smart Campus Combined Heat and Power Project, OSU, Columbus Franklin County

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-0690

Dear Mr. Sponsler,

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 Ashfield
Field Office Supervisor

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Franklin County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

NOT FOR CONSULTATION

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis This species only needs to be considered if the following condition applies: • Incidental take of the northern long-eared bat is not prohibited at this location. Federal action agencies may conclude consultation using the streamlined process described at https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Scioto Madtom Noturus trautmani No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5395	Endangered

Clams

NAME	STATUS
Clubshell Pleurobema clava No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3789	Endangered
Northern Riffleshell Epioblasma torulosa rangiana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/527	Endangered
Rabbitsfoot Quadrula cylindrica cylindrica There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5165	Threatened
Rayed Bean Villosa fabalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5862	Endangered

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Snuffbox Mussel Epioblasma triquetra No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4135	Endangered

Flowering Plants

NAME	STATUS
Running Buffalo Clover Trifolium stoloniferum No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2529	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be

found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Bittern Botaurus lentiginosus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6582	Breeds Apr 1 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

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Cerulean Warbler Dendroica cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 21 to Jul 20
Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

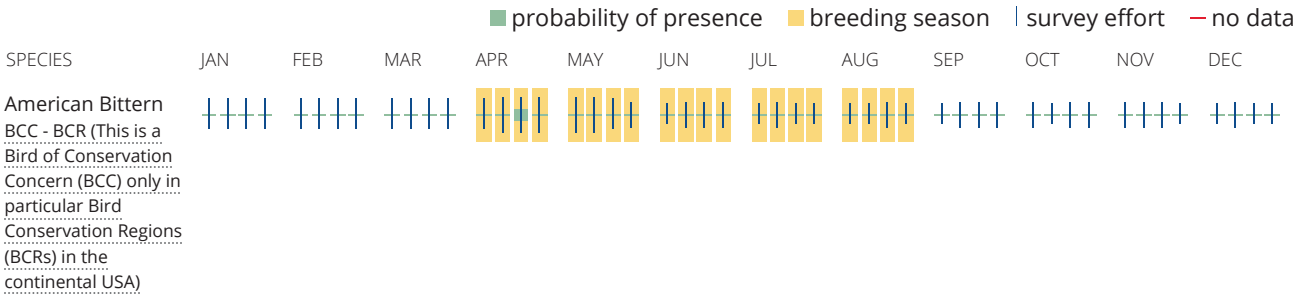
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

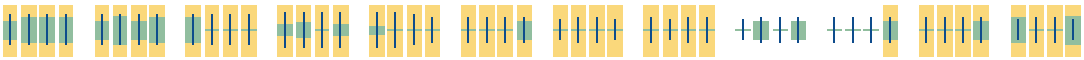
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

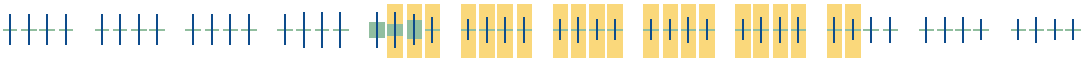
NOT FOR CONSULTATION



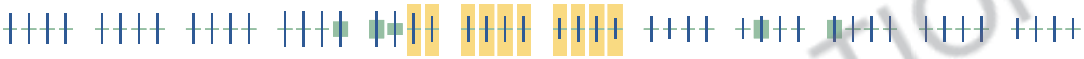
Bald Eagle
Non-BCC Vulnerable
(This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



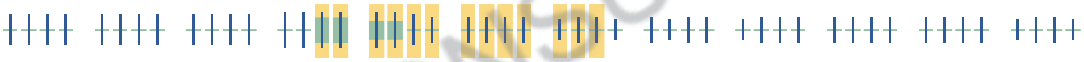
Black-billed Cuckoo
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



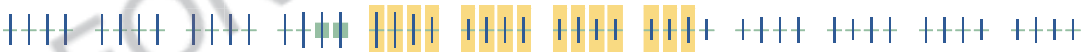
Bobolink
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



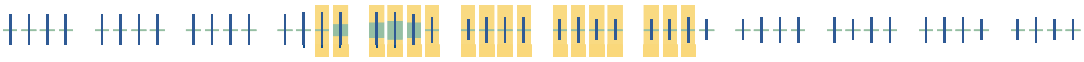
Cerulean Warbler
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Eastern Whip-poor-will
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



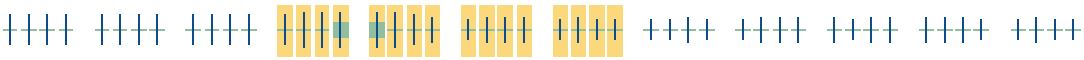
Kentucky Warbler
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



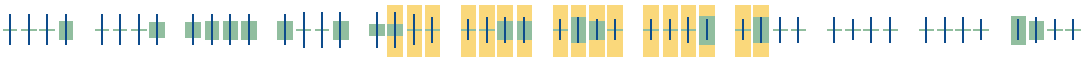
Lesser Yellowlegs
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

NOT FOR CONSULTATION

Prothonotary Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

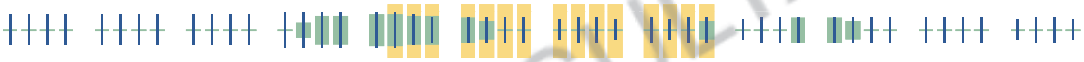


Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Rusty Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

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The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

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The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

921 Eastwind Drive
Suite 122
Westerville, OH 43081

614.423.6334 PHONE
614.423.6373 FAX

www.trcsolutions.com

January 9, 2019

Electronically Submitted to:

Ohio Department of Natural Resources, Division of Wildlife
2045 Morse Road, Building G
Columbus, OH 43229-6693

RE: Request for Environmental Review

To Whom It May Concern:

On behalf of The Ohio State University and Engie Services, TRC is requesting Technical Assistance regarding the $Smart_E$ Campus Combined Heat and Power (CHP) Project (Project) located in the City of Columbus, Franklin County, Ohio (40.002074, -83.29015). TRC is requesting assistance from the Ohio Department of Natural Resources (ODNR) with coordination through the Departments Environmental Review Program and under the authority of the National Environmental Policy Act (NEPA), the endangered Species Act (ESA), the Fish and Wildlife Coordination Act (FWCA), the Clean Water Act (CWA), the Coastal Zone Management Act (CZMA), and other applicable laws and regulations.

The proposed Project includes the siting of the approximate 2-acre CHP Facility with Interconnection System in Franklin County, Ohio. **See Project Area Maps in Attachment A**. The proposed Project area is located within an urbanized (developed) area approximately 700 feet (0.13 mile) southeast of the Woody Hayes Drive intersection with John H Herrick Drive. The proposed Project will include buried chilled water, heating hot water, and steam lines from the site to the interconnection points. The lines will be attached to the existing pedestrian footbridge that spans the Olentangy River. Buried electrical and communications lines will run along Herrick Road and beneath the Olentangy River inside an existing conduit to their interconnection points. Minimal tree clearing, if any, is anticipated. Construction of the proposed facility is anticipated to commence in December 2019 and be completed by April 2021. Appropriate Best Management Practices (BMPs) will be utilized during construction of the proposed facility to mitigate construction impacts, including, but not limited to noise, dust, utility disruption, debris and soil disposal, water quality, disruption of traffic or access to properties, safety, and security.

TRC appreciates ODNR's assistance with this very important project. If you have any questions or wish to discuss further, please do not hesitate to contact me directly at 614.623.0485 or electronically at MSponsler@trcsolutions.com.

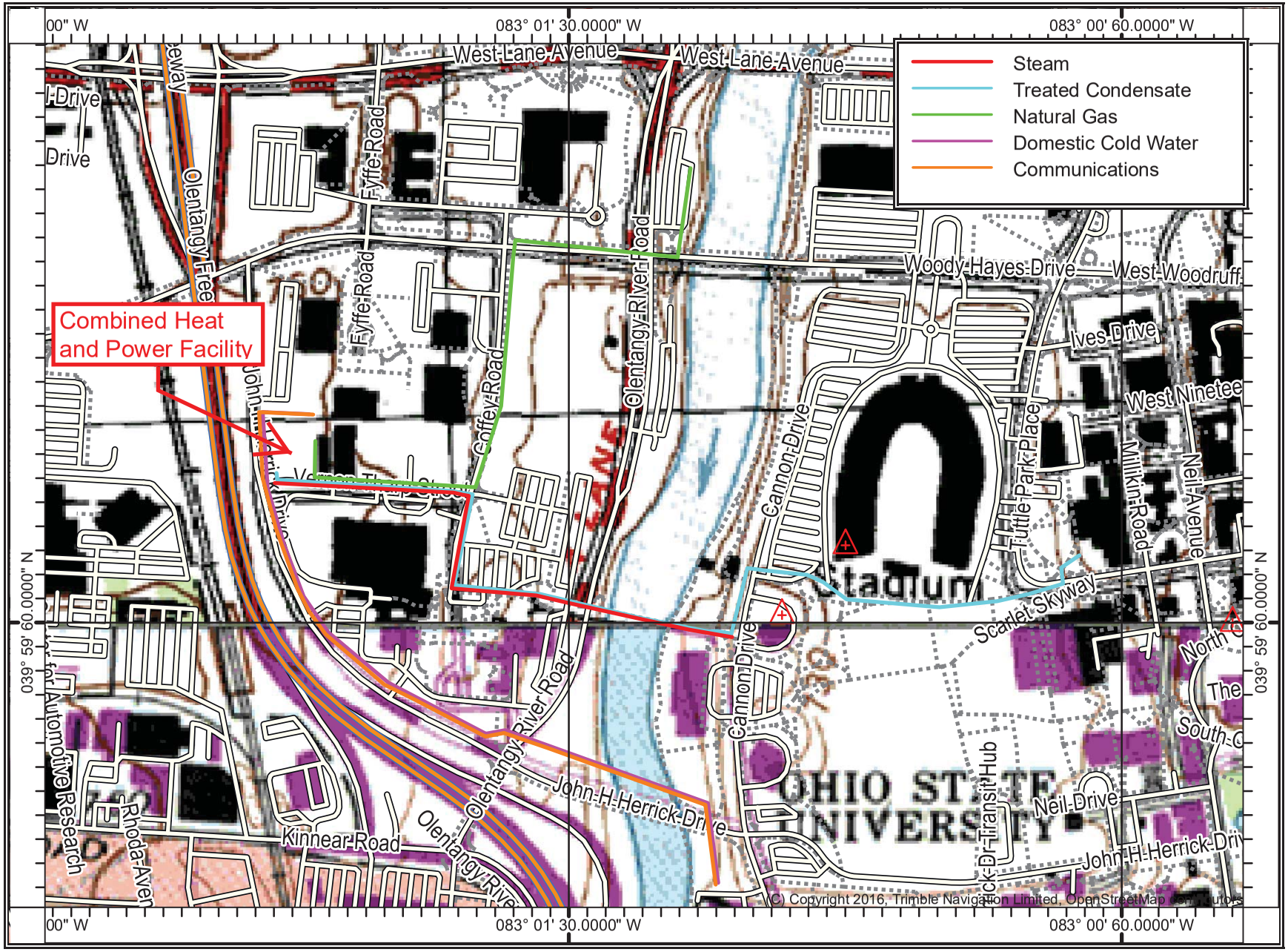
Kind Regards,

TRC Environmental Corporation

Mike Sponsler
Senior Project Manager

Attachments:
A: Project Area Maps
B: Project Area Photographs

Attachment A
Project Area Maps



SCALE 1:7200

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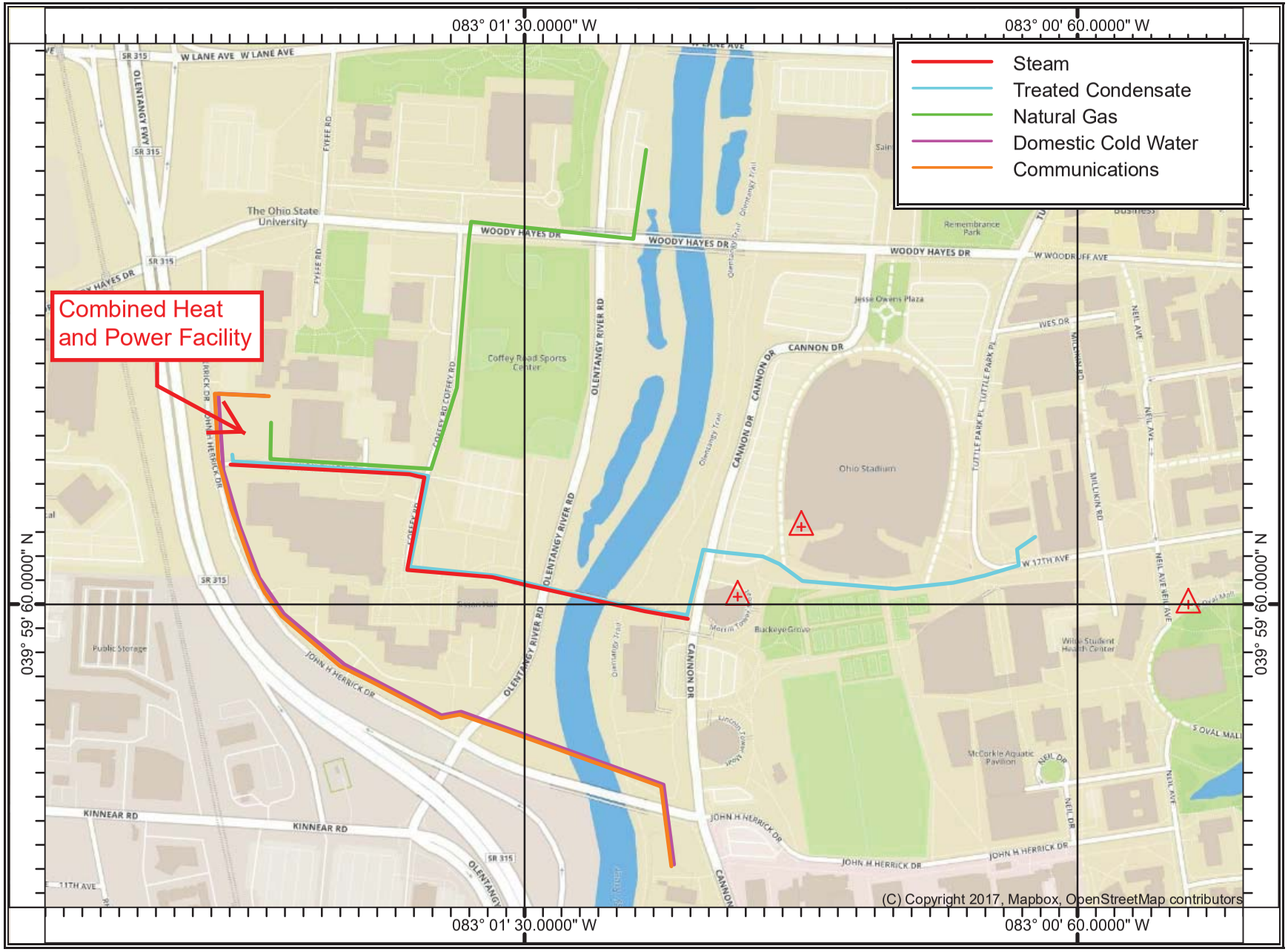
Feet

N

Project Area Map
Combine Heat and Power Project



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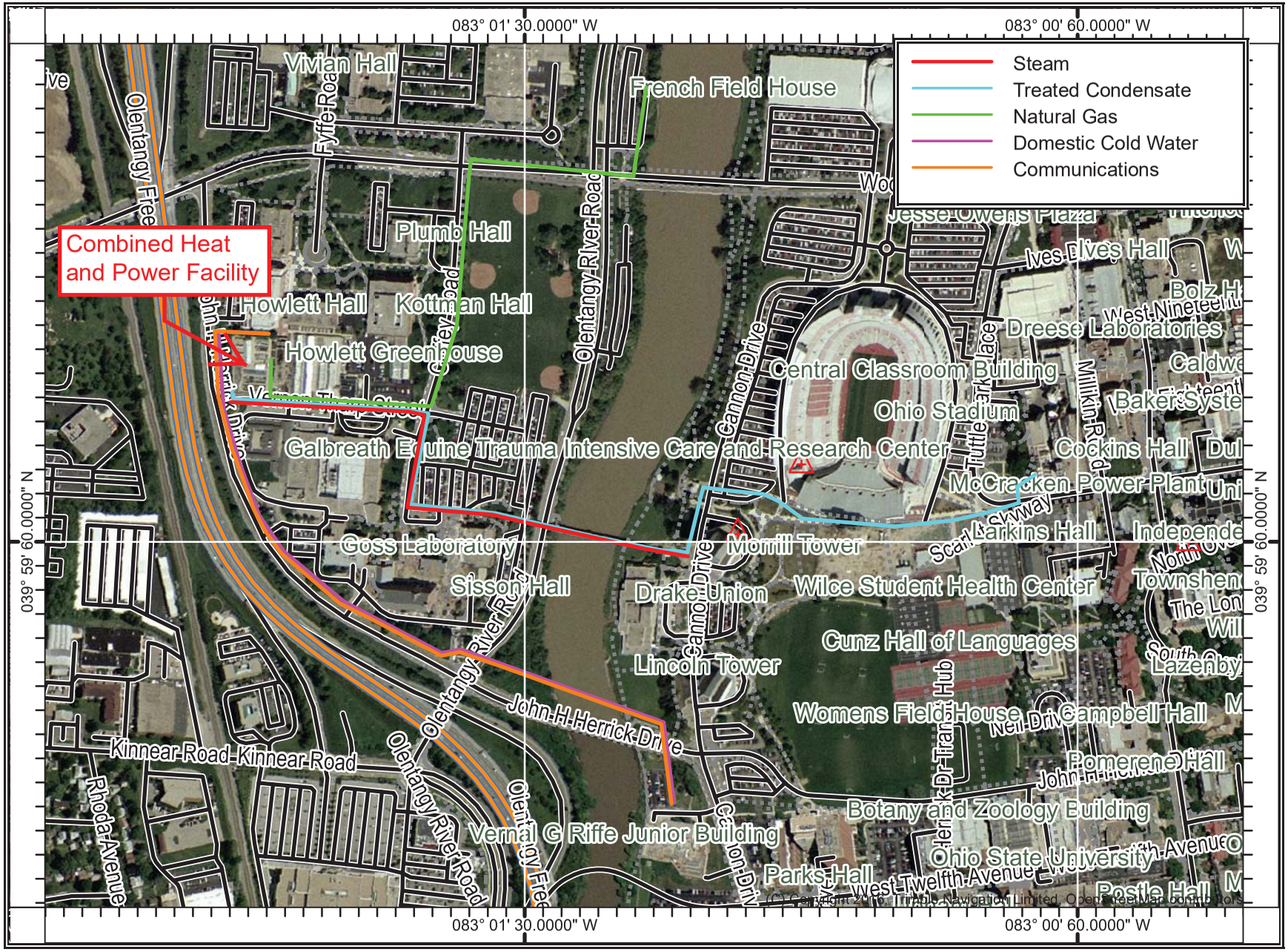
Feet

N

Project Area Map
Combine Heat and Power Project



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Feet

N

Project Area Map
Combine Heat and Power Project

Attachment B
Project Area Photographs

PHOTOGRAPHIC RECORD
Combined Heat and Power

Client Name:	Site Location:	Project No.
Engie Services	Franklin County, Ohio	314315.0000.0000

Photo No. 1.

Date: January 7, 2019

Description: Facing northeast, view of the proposed Project area east of John H Herrick Drive. The existing structures will be removed for construction of the Combined Heat and Power Facility.

Photo No. 2.

Date: January 7, 2019

Description: Facing north, view of the area where the Combined Heat and Power Facility will be constructed.

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

February 20, 2019

Mike Sponsler
TRC
921 Eastwind Drive, Suite 122
Westerville, Ohio 43081

Re: 19-029; Smart Campus Combined Heat and Power Project

Project: The proposed project involves the installation of buried water and steam lines from the site to the interconnection points.

Location: The proposed project is located in the City of Columbus, Franklin County, Ohio.

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

Natural Heritage Database: The Natural Heritage Database has the following records at or within a one-mile radius of the project area:

Elktoe (*Alasmidonta marginata*), SC, FSC
Pocketbook (*Lampsilis ovata*), E
Kidneyshell (*Ptychobranchus fasciolaris*), SC
Pondhorn (*Uniomerus tetralasmus*), T
Rayed bean (*Villosa fabalis*), E, FE

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity. Additional comments on some of the features may be found in pertinent sections below.

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

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

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

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

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

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

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, the popeye shiner (*Notropis ariommus*), a state endangered fish, the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, the spotted darter

(*Etheostoma maculatum*), a state endangered fish, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the tonguetied minnow (*Exoglossum laurae*), a state threatened fish, the paddlefish (*Polyodon spathula*) a state threatened fish, and the Tippecanoe darter (*Etheostoma tippecanoe*), a state threatened fish. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact these species.

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

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

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

John Kessler
Environmental Services Administrator

FRANKLIN COUNTY

State Status	Federal Status	County	Category	Species	CommonName	Sensitive Species	Most Recent Record	FWS
Endangered	Species of Concern	Franklin	Amphibian - Salamander	Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	Yes	1930	
Endangered		Franklin	Fish	Etheostoma maculatum	Spotted Darter	No	2013	
Endangered		Franklin	Fish	Lepisosteus platostomus	Shortnose Gar	No	1981	
Endangered		Franklin	Fish	Notropis ariommus	Popeye Shiner	No	2011	
Endangered	Endangered	Franklin	Fish	Noturus trautmani	Scioto Madtom	No		*
Endangered		Franklin	Insect - butterfly	Speyeria idalia	Regal Fritillary	No	1932	
Endangered	Endangered	Franklin	Invert. - fw bivalve	Cyprogenia stegaria	Fanshell	No	1838	
Endangered		Franklin	Invert. - fw bivalve	Ellipsaria lineolata	Butterfly	No	2007	
Endangered		Franklin	Invert. - fw bivalve	Elliptio crassidens crassidens	Elephant-ear	No	2000	
Endangered	Endangered	Franklin	Invert. - fw bivalve	Epioblasma obliquata obliquata	Purple Cat's Paw	No	2012	
Endangered	Endangered	Franklin	Invert. - fw bivalve	Epioblasma torulosa rangiana	Northern Riffleshell	No	2012	
Endangered	Endangered	Franklin	Invert. - fw bivalve	Epioblasma triquetra	Snuffbox	No	2013	
Endangered		Franklin	Invert. - fw bivalve	Fusconaia ebena	Ebonyshell	No	1850	
Endangered		Franklin	Invert. - fw bivalve	Fusconaia maculata maculata	Long-solid	No	1999	
Endangered		Franklin	Invert. - fw bivalve	Lampsilis ovata	Sharp-ridged Pocketbook	No	2011	
Endangered		Franklin	Invert. - fw bivalve	Megalonaias nervosa	Washboard	No	2012	
Endangered	Endangered	Franklin	Invert. - fw bivalve	Pleurobema clava	Clubshell	No	2012	
Endangered		Franklin	Invert. - fw bivalve	Pleurobema cordatum	Ohio Pigtoe	No	2007	
Endangered	Threatened	Franklin	Invert. - fw bivalve	Quadrula cylindrica cylindrica	Rabbitsfoot	No	2012	
Endangered		Franklin	Invert. - fw bivalve	Quadrula nodulata	Wartyback	No	1850	
Endangered	Endangered	Franklin	Invert. - fw bivalve	Villosa fabalis	Rayed Bean	No	2008	
Endangered	**Endangered**	**Franklin**	**Mammal**	**Myotis sodalis**	**Indiana Myotis**	**Yes**	**2013**	
Threatened		Franklin	Amphibian - Salamander	Pseudotriton montanus diastictus	Midland Mud Salamander	No	1981	
Threatened		Franklin	Fish	Etheostoma tippecanoe	Tippecanoe Darter	No	2013	
Threatened		Franklin	Fish	Exoglossum laurae	Tonguetied Minnow	No	2005	
Threatened		Franklin	Fish	Polyodon spathula	Paddlefish	No	2008	
Threatened		Franklin	Invert. - fw bivalve	Ligumia recta	Black Sandshell	No	2012	
Threatened		Franklin	Invert. - fw bivalve	Obliquaria reflexa	Threehorn Wartyback	No	2009	
Threatened		Franklin	Invert. - fw bivalve	Truncilla donaciformis	Fawnsfoot	No	2012	
Threatened		Franklin	Invert. - fw bivalve	Uniomerus tetralasmus	Pondhorn	No	2013	
Species of Concern		Franklin	Amphibian - Frog / Toad	Acris crepitans crepitans	Eastern Cricket Frog	No	2010	
Species of Concern		Franklin	Amphibian - Salamander	Hemidactylium scutatum	Four-toed Salamander	No	1965	
Species of Concern		Franklin	Bird	Accipiter striatus	Sharp-shinned Hawk	No	2010	
Species of Concern		Franklin	Bird	Colinus virginianus	Northern Bobwhite	No	2004	
Species of Concern		Franklin	Bird	Dendroica cerulea	Cerulean Warbler	No	2011	
Species of Concern		Franklin	Bird	Protonotaria citrea	Prothonotary Warbler	No	1998	
Species of Concern		Franklin	Fish	Esox masquinongy	Muskellunge	No	2011	
Species of Concern		Franklin	Fish	Moxostoma carinatum	River Redhorse	No	2013	
Species of Concern		Franklin	Invert. - fw bivalve	Alasmidonta marginata	Elktoe	No	2013	
Species of Concern		Franklin	Invert. - fw bivalve	Cyclonaias tuberculata	Purple Wartyback	No	2013	
Species of Concern		Franklin	Invert. - fw bivalve	Lampsilis fasciola	Wavy-rayed Lampmussel	No	2013	
Species of Concern		Franklin	Invert. - fw bivalve	Lasmigona compressa	Creek Heelsplitter	No	2012	
Species of Concern		Franklin	Invert. - fw bivalve	Pleurobema sintoxia	Round Pigtoe	No	2013	
Species of Concern		Franklin	Invert. - fw bivalve	Ptychobranchus fasciolaris	Kidneyshell	No	2013	
Species of Concern		Franklin	Invert. - fw bivalve	Simpsonaias ambigua	Salamander Mussel	No	1999	
Species of Concern		Franklin	Invert. - fw bivalve	Truncilla truncata	Deertoe	No	2012	
Species of Concern		Franklin	Mammal	Eptesicus fuscus	Big Brown Bat	No	2013	
Species of Concern		Franklin	Mammal	Lasionycteris noctivagans	Silver-haired Bat	No	1980	
Species of Concern		Franklin	Mammal	Lasiurus borealis	Red Bat	No	2013	
Species of Concern		Franklin	Mammal	Lasiurus cinereus	Hoary Bat	No	2013	
Species of Concern		Franklin	Mammal	Microtus pinetorum	Woodland Vole	No	1939	
Species of Concern		Franklin	Mammal	Myotis lucifugus	Little Brown Bat	No	2012	
Species of Concern	Threatened	Franklin	Mammal	Myotis septentrionalis	Northern Long-eared Bat	No	2013	
Species of Concern		Franklin	Mammal	Perimyotis subflavus	Tri-colored Bat	No	2013	
Species of Concern		Franklin	Mammal	Peromyscus maniculatus	Deer Mouse	No	2005	
Species of Concern		Franklin	Mammal	Synaptomys cooperi	Southern Bog Lemming	No	1905	
Species of Concern		Franklin	Mammal	Taxidea taxus	Badger	No	2007	
Special Interest		Franklin	Bird	Anas rubripes	American Black Duck	No	2010	
Special Interest		Franklin	Bird	Catharus guttatus	Hermit Thrush	No	2013	
Special Interest		Franklin	Bird	Junco hyemalis	Dark-eyed Junco	No	2009	
Special Interest		Franklin	Mammal	Nycticeius humeralis	Evening Bat	No	1927	
Extirpated		Franklin	Invert. - fw bivalve	Actinonaias ligamentina ligamentina	Mucket	No	2000	
Extirpated		Franklin	Invert. - fw bivalve	Leptodea leptodon	Scaleshell	No	1850	
Extirpated		Franklin	Invert. - fw bivalve	Pleurobema plenum	Rough Pigtoe	No	1999	
Extirpated		Franklin	Invert. - fw bivalve	Quadrula fragosa	Winged Mapleleaf	No	1850	
Extinct		Franklin	Invert. - fw bivalve	Epioblasma flexuosa	Leafshell	No	1850	
Extinct		Franklin	Invert. - fw bivalve	Epioblasma personata	Round Snuffbox	No	1850	
Extinct		Franklin	Invert. - fw bivalve	Epioblasma torulosa torulosa	Tubercled Blossom	No	1962	

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Summary: Application Application Part 14 of 17 - Exhibits R and S electronically filed by Ms. Kari D Hehmeyer on behalf of Alexander, Trevor Mr. and THE OHIO STATE UNIVERSITY