August 25, 2016

Mr. Steve Lane, CPESC, AICP, PMP
Senior Environmental Scientist/Planner
Duke Energy Corporation
139 East Fourth Street, Room EM740
Cincinnati, OH 45202

Dear Steve:

Subject: Wetland and Waterbody Delineation Report
Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230

Civil & Environmental Consultants, Inc. (CEC) is pleased to present the attached wetland and waterbody delineation report for the Duke Energy Corporation (Duke Energy) Line D000B Natural Gas Pipeline Replacement Project, located in Cincinnati, Hamilton County, Ohio. CEC's services were provided in accordance with the Master Consulting Services Agreement, effective June 1, 2015, between Duke Energy and CEC, and our revised proposal dated February 1, 2016. We appreciate the opportunity to be of service to Duke Energy on this project. Please call us if you have any questions regarding the attached report.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Dustin M. Giesler
Staff Scientist

Joseph A. Van Skaik
Project Manager

Attachment – Wetland and Waterbody Delineation Report

P:\2015\153-230\-Final Documents\WWD\153-230 FINAL Line D000B WWD Report.docx

WETLAND AND WATERBODY DELINEATION REPORT

LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

PREPARED FOR:
DUKE ENERGY CORPORATION
139 EAST FOURTH STREET
CINCINNATI, OHIO 45202

PREPARED BY:
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
CINCINNATI, OHIO

CEC Project 153-230

August 25, 2016

Civil & Environmental Consultants, Inc.
Cincinnati
5899 Montclair Boulevard | Cincinnati, OH 45150 | p: 513-985-0226 f: 513-985-0228 | www.cecinc.com

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1.0 INTRODUCTION

1.1 GENERAL INFORMATION

This report presents the findings of a wetland and waterbody delineation conducted by Civil & Environmental Consultants, Inc. (CEC) for the Duke Energy Corporation (Duke Energy) within the Line D000B Pipeline Replacement study corridor, located in Cincinnati's East End, Hamilton County, Ohio. CEC understands that Duke is proposing to replace approximately 3.45 miles (18,200 feet) of a single existing 20- and 24-inch spiral welded bare steel high pressure natural gas pipeline with a new 24-inch corrosion protected steel pipe. The variable width Project study corridor, averaging 200-foot wide, is approximately 3.45 miles in length and totals approximately 84.2 acres and was extended beyond the pipeline easement and associated workspace. The pipeline easement is at maximum 50 feet in width, with another 20 to 50 feet of additional temporary workspace where available.

Civil & Environmental Consultants, Inc. (CEC) conducted the field reconnaissance portion of the jurisdictional waters delineation on May 16, 18 and 19, 2016.

1.2 ROUTE DESCRIPTION

The northern terminus of the project begins southeast of Duke Energy's natural gas distribution center in the East End, and is bound by Riverside Drive to the north, Schmidt Park and the Ohio River Trail to the east and southeast, and the Ohio River to the south. The replacement pipeline route proceeds in a southeast direction across Schmidt Park, following Duke's existing ROW in the vicinity of Humbert Avenue and the Ohio River Trail. The route leaves Schmidt Park beginning near the southern terminus of Wenner Street, and continues paralleling the Ohio River Trail for approximately 475 feet. Near the intersection of Strader and Humbert Streets, the replacement pipeline route departs from the Ohio River Trail and is collocated with Humbert Street for approximately 630 feet, until the convergence of Humbert Street and Delta Avenue. The route continues in a southeast direction, crossing onto Riverview East Academy property, a Cincinnati Public School, and then subsequently crosses and parallels the Ohio River Trail for

approximately 470 feet before arriving at the western terminus of Congress Avenue. From Congress Avenue, the route follows the south side of the road in an east-northeast direction for approximately 200 feet to the intersection of Congress and Kellogg Avenues. The replacement pipeline then turns south-southeast and is collocated with the west side of Kellogg Avenue for approximately 1.2 miles (6,270 feet). Approximately 150 feet south of the Martin Marietta Materials Kellogg Yard property, the replacement pipeline route departs from Kellogg Avenue ROW and veers west-southwest paralleling the south side of an existing private drive for approximately 275 feet, and then continues following the private drive in a southeast direction for an additional 1,150 feet, before connecting with Kellogg Avenue road ROW again. The replacement route continues in a southerly direction along the west side of Kellogg Avenue for approximately 1,260 feet. The replacement route subsequently departs from Kellogg Avenue ROW and travels in a south-southwest direction, collocated with existing private roads for an additional 1,060 feet. From this location, the replacement pipeline route rejoins the existing Duke pipeline ROW and continues due south for approximately 3,800 feet to the southern interconnect location, near the Little Miami and Ohio Rivers confluence.

1.3 METHODOLOGY

This report identifies delineated wetlands, streams (ephemeral, intermittent, and perennial), and other potentially regulated waters within the Project study corridor. The methodology for conducting the wetland and waterbody delineation is presented below.

1.3.1 Wetlands

The wetland delineation was conducted using the routine on-site determination method described in the United States Army Corps of Engineers (USACE) 1987 Corps Manual (USACE Manual) and the USACE (2012) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0* (Eastern Mountains and Piedmont Regional Supplement). The wetland boundaries, where present, were delineated using the routine onsite determination method described in the USACE Manual and Eastern Mountains and Piedmont Regional Supplement, supplemented by the *National Wetland Plant List:*

2016 Wetland Ratings (Lichvar 2016) and the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2013). CEC conducted the following scope of services to identify and delineate wetland boundaries within the Project study corridor:

1. Office Data Review: Prior to the site reconnaissance, a review was conducted of publicly available data resources, associated with topography and historically mapped soils and wetlands, in the vicinity of the Project study corridor, in order to identify potential wetland areas. General site topography was assessed using the U.S. Geological Survey (USGS) topographic quadrangle map of Newport Kentucky-Ohio (Figure 1). Soils information for Hamilton County, Ohio is available online from the Web Soil Survey through the USDA NRCS. Soils information in the vicinity of the Project study corridor is displayed on Figures 2 and 3.

   NWI maps, prepared by the United States Fish and Wildlife Service, are based on high altitude infrared aerial photography and limited ground truthing. NWI designated areas depict wetlands and deep water habitats and are classified according to the system developed by Cowardin et al. (1979). Accordingly, NWI data reflect conditions during the specific year and season in which the aerial photography was acquired and all wetlands may not be indicated. Similarly, the Ohio Wetlands Inventory (OWI) is based on analysis of satellite data and is intended solely as an indicator of wetland sites for which field review should be conducted. The OWI was developed in cooperation with the Ohio Department of Natural Resources (ODNR), Division of Wildlife and the USDA NRCS to provide a statewide inventory of wetlands. The Ohio Wetland Inventory is useful in general planning and environmental analyses. The wetland areas shown do not necessarily meet the definition of a regulatory wetland. Mapped NWI and OWI wetlands in the vicinity of the Project study corridor are shown on Figures 4 and 5.

2. Site Reconnaissance: The site reconnaissance portion of the wetland and waterbody delineation was performed on May 16, 18 and 19, 2016. First, plant communities present within the Project area were identified. The dominant plant species within each community were identified and a determination was made on whether the plant community was dominated by hydrophytic (wetland) plants. If areas that appeared to be dominated by hydrophytic plants were identified within the Project area, a representative test site was located within the plant community and soils were sampled using a spade shovel to determine if hydric soil indicators were present. Lastly, the test site was inspected to determine if indicators of wetland hydrology (ponding, soil saturation, etc.) were present. If a test site was determined to be within a wetland, further testing was to be performed to locate the wetland/non-wetland boundary and a second test site was to be established outside the wetland boundary to document conditions in the non-wetland area. If found, the boundaries of areas having the three necessary criteria were to be marked in the field with vinyl flagging and subsequently located using a sub-meter accuracy Trimble Geo-XT Global Positioning System (GPS) unit.

3. Data Collection: CEC photographed the test site location and vegetation communities located within the Project study corridor. Representative photographs of these locations

are included in Appendix A. Regional Supplement wetland determination data forms for the onsite determination method were prepared for potential wetland areas that were observed within the Project area. The wetland determination data forms provide a record of the vegetation, soils, and hydrology observations used in making the wetland determinations. Completed wetland determination data forms are provided in Appendix B.

4. Functional Assessment of Wetland Areas: CEC conducted a functional assessment on the delineated wetlands that were identified within the Project study corridor using the Ohio Rapid Assessment Method (ORAM version 5.0) for wetlands (Mack 2001). The ORAM characterizes wetlands into one of three categories (Category 1, 2, or 3) based upon their functions, value, and overall quality. Category 1 wetlands typically have minimal functions and low quality, are often dominated by invasive species, and are often hydrologically isolated. Category 2 wetlands typically have moderate or intermediate functions and quality. Category 3 wetlands typically have superior functions and quality and may include wetlands which provide habitat for threatened and endangered species or contain unique habitats. Although the ORAM only lists three categories of wetlands, some wetlands fall into "gray zones" that exist between the categories. These wetlands must be further assessed by using either another technique or professional judgment. Completed ORAM forms are provided in Appendix C.

1.3.2 Streams

In addition to the identification of wetlands, CEC identified streams within the Project study corridor that would likely be considered jurisdictional by the USACE and/or the Ohio Environmental Protection Agency (Ohio EPA). Using professional judgment and field indicators such as flow, substrate composition, embeddedness, defined bed and bank, vegetation, and benthic macroinvertebrates, CEC classified on-site stream segments into one of three stream types: ephemeral, intermittent, and perennial. The following descriptions are provided to clarify the different stream classifications.

- Ephemeral Stream – An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for this stream flow regime.

- Intermittent Stream – An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. Typically these streams flow regularly during the spring and fall when ground water tables are elevated. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for this stream flow regime.
- Perennial Stream – A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for this stream flow regime.

The uppermost limit of an ephemeral stream is determined at the point where the stream loses its defined "bed and bank" or ordinary high water mark (OHWM) and a predominance of upland vegetation occurs in the channel. Under natural, undisturbed conditions, streams generally originate as headwater ephemeral drainages along the tops of ridges, transition into intermittent stream systems, and eventually transition into perennial stream systems.

The interpreted limits of each stream segment within the Project study corridor, was recorded in the field using a Trimble GeoXT GPS unit. CEC also conducted a habitat evaluation of the on-site streams using the Ohio EPA Headwater Habitat Evaluation Index ([HHEI] Ohio EPA 2012) and/or Qualitative Habitat Evaluation Index ([QHEI] Ohio EPA 2006), depending upon the watershed size and/or predominant natural pool depths. For on-site primary headwater habitat (PHWH) streams (those with drainage areas equal to or less than one square mile or predominant natural pools that are equal to or less than 15.75 inches in depth), the HHEI classifies the streams into one of three categories: ephemeral (PHWH Class I), intermittent (PHWH Class II/III), or perennial (PHWH Class II/III). The stream receives a “Modified” designation from the HHEI assessment if the stream is recovering from historic stream channel modification or exhibits recent or no recovery from past modification.

For larger streams that exceed the maximum pool depths or drainage area criteria set forth by the HHEI methodology, the QHEI assessment classifies streams into general narrative ranges based on the total score and also provides a general indication on the aquatic life habitat use designation. The narrative ratings and corresponding QHEI scoring ranges are provided below in Table 1.

TABLE 1 GENERAL NARRATIVE RANGES ASSIGNED TO QHEI SCORES		
Narrative Rating	**QHEI Scoring Range**	
	Headwaters	**Larger Streams**
Excellent	≥70	≥75
Good	55 to 69	60 to 74
Fair	43 to 54	45 to 59
Poor	30 to 42	30 to 44
Very Poor	<30	<30

Ohio Water Quality Standards (OAC 3745-1) are designed to provide a basis for protecting and restoring surface waters for a variety of uses, including protection and propagation of aquatic life. Aquatic life protection criteria consist of tiered aquatic life uses which are defined in OAC 3745-1-07. These include Warmwater Habitat (WWH), Exceptional Warmwater Habitat (EWH), Coldwater Habitat (CWH), Seasonal Salmonid Habitat (SSH) and Limited Resource Waters (LRW), which is linked with Modified Warm Water Habitats (MWH).

The WWH use designation defines the "typical" warmwater assemblage of aquatic organisms for Ohio rivers and streams. This use represents the principal restoration target for the majority of water resource management efforts in Ohio.

The EWH use designation is reserved for waters that support "unusual and exceptional" assemblages of aquatic organisms which are characterized by a high species diversity, particularly those which are intolerant and/or rare, threatened, endangered, or special status (i.e., declining species). This designation represents a protection goal for Ohio's water resources.

The MWH designation applies to highly modified habitats that support the semblance of a warmwater biological community, but where the community falls short of attaining the WWH biological criteria because of functional and structural alterations of the macro-habitat. Examples include streams that have been channelized, straightened and/or heavily impounded and streams that are experiencing heavy sedimentation. MWH habitats are commonly low in dissolved oxygen (DO), elevated in ammonia, and/or nutrient enriched.

The LRW use designation applies to small streams and other water courses which have been irretrievably altered to the extent that no appreciable assemblage of aquatic life can be supported. Such waterways generally include small streams in urbanized areas, those which lie in watersheds with extensive drainage modifications and those which completely lack water on a recurring basis.

1.3.3 Open Water Bodies

The locations of ponds, lakes, or other open water bodies, where present within the Project area, were recorded using a Trimble Geo-XT GPS unit during the site reconnaissance.

2.0 FINDINGS

2.1 HYDROLOGY

The Project study corridor is situated in the Town of Newport – Ohio River [hydrologic unit code (HUC) 050902030201] and the Clough Creek - Little Miami River [hydrologic unit code (HUC) 050902021406] watersheds. Elevations within the Project study corridor are mapped to range from approximately 470 feet to 515 feet above mean sea level (AMSL). Drainage within the Project area is to the Little Miami and Ohio Rivers. The full extent of the Project study corridor is located within the Federal Emergency Management Agency (FEMA) 100-year floodplain (Figures 6-21).

2.2 SOILS

The NRCS (USDA 2013) identifies nine soil types within the Project study corridor (Table 2, Figures 2 and 3). None of the nine NRCS mapped soil types are classified as hydric. Two of the soil types, Genesee loam, occasionally flooded (Gn) and Huntington silt loam, occasionally flooded (Hu), are identified as non-hydric soils having hydric inclusions.

TABLE 2 SOILS INFORMATION			
Soil Map Unit Symbol	**Soil Mapping Unit Name**	**Drainage Class**	**NRCS Hydric Designation**
CNWXFF	Chagrin-Nelse-Wheeling complex, 2 to 75 percent slopes, frequently flooded	Well drained	Not hydric
Gn	Genesee loam, occasionally flooded	Well drained	Hydric inclusions
Hu	Huntington silt loam, occasionally flooded	Well drained	Hydric inclusions
Pb	Pits, borrow	Not listed	Not hydric
Pg	Pits, gravel	Not listed	Not hydric
UMHXAO	Urban land-Molliac Udarents-Huntington complex, 0 to 2 percent slopes, occasionally flooded	Well drained	Not hydric
UrUXC	Urban land-Udorthents complex, 0 to 12 percent slopes	Not listed	Not hydric
UrUXCO	Urban land-Udorthents complex, 0 to 12 percent slopes, occasionally flooded	Not listed	Not hydric
UUWXFF	Urban land-Udorthents-Wheeling complex, 2 to 75 percent slopes, frequently flooded	Well drained	Not hydric

2.3 NATIONAL AND STATE WETLAND INVENTORY MAPS

2.3.1 NATIONAL WETLAND INVENTORY MAP

Two mapped NWI wetlands were identified within the Project study corridor at the southern terminus of the Project area at the time that this report was prepared (Figures 4 and 5). One of the two NWI designated areas is classified as palustrine (P), forested (FO), broad-leaved deciduous (1), seasonally flooded (C) wetland (PFO1C), and was identified as a palustrine forested wetland community during the site reconnaissance, as shown on Figures 20 and 21. The second NWI area is classified as a PFO1, temporarily flooded (A) wetland (PFO1A). This area did not meet the criteria to be designated as a wetland during the site reconnaissance, as shown on Figure 21.

2.3.2 OHIO WETLAND INVENTORY MAP

One mapped OWI wetland was identified within the Project study corridor at the southern terminus of the Project area at the time that this report was submitted (Figures 4 and 5). This OWI designated area is classified as a shallow marsh. The site reconnaissance revealed that this area does not meet the criteria to be considered a jurisdictional wetland. This OWI designated area is currently part of the Four Seasons Marina parking lot and Ohio River backwater area.

2.4 VEGETATION

The vegetation found within the wetland determination test sites have been detailed in the individual wetland determination data forms provided in Appendix B. Representative photographs the vegetation types found within the wetland determination test sites are included in Appendix A. Dominant plant species comprising these plant communities were identified and the USFWS wetland plant indicator status was determined according to Lichvar (2016). The USFWS has defined five wetland plant indicator categories, which include:

- Obligate Wetland (OBL – has >99% probability of occurring in wetlands);
- Facultative Wetland (FACW – has 66% to 99% chance of occurring in wetlands);
- Facultative (FAC – has 33% to 66% chance of occurring in wetlands);
- Facultative Upland (FACU – has 1 to 33% chance of occurring in wetlands); and,
- Upland (UPL – has <1% chance of occurring in wetlands).

Plants classified as OBL, FACW, or FAC are considered to be wetland plants (hydrophytes) by the USFWS and USACE.

2.5 WETLANDS

Six wetlands (Wetlands 1, 2, 3, 4, 5, and 6) were identified and delineated within the Project study corridor (Figures 6 through 21). Descriptions of each wetland can be found in Table 2

below. All six wetlands are located entirely within the FEMA 100-year floodplains of the Ohio and Little Miami Rivers.

Twenty-seven (27) wetland determination sample points were evaluated by CEC within the Project study corridor using the on-site wetland determination method described above in Section 1.2.1. The wetland determination data forms for these 27 sites are provided in Appendix B. The location of these sample sites were recorded using a Trimble Geo-XT GPS unit and are shown on Figures 6 through 21. Representative photographs of the wetland determination sample point locations can be found in Appendix A.

TABLE 3. WETLAND CHARACTERISTICS

Wetland Identifier	USFWS Classification[1,2,3]	ORAM[4]		Sample Point (SP) Location	Interpreted Hydrological Status[5]	Approximate Area within Project Study Corridor (Acres)
		Score	Category			
1	PEM	76.5	3	2,9	Connected/Adjacent	0.06
	PFO			1,3,5,6,7,8,9		1.74
2	PEM	52.5	2	18	Connected/Adjacent	0.07
	PFO			17		0.58
3	PEM	17.5	1	20	Connected/Adjacent	0.04
4	PFO	43	2	22	Connected/Adjacent	0.42
5	PFO	42.5	2	25	Connected/Adjacent	0.27
6	PEM	18	1	26	Connected/Adjacent	0.09
Total						3.27

[1] As interpreted from *Classification of Wetlands and Deep Water Habitats of the United States*. Cowardin, L. M., V. Carter, and F. C. Golet. 1979.
[2] Palustrine Emergent (PEM) Wetland
[3] Palustrine Forested (PFO) Wetland
[4] Ohio Rapid Assessment for Wetlands (ORAM)
[5] The determinations of hydrologically connected/adjacent and isolated wetlands outlined in this report are preliminary, based on the boundary delineations and have not been formally approved by the USACE.

Wetland 1, totaling approximately 1.8 acres within the study corridor, is located at the southern terminus of the Project area near the confluence of the Little Miami and Ohio Rivers (Figures 20 and 21). CEC classified this wetland as a palustrine (P), emergent (EM) and palustrine (P) forested (FO) wetland (PEM/PFO) (Cowardin 1979). The PEM portion of this wetland is an existing utility right-of-way (ROW) that crosses the wetland in a northwest to southeast

direction. The PEM wetland community comprises less than 3 percent (0.06 acre) of the total wetland area for Wetland 1 within the Project area. Based on an ORAM score of 76.5, this wetland was classified as a Category 3 wetland or high quality wetland (Appendix C). The forested vegetation community is dominated by silver maple (*Acer saccharinum*, FACW), cottonwood (*Populus deltoids*, FAC), and box elder (*Acer negundo*, FAC), while the emergent plant community is dominated by creeping jenny (*Lysimachia nummularia*, FACW) and false nettle (*Boehmeria cylindrica*, FACW). The soil profiles from the wetland determination sample point locations exhibited a depleted matrix or a redox dark surface. Positive wetland hydrology indicators included surface water, high water table, saturation, drift deposits, inundation and/or visible on aerial imagery, water marks, water-stained leaves, sparsely vegetated concave surface, drainage patterns, geomorphic position, stunted or stressed plants, microtopographic relief, and a positive FAC-neutral test.

Wetland 2, totaling approximately 0.65 acre within the study corridor, is located near the southern terminus of the Project area, adjacent to the east of Four Seasons Marina (Figures 19 and 20). CEC classified this wetland as a palustrine (P), emergent (EM) and palustrine (P) forested (FO) wetland (PEM/PFO) (Cowardin 1979). The PEM portion of this wetland, totaling 0.07 acre, is located within the existing, maintained Duke utility ROW. Based on an ORAM score of 52.5, this wetland was classified as a Category 2 wetland (Appendix C). The forested vegetation community is dominated by American sycamore (*Platanus occidentalis*, FACW), cottonwood, silver maple, and box elder, while the emergent plant community is dominated by Gray's sedge (*Carex grayi*, FACW), creeping jenny, and poison ivy (*Toxicodendren radicans*, FAC). The soil profiles from the two wetland determination sample point locations exhibited a depleted matrix and redox dark surface, respectively. Positive wetland hydrology indicators included sediment deposits, sparsely vegetated concave surface, drainage patterns, geomorphic position, and a positive FAC-neutral test.

Wetland 3, totaling 0.04 acre, is a PEM wetland located within a roadside ditch adjacent to the north of Stites Road. Based on an ORAM score of 17.5, this wetland was classified as a Category 1 wetland (Appendix C). The emergent vegetation is dominated by common threesquare (*Schoenoplectus pungens*, OBL), curly dock (*Rumex crispus*, FAC), common blue

violet (*Viola sororia*, FAC), and poison hemlock (*Conium maculatum*, FACW). The soil profile exhibited a redox dark surface. Positive wetland hydrology indicators included drainage patterns, geomorphic position, and a positive FAC-neutral test.

Wetland 4, totaling approximately 0.42 acre within the study corridor, is a PFO wetland located adjacent to the east of Kellogg Avenue, and is bound by Derrick Heat Treating Blasting Painting to the north and Bob's Used Auto Parts to the south. Based on an ORAM score of 43, this wetland was classified as a Category 2 wetland (Appendix C). The vegetation is dominated by silver maple. The soil profile exhibited a depleted matrix. Positive wetland hydrology indicators included surface water, high water table, saturation, water marks, inundation and saturation visible on aerial imagery, water-stained leaves, geomorphic position, microtopographic relief, and a positive FAC-neutral test.

Wetland 5, totaling approximately 0.27 acre within the study corridor, is a PFO wetland located adjacent to the east of Kellogg Avenue, and is bound by Kellogg Auto Parts to the north and the Little Miami Wastewater Treatment Plant to the south. Based on an ORAM score of 42.5, this wetland was classified as a Category 2 wetland (Appendix C). Similar to Wetland 4, the vegetation is dominated by silver maple. The soil profile exhibited a redox dark surface. Positive wetland hydrology indicators included surface water, high water table, saturation, water marks, inundation and saturation visible on aerial imagery, drainage patterns, geomorphic position, and a positive FAC-neutral test.

Wetland 6, totaling approximately 0.09 acre within the study corridor, is a PEM wetland located south-southwest of the intersection of Kellogg and Congress Avenues. Wetland 6 is located within the secondary containment berms that were constructed at the Kinder Morgan / Queen City Terminal. The vegetation is dominated by reed canarygrass (*Phalaris arundinacea*, FACW) and whitegrass (*Leersia virginica*, FACW). The soil profile exhibited a redox dark surface. Positive wetland hydrology indicators included saturation, water marks, inundation and saturation visible on aerial imagery, sparsely vegetated concave surface, drainage patterns, geomorphic position, microtopographic relief, and a positive FAC-neutral test.

2.6 STREAMS

No streams were identified within the Project area (Figures 6 through 21). For much of the project length rainfall is directed into storm sewers hence the lack of stream channels.

2.7 OPEN WATER BODIES

No open water bodies, including ponds and lakes, were identified in the Project area (Figures 6 through 21).

3.0 CONCLUSIONS

CEC identified approximately 3.27 acres of wetland within the Project study corridor. The locations of these wetlands are shown on Figures 6 through 21. No streams or open water bodies were identified within the study area.

4.0 LEVEL OF CARE

The wetland and stream delineation services performed by CEC were conducted in a manner consistent with the criteria contained in the USACE Manual and Eastern Mountains and Piedmont Regional Supplement and with the level of care and skill ordinarily exercised by members of the environmental consulting profession practicing contemporaneously under similar conditions in the locality of the project. It must be recognized that the jurisdictional waters delineation was based on field observations and CEC's professional interpretation of the criteria in the USACE Manual and Eastern Mountains and Piedmont Regional Supplement at the time of our fieldwork. Wetland and stream determinations may change subsequent to CEC's delineation based on changes in the regulatory criteria, seasonal variations in hydrology, alterations to drainage patterns and other human activities and/or land disturbances.

5.0 REFERENCES

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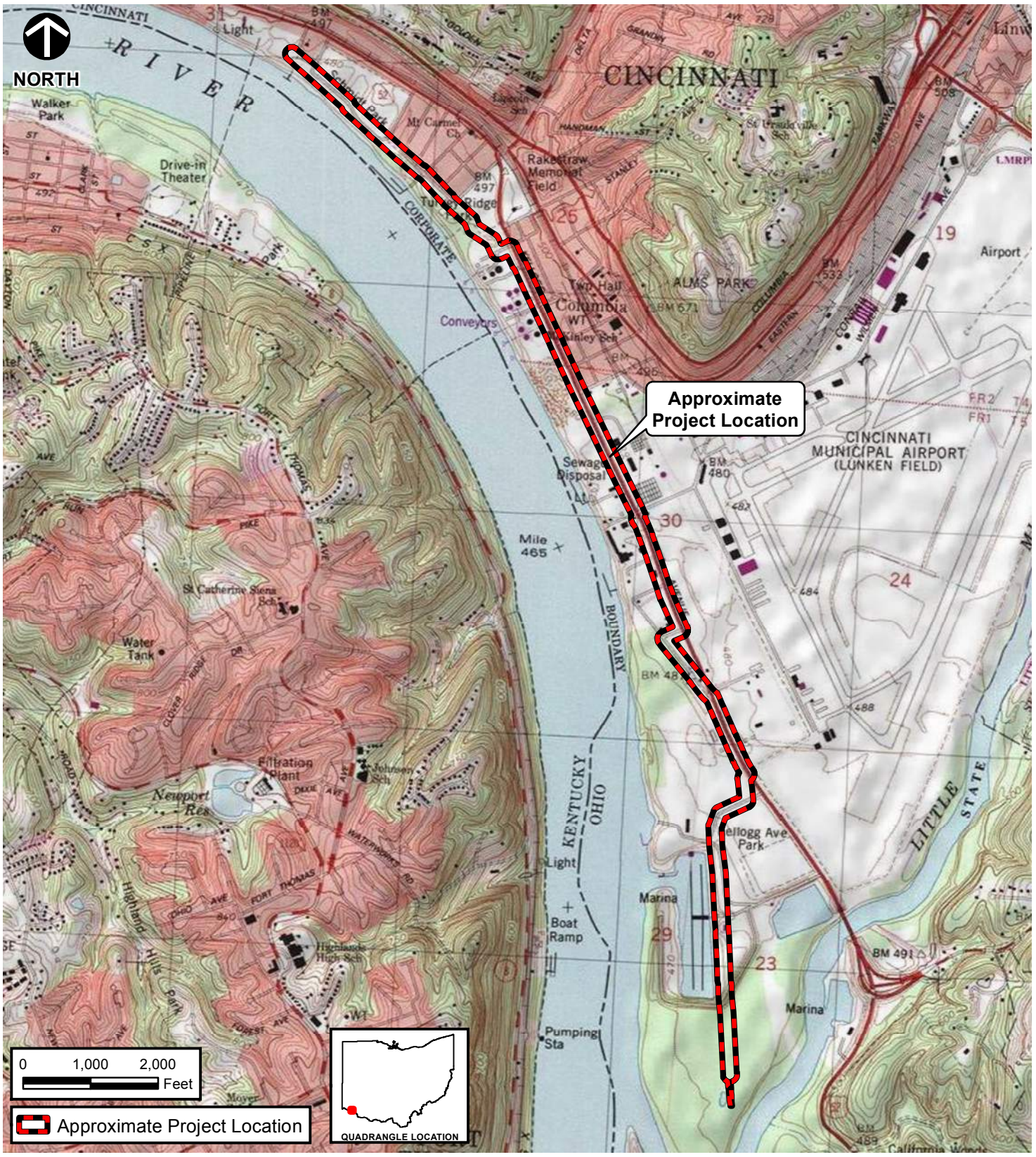
FIGURES



SOURCE: PORTION OF THE USGS 7.5-MINUTE SERIES TOPOGRAPHIC QUADRANGLE MAP OF NEWPORT, KENTUCKY-OHIO - 1984.

Civil & Environmental Consultants, Inc.
5899 Montclair Boulevard - Cincinnati, OH 45150
513-985-0226 - 800-759-5614
www.cecinc.com

DUKE ENERGY
LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

PROJECT LOCATION MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	1
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 2,000 '	PROJECT NO:	153-230		

Signature on File *

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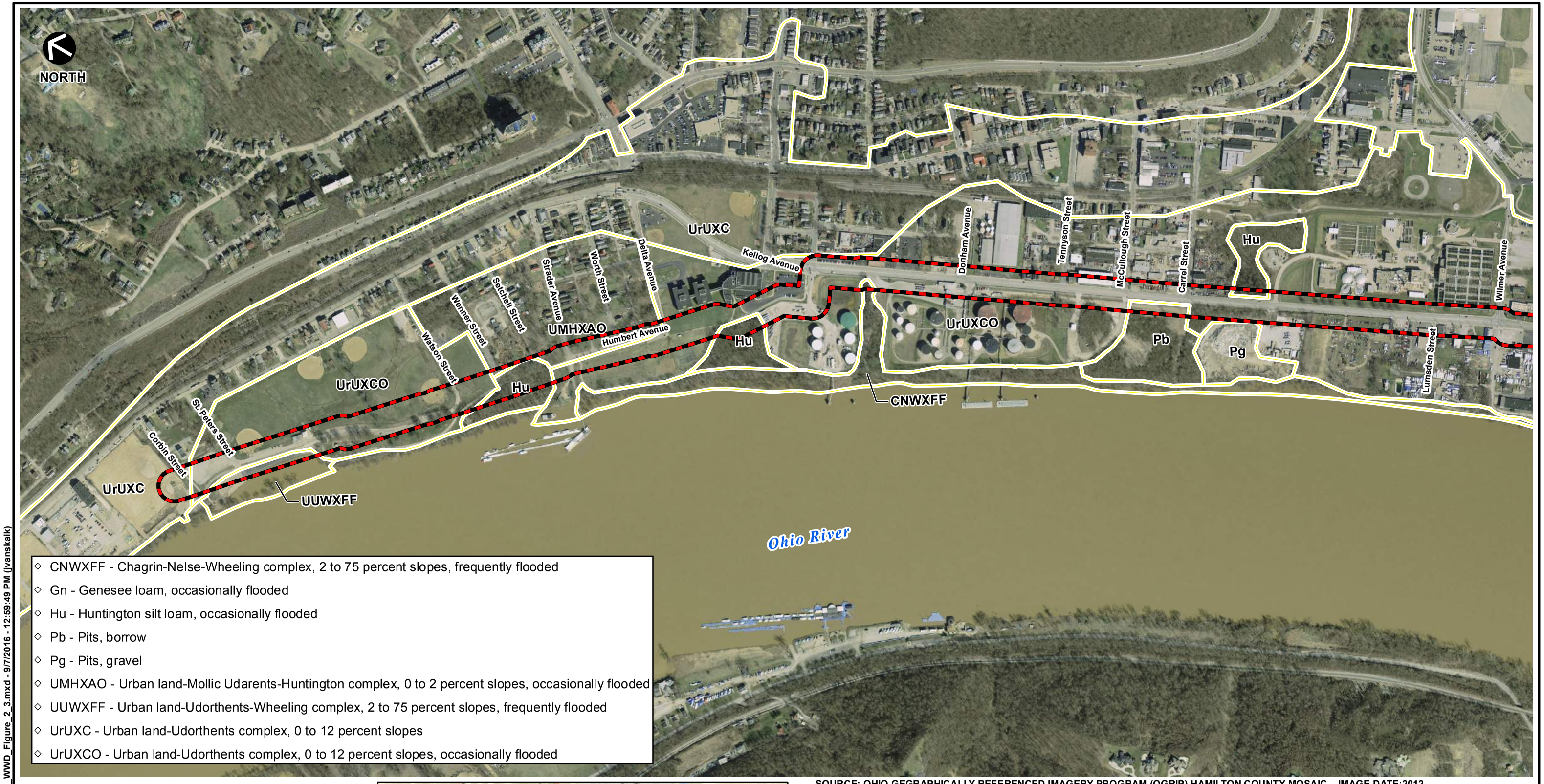
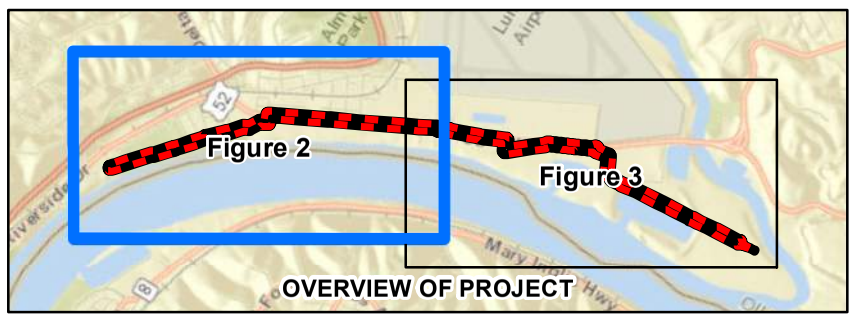


- ◇ CNWXFF - Chagrin-Nelse-Wheeling complex, 2 to 75 percent slopes, frequently flooded
- ◇ Gn - Genesee loam, occasionally flooded
- ◇ Hu - Huntington silt loam, occasionally flooded
- ◇ Pb - Pits, borrow
- ◇ Pg - Pits, gravel
- ◇ UMHXAO - Urban land-Mollic Udarents-Huntington complex, 0 to 2 percent slopes, occasionally flooded
- ◇ UUWXFF - Urban land-Udorthents-Wheeling complex, 2 to 75 percent slopes, frequently flooded
- ◇ UrUXC - Urban land-Udorthents complex, 0 to 12 percent slopes
- ◇ UrUXCO - Urban land-Udorthents complex, 0 to 12 percent slopes, occasionally flooded

Variable Width Study Corridor

Soil Map Unit Boundary



SOURCE: OHIO GEGRAPHICALLY REFERENCED IMAGERY PROGRAM (OGRIP) HAMILTON COUNTY MOSAIC. IMAGE DATE:2012
SOURCE: WEB SOIL SURVEY DATA OF HAMILTON COUNTY, OHIO.

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DUKE ENERGY
LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

USDA SOILS MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	2
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 600 '	PROJECT NO:	153-230		

Signature on File *

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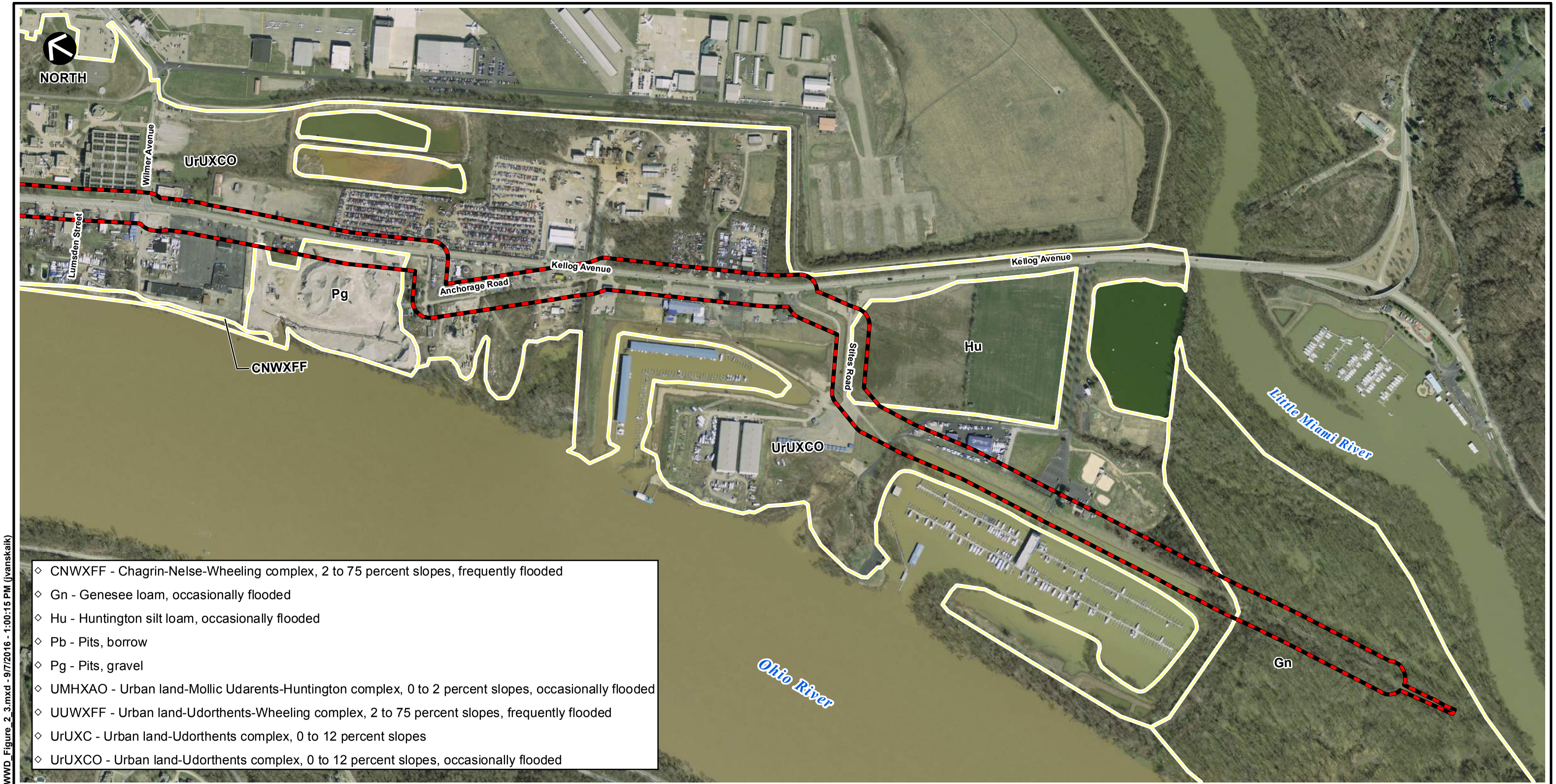
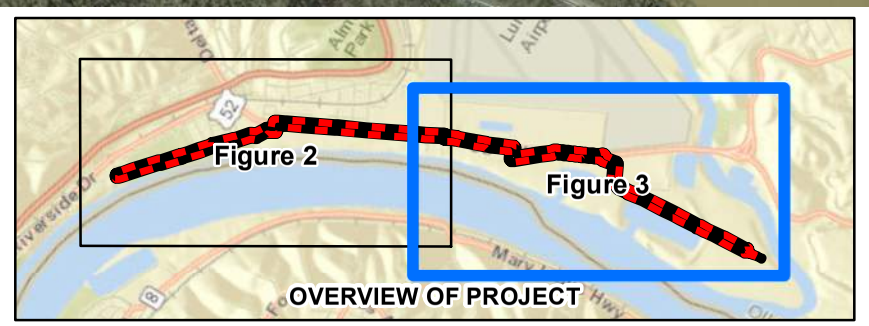


- ◇ CNWXFF - Chagrin-Nelse-Wheeling complex, 2 to 75 percent slopes, frequently flooded
- ◇ Gn - Genesee loam, occasionally flooded
- ◇ Hu - Huntington silt loam, occasionally flooded
- ◇ Pb - Pits, borrow
- ◇ Pg - Pits, gravel
- ◇ UMHXAO - Urban land-Mollic Udarents-Huntington complex, 0 to 2 percent slopes, occasionally flooded
- ◇ UUWXFF - Urban land-Udorthents-Wheeling complex, 2 to 75 percent slopes, frequently flooded
- ◇ UrXC - Urban land-Udorthents complex, 0 to 12 percent slopes
- ◇ UrUXCO - Urban land-Udorthents complex, 0 to 12 percent slopes, occasionally flooded

Variable Width Study Corridor
Soil Map Unit Boundary



0 600 1,200 Feet

SOURCE: OHIO GEGRAPHICALLY REFERENCED IMAGERY PROGRAM (OGRIP) HAMILTON COUNTY MOSAIC. IMAGE DATE:2012
SOURCE: WEB SOIL SURVEY DATA OF HAMILTON COUNTY, OHIO.

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DUKE ENERGY
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CINCINNATI, HAMILTON COUNTY, OHIO

USDA SOILS MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	3
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 600 '	PROJECT NO:	153-230		

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NORTH

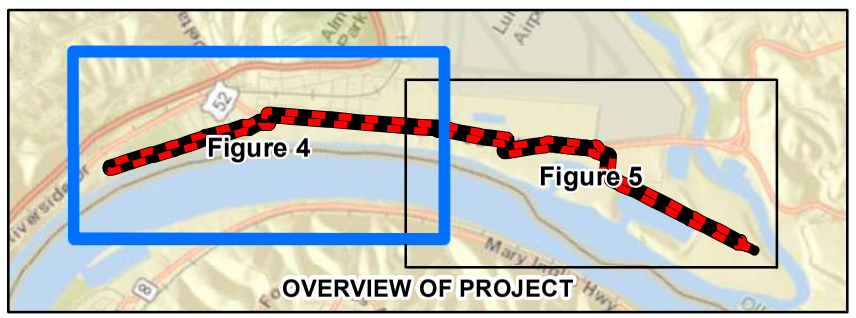
Kellog Avenue
Delta Avenue
Worth Street
Strader Avenue
Satchell Street
Werner Street
Watson Street
Humbert Avenue
St. Peters Street
Corbin Street
Donham Avenue
Tennyson Street
McCullough Street
Carrel Street
Wilmer Avenue
Lumsden Street

Ohio River

Variable Width Study Corridor
National Wetland Inventory (NWI) Designated Area

Ohio Wetland Inventory (OWI) Designated Area

- Open Water
- Shallow Marsh
- Shrub/Scrub Wetland
- Wet Meadow
- Farmed Wetland



0 600 1,200 Feet

SOURCE: OHIO GEGRAPHICALLY REFERENCED IMAGERY PROGRAM (OGRIP) HAMILTON COUNTY MOSAIC. IMAGE DATE:2012
SOURCES: OHIO WETLAND INVENTORY DATA FOR HAMILTON COUNTY, OHIO AND NATIONAL WETLAND INVENTORY STATEWIDE DATASET FOR OHIO.

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CINCINNATI, HAMILTON COUNTY, OHIO

NATIONAL (NWI) AND OHIO (OWI) WETLAND INVENTORIES MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 600 '	PROJECT NO:	153-230	4

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NORTH

Wilmer Avenue

Lumsden Street

Anchorage Road

Kellog Avenue

Kellog Avenue

Sittes Road

Little Miami River

Shallow Marsh

Freshwater Forested/Shrub Wetland (PFO1C)

Ohio River

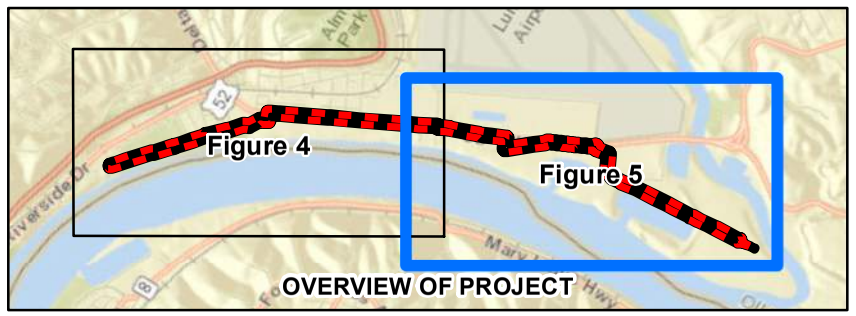
Freshwater Forested/Shrub Wetland PFO1A

Variable Width Study Corridor

National Wetland Inventory (NWI) Designated Area

Ohio Wetland Inventory (OWI) Designated Area

- Open Water
- Shallow Marsh
- Shrub/Scrub Wetland
- Wet Meadow
- Farmed Wetland



SOURCE: OHIO GEGRAPHICALLY REFERENCED IMAGERY PROGRAM (OGRIP) HAMILTON COUNTY MOSAIC. IMAGE DATE:2012
SOURCES: OHIO WETLAND INVENTORY DATA FOR HAMILTON COUNTY, OHIO AND NATIONAL WETLAND INVENTORY STATEWIDE DATASET FOR OHIO.

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CINCINNATI, HAMILTON COUNTY, OHIO

NATIONAL (NWI) AND OHIO (OWI) WETLAND INVENTORIES MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	5
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 600 '	PROJECT NO:	153-230		

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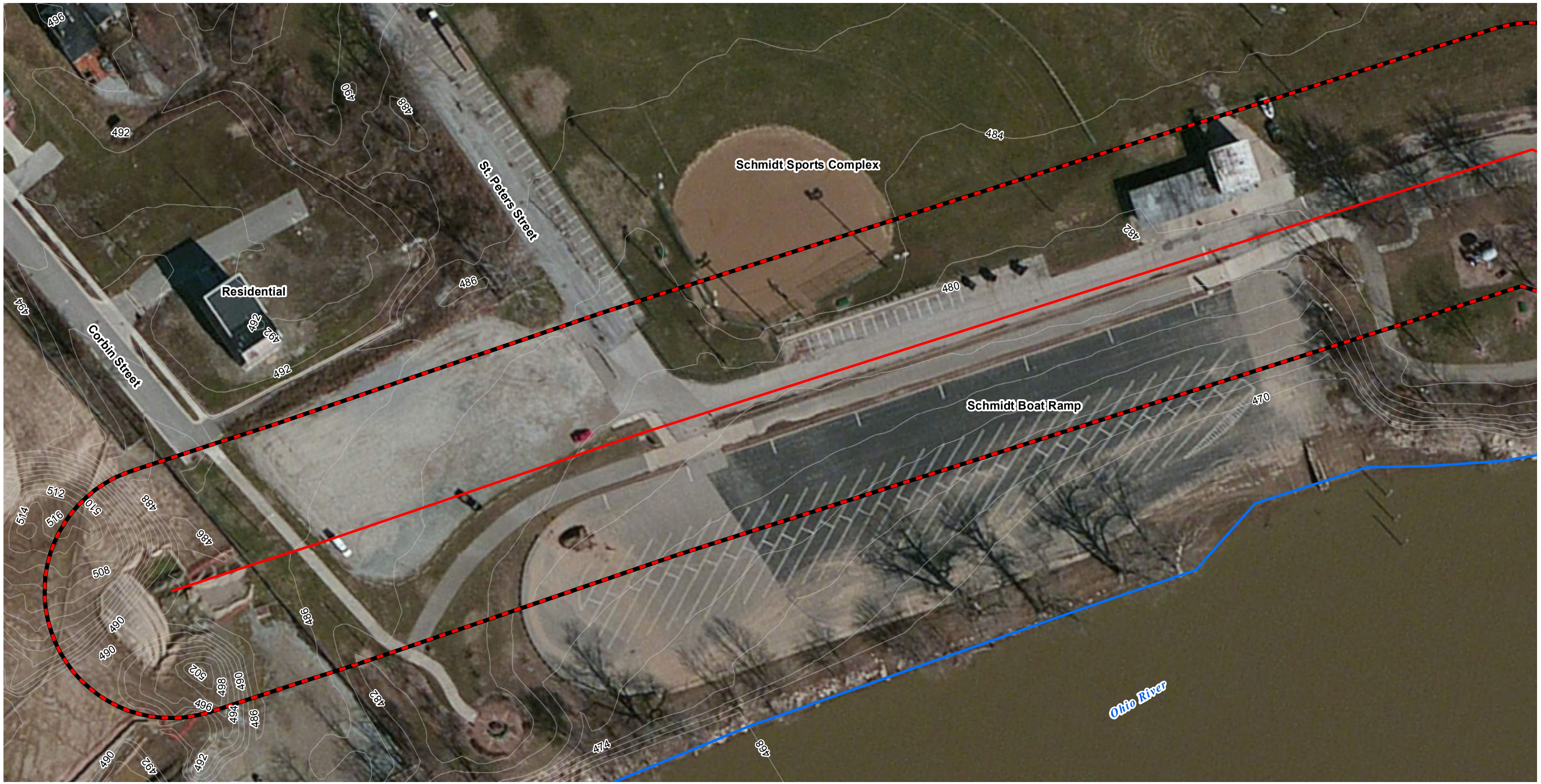
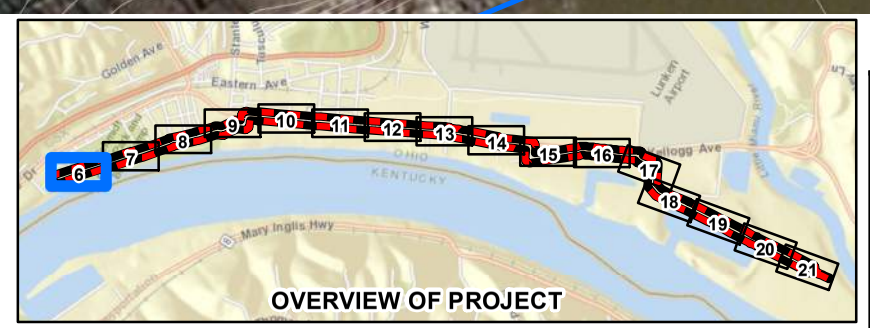


- Proposed Replacement Pipeline
- Variable Width Study Corridor

Delineated Wetland

- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Wetland Determination Sample Point Location
- Ohio River or Backwater Area
- Existing Culvert
- 2-Foot Contour Interval
- Photograph Location and Direction

NORTH



OVERVIEW OF PROJECT

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
NO STREAMS OR WATERBODIES WERE IDENTIFIED WITHIN THE STUDY CORRIDOR.

0 75 150 Feet

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

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DUKE ENERGY
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CINCINNATI, HAMILTON COUNTY, OHIO

WETLAND AND WATERBODY DELINEATION AND PHOTOGRAPH LOCATION MAP

DRAWN BY:	JBF	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	6
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230		

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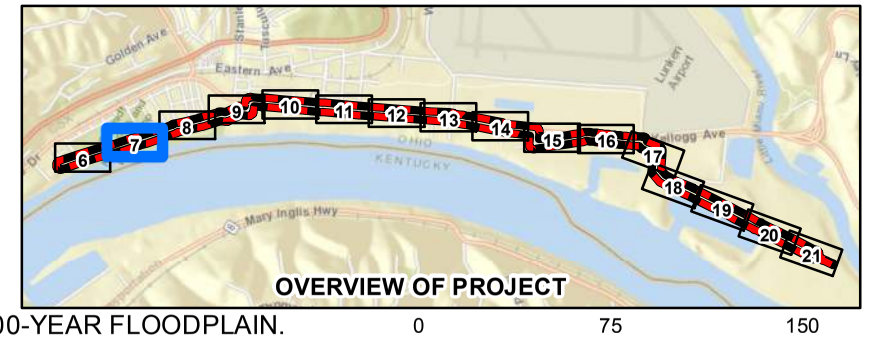
Proposed Replacement Pipeline
Variable Width Study Corridor
Delineated Wetland
Palustrine Emergent (PEM)
Palustrine Forested (PFO)
Wetland Determination Sample Point Location
Ohio River or Backwater Area

Existing Culvert
2-Foot Contour Interval
Photograph Location and Direction

NORTH



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0 75 150 Feet

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CINCINNATI, HAMILTON COUNTY, OHIO

WETLAND AND WATERBODY DELINEATION AND PHOTOGRAPH LOCATION MAP

DRAWN BY:	JBF	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	7

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- Proposed Replacement Pipeline
- Variable Width Study Corridor

Delineated Wetland

- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Wetland Determination Sample Point Location
- Ohio River or Backwater Area
- Existing Culvert
- 2-Foot Contour Interval
- Photograph Location and Direction

NORTH

OVERVIEW OF PROJECT

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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WETLAND AND WATERBODY DELINEATION AND PHOTOGRAPH LOCATION MAP

DRAWN BY:	JBF	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	AUGUST 25, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	8

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