

PROJECT LOCATION



BUTLER COUNTY, OHIO

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED
THROUGH ESRI WORLD IMAGRY
MICROSOFT CORPORATION,
ACCESSED 10/2018

- | | | | |
|----------------------|--------------------|---------------------|----------------------|
| ■ Existing Facility | ▭ Study Area | — Ditch | — US Highway |
| ● Wetland Data Point | ▭ Area of Interest | — Delineated Stream | — Railroad |
| ● Existing Structure | — Local Road | ■ Delineated Pond | ▨ Delineated Wetland |
| ○ Proposed Structure | — Interstate | — State Highway | |



0 400 Feet



FIGURE 3

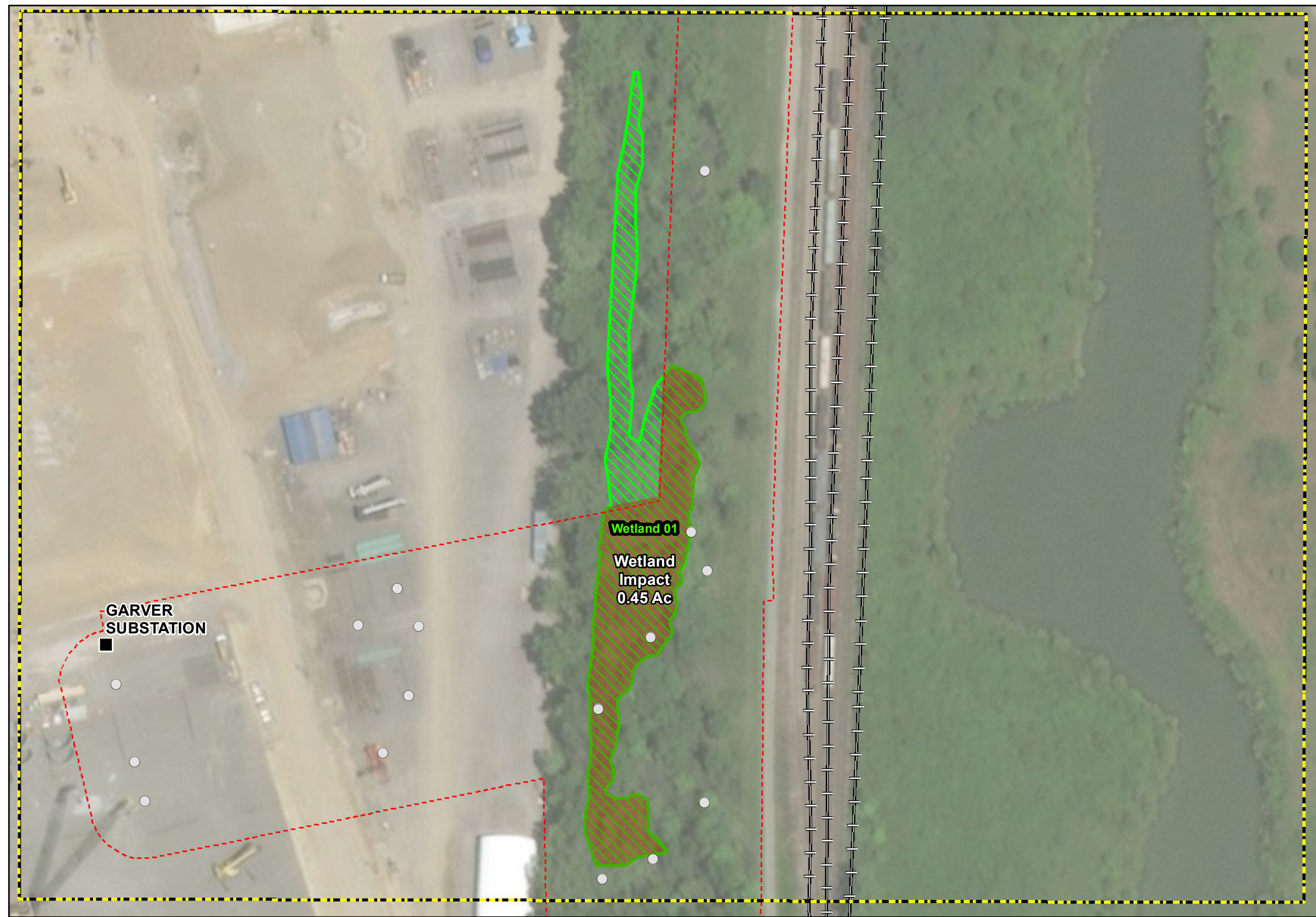
NATIONWIDE PERMIT 12
Garver TLoop and AK Steel to Garver

DUKE ENERGY

IDENTIFIED FEATURES MAP

DRAWN BY: DKT
CHECKED: DKT

DATE: 1/31/2019
APPROVED: MWW



PROJECT LOCATION



BUTLER COUNTY, OHIO

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED
THROUGH ESRI WORLD IMAGRY
MICROSOFT CORPORATION,
ACCESSED 10/2018

- | | | | |
|----------------------|--------------------|---------------------|----------------------|
| ■ Existing Facility | ■ Wetland Impact | — Ditch | — US Highway |
| ● Existing Structure | ▭ Area of Interest | — Delineated Stream | — Railroad |
| ○ Proposed Structure | — Local Road | ■ Delineated Pond | ▨ Delineated Wetland |
| ▭ Study Area | — Interstate | — State Highway | |



0 400 Feet



AREAS OF INTEREST 0 50 100 200 Feet

FIGURE 4

NATIONWIDE PERMIT 12
Garver TLoop and AK Steel to Garver

DUKE ENERGY

IMPACT MAP

DRAWN BY: DKT
CHECKED: DKT

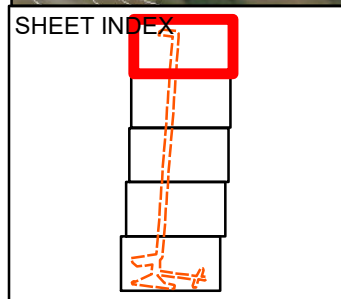
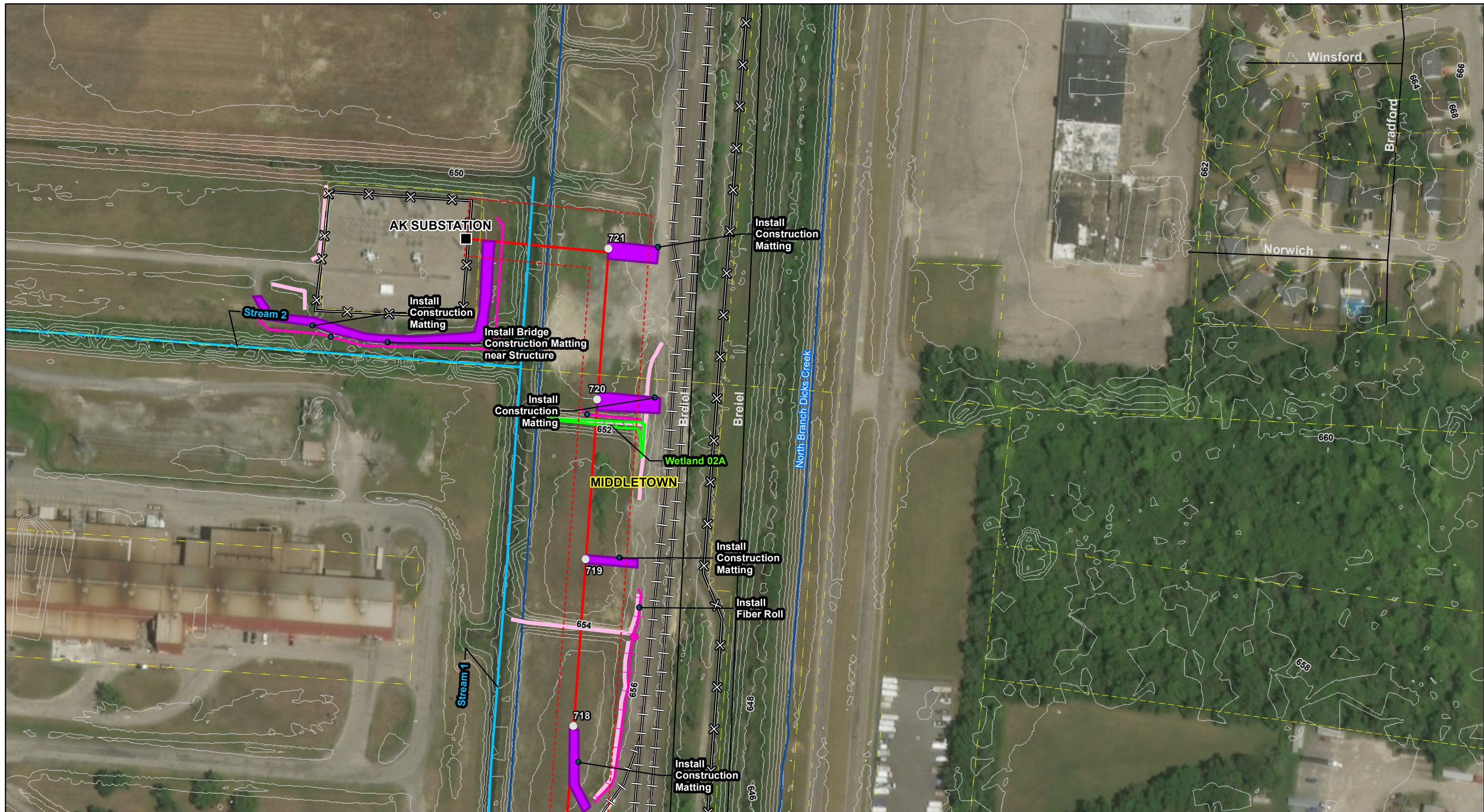
DATE: 1/31/2019
APPROVED: MWW

Nationwide Permit (NWP) 12 Application and
Pre-Construction Notification (PCN)
F7581/F7582/F5689 - 138kV Garver Substation TLoop and
Garver to AK Steel-138kV

EXHIBIT 1

SITE PLANS

R:\Projects\151156156720M_DukeEnergy\9193M76_SOW\36_GarverSubstation_TLoops\GIS\MXD_AK_Garver_COMBOWP\F5_NWP_WDR_Exhibit_1_Pages.mxd



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

N

0 65 130 260
 Feet

- | | | |
|----------------------|------------------------|-------------------|
| ■ Existing Facility | ■ Construction Matting | — 1' Contour Line |
| ▭ Parcels | ● Existing Culvert | |
| ▭ Study Area | — Ditch | |
| ⊗ Barrier Fence | — Delineated Stream | |
| — Fiber Roll | — NHD Flowline | |
| ▨ Delineated Wetland | ▭ Municipal Boundary | |



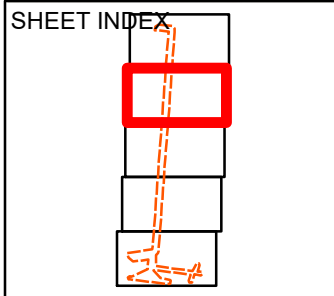
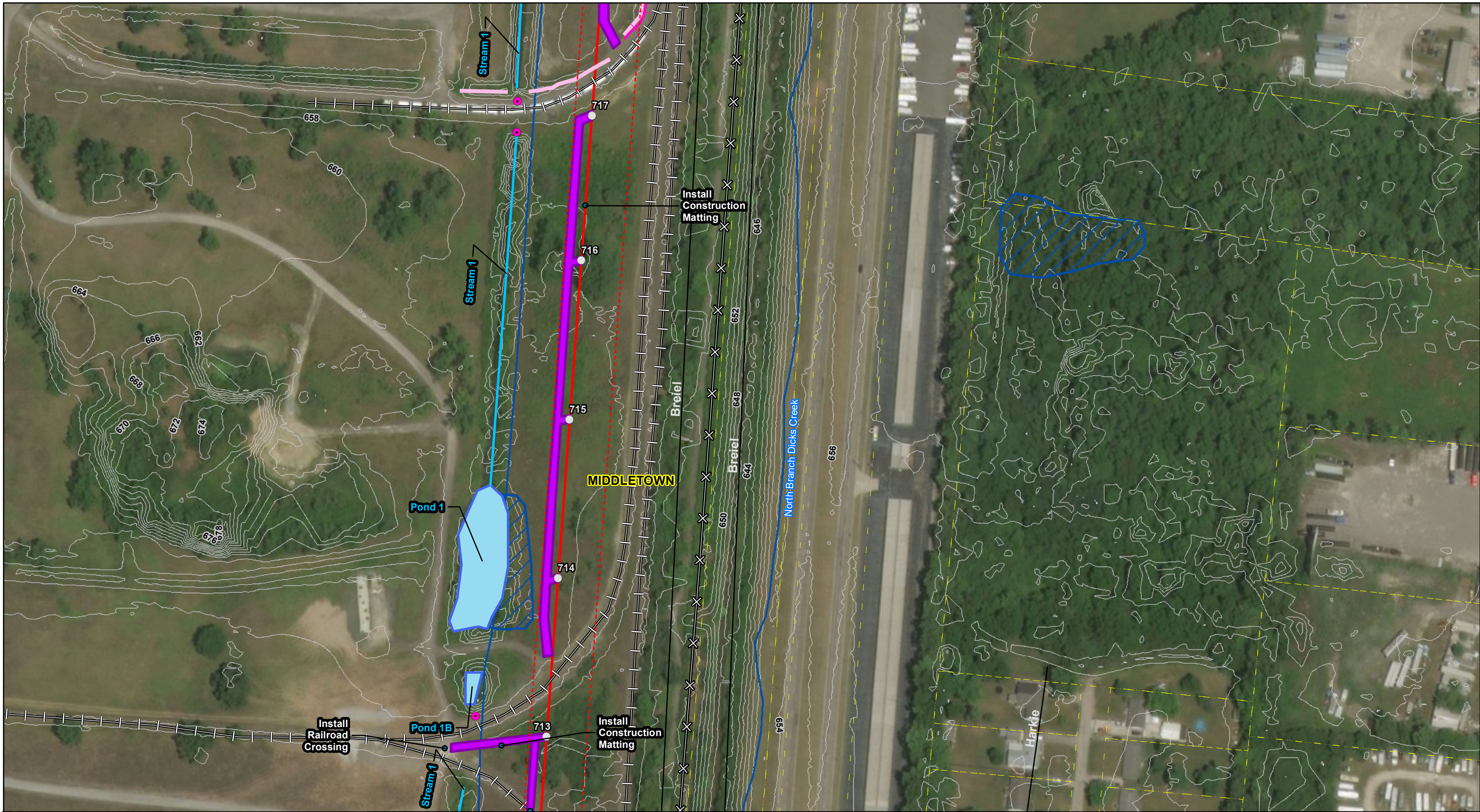
PROPOSED SITE PLAN / EXHIBIT 1 Page 1 of 5

NATIONWIDE PERMIT 12
 Garver TLoop and AK Steel to Garver

DUKE ENERGY

DRAWN BY: COD DATE: 1/31/2019
 CHECKED: CJ APPROVED: JT

R:\Projects\151156156720M_DukeEnergy\9193M76_SOW\36_GarverSubstation_TLoops\GIS\MXD_AK_Garver_COMBO\WP\F5_NWP_WDR_Exhibit_1_Pages.mxd



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

N

0 65 130 260
Feet

- Parcels
- Study Area
- Barrier Fence
- Fiber Roll
- Construction Matting
- Existing Culvert
- Ditch
- Delineated Stream
- Delineated Pond
- NWI Wetland
- NHD Flowline
- Municipal Boundary
- 1' Contour Line



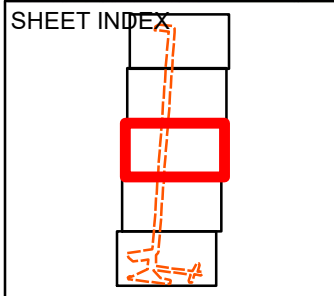
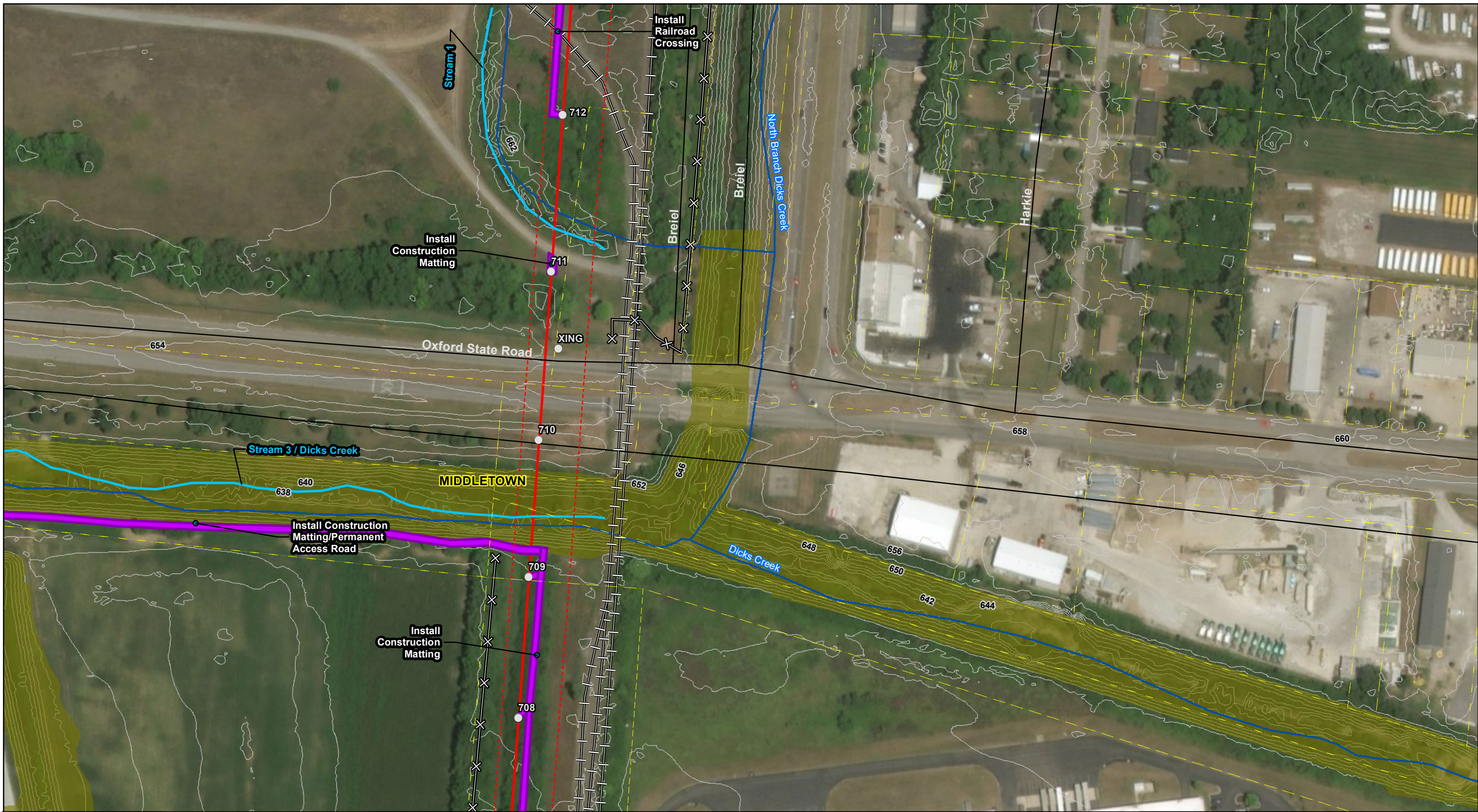
PROPOSED SITE PLAN / EXHIBIT 1 Page 2 of 5

NATIONWIDE PERMIT 12
Garver TLoop and AK Steel to Garver

DUKE ENERGY

DRAWN BY: COD DATE: 1/31/2019
CHECKED: CJ APPROVED: JT

R:\Projects\151156156720M_DukeEnergy\9193M76_SOW\36_GarverSubstation_T\Loops\GIS\MXD_AK_Garver_COMBONWPF5_NWP_WDR_Exhibit_1_Pages.mxd



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

N

0 65 130 260
Feet

- Parcels
- Study Area
- Barrier Fence
- Construction Matting
- Delineated Stream
- Railroad
- NHD Flowline
- 100Yr Floodplain
- Municipal Boundary
- 1' Contour Line



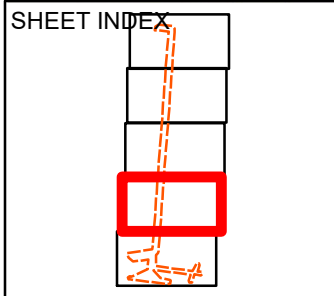
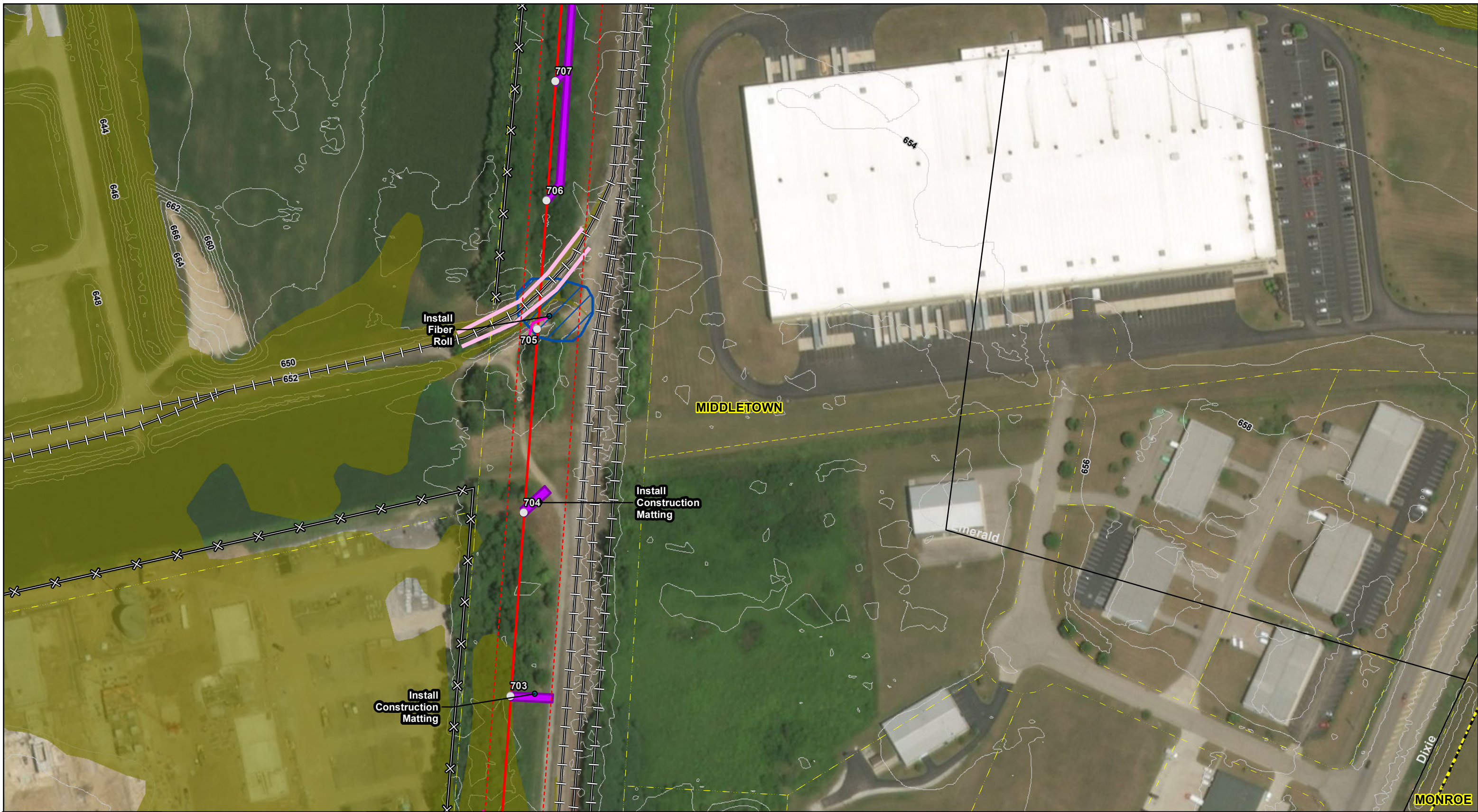
PROPOSED SITE PLAN / EXHIBIT 1 Page 3 of 5

NATIONWIDE PERMIT 12
Garver TLoop and AK Steel to Garver

DUKE ENERGY

DRAWN BY: COD DATE: 1/31/2019
CHECKED: CJ APPROVED: JT

R:\Projects\151156156720M_DukeEnergy\9193M76_SOW\36_GarverSubstation_T\Loops\GIS\MXD_AK_Garver_COMBOWP\F5_NWP_WDR_Exhibit_1_Pages.mxd



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

N

0 65 130 260
 Feet

- Parcels
- Study Area
- Barrier Fence
- Fiber Roll
- Construction Matting
- Ditch
- Railroad
- NWI Wetland
- 100Yr Floodplain
- Municipal Boundary
- 1' Contour Line



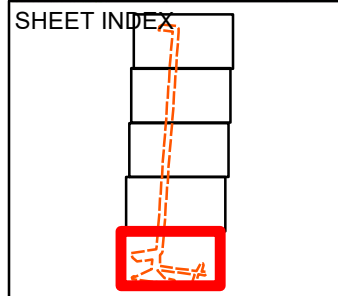
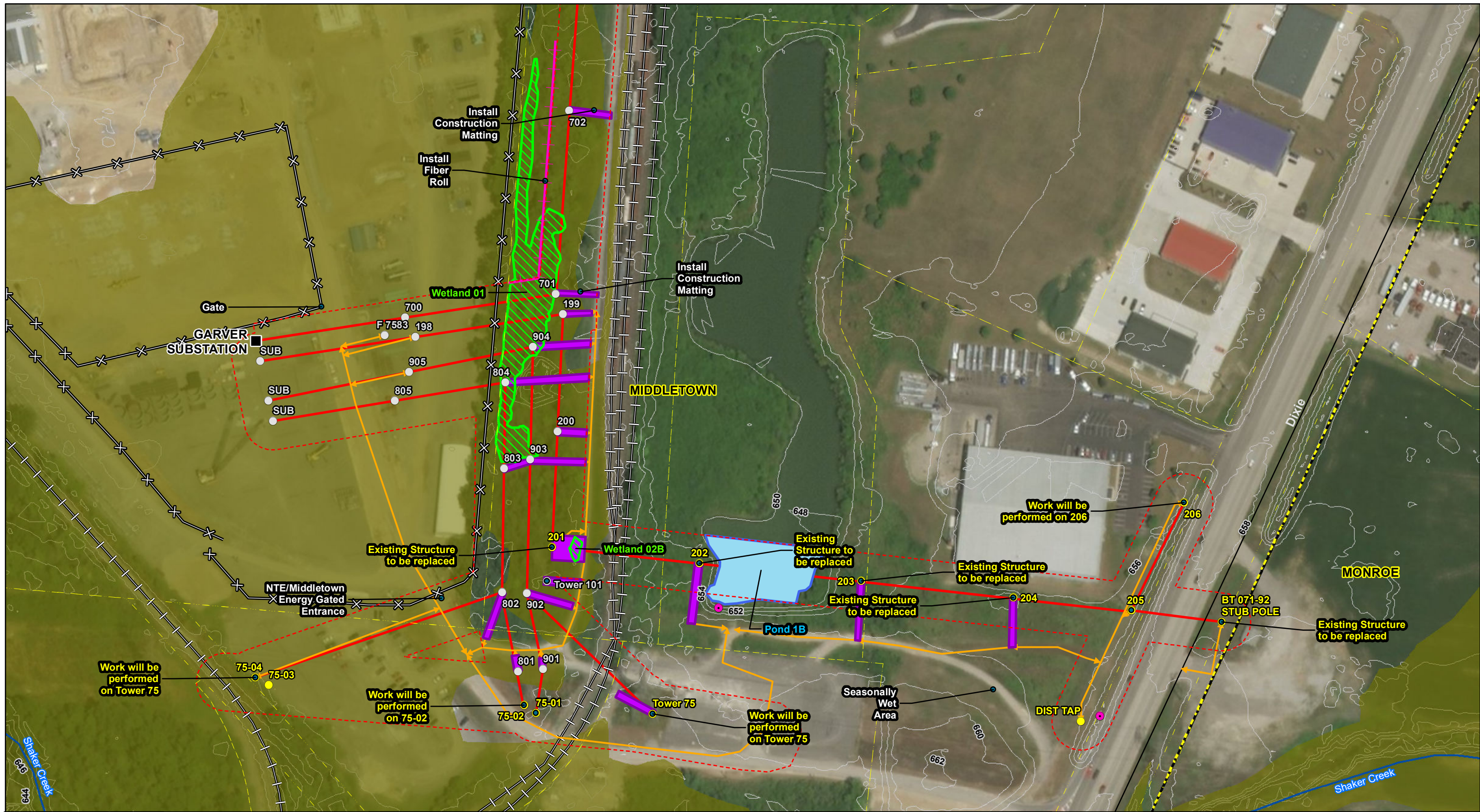
PROPOSED SITE PLAN / EXHIBIT 1 Page 4 of 5

NATIONWIDE PERMIT 12
 Garver TLoop and AK Steel to Garver

DUKE ENERGY

DRAWN BY: COD DATE: 1/31/2019
 CHECKED: CJ APPROVED: JT

R:\Projects\1511561720M_DukeEnergy\9193M76_SOW\36_GarverSubstation_TLoops\GIS\MXD_AK_Garver_COMBOWP\F5_NWP_WDR_Exhibit_1_Pages.mxd



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

N

0 65 130 260 Feet

Existing Facility	Barrier Fence	Railroad
Identified Feature	Fiber Roll	Project Centerline
Existing Structure	Delineated Wetland	NHD Flowline
Proposed Structure	Construction Matting	100Yr Floodplain
Parcels	Existing Culvert	Municipal Boundary
Study Area	Potential Access	1' Contour Line



PROPOSED SITE PLAN / EXHIBIT 1 Page 5 of 5

NATIONWIDE PERMIT 12
Garver TLoop and AK Steel to Garver

DUKE ENERGY

DRAWN BY: COD DATE: 1/31/2019
CHECKED: CJ APPROVED: JT

Nationwide Permit (NWP) 12 Application and
Pre-Construction Notification (PCN)
F7581/F7582/F5689 - 138kV Garver Substation TLoop and
Garver to AK Steel-138kV

EXHIBIT 2

SITE PHOTOGRAPHS



Photo 1. Data Point 1, View Facing North, 11/17/2018.



Photo 2. Data Point 1, View Facing South, 11/17/2018.



Photo 3. Data Point 2, View Facing East, 11/17/2018.



Photo 4. Data Point 2, View Facing South, 11/17/2018.



Photo 5. Data Point 3, View Facing West, 12/11/2018.



Photo 6. Data Point 3, View Facing North, 12/11/2018.



Photo 7. Data Point 4, View Facing West, 12/11/2018.



Photo 8. Stream 1, View Facing Upstream, 12/11/2018.



Photo 9. Stream 1, View Facing Downstream, 12/11/2018.



Photo 10. Stream 3, View Facing Upstream, 12/11/2018.



Photo 11. Stream 3, View Facing Downstream, 12/11/2018.



Photo 1. Data Point 1, View Facing North, 11/17/2018.



Photo 2. Data Point 1, View Facing South, 11/17/2018.



Photo 3. Data Point 2, View Facing East, 11/17/2018.



Photo 4. Data Point 2, View Facing South, 11/17/2018.



Photo 5. Data Point 3, View Facing North, 11/17/2018.



Photo 6. Data Point 3, View Facing South, 11/17/2018.



Photo 7. Data Point 4, View Facing North, 11/17/2018.



Photo 8. Data Point 4, View Facing South, 11/17/2018.

Nationwide Permit (NWP) 12 Application and
Pre-Construction Notification (PCN)
F7581/F7582/F5689 - 138kV Garver Substation TLoop and
Garver to AK Steel-138kV

APPENDIX

A

WATERS OF THE U.S. DELINEATION REPORT

Regulated Waters Delineation Report

F7581/F7582/F5689 – 138kV Garver Substation
TLoop

Middletown, Butler County, Ohio

January 17, 2019



Document Information

Prepared for Duke Energy
Client Contact Kate Keck (Duke Energy)
Project Name F7581/F7582/F5689 – 138kV Garver Substation TLoop
Project Number Cardno #J156720M76
Duke # M170053
Project Manager Cori Jansing
Date January 17, 2019

Prepared for:



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

Prepared by:



Cardno
11121 Canal Road, Cincinnati, Ohio 45241

Table of Contents

1	Introduction	1
2	Regulatory Definitions	1
2.1	Waters of the United States	1
2.2	Waters of the State.....	3
2.3	Wetlands.....	3
2.4	Streams, Rivers, Watercourses & Jurisdictional Ditches	6
2.5	Endangered Species Act.....	6
3	Background Information.....	6
3.1	Existing Maps	6
4	Methodology and Description	7
4.1	Regulated Waters Investigation	7
4.2	Technical Descriptions	8
4.3	Endangered, Threatened, and Rare Species.....	9
5	Jurisdictional Analysis	10
5.1	U.S. Army Corps of Engineers	10
5.2	Ohio Environmental Protection Agency.....	11
6	Summary and Conclusion	11
6.1	Summary	11
6.2	Conclusion.....	12
7	References.....	13

Appendices

Appendix A	Site Photographs
Appendix B	Ohio Rapid Assessment Method 5.0 Forms and USACE Wetland Delineation Data Sheets
Appendix C	Endangered, Threatened, and Rare Species

Tables

Table 1-1	PLSS within the F7281/F7582/F5689 – 138kV Garver Substation TLoop Study Area.....	1
Table 3-2	Soil Map Units within the F7281/F7582/F5689 – 138kV Garver Substation TLoop Study Area	7
Table 6-1	Features Identified within the F7281/F7582/F5689 – 138kV Garver Substation TLoop Study Area	11

Figures

Figure 1	Project Location and Water Resources
Figure 2	Soil Survey
Figure 3	Delineation

Acronyms

APA	Administrative Procedure Act
BF	Bank Full
CFR	Code of Federal Regulations
CWA	Clean Water Act
DBH	Diameter at Breast Height
DP	Data Point
EPA	U.S. Environmental Protection Agency
ETR	Endangered, Threatened, and Rare
FAC	Facultative Plant
FACU	Facultative Upland Plant
FACW	Facultative Wetland Plant
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographical Information System
MS4	Municipal Separate Storm Water Sewer Systems

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

1 Introduction

Cardno was contracted to perform a water resource inventory, including wetlands and streams, which are located at the F7581/F7582/F5689 – 138kV Garver Substation TLoop project in Middletown, Butler County, Ohio. This field investigation was performed on November 7, 2018. Table 1-1 summarizes the location of the project based on the Public Land Survey Section (PLSS) data.

Table 1-1 PLSS within the F7581/F7582/F5689 – 138kV Garver Substation TLoop Study Area

Township	Range	Section
2E	4N	7

The total size of the Study Area was approximately 11.58 acres. The Study Area consisted of a mix of habitats including secondary growth deciduous forest, forested wetland, emergent wetland, scrub shrub, and fallow field.

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

2 Regulatory Definitions

2.1 Waters of the United States

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

On January 9, 2001, the U.S. Supreme Court issued a decision, *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* (No. 99-1178). The decision reduced the regulation of isolated wetlands under Section 404 of the CWA, which assigned the USACE authority to issue permits for the discharge of dredge or fill material into “waters of the U.S.”. Prior

to the SWANCC decision, the USACE had adopted a regulatory definition of "waters of the U.S." that afforded federal protection for almost all of the nation's wetlands. The Supreme Court decision interpreted that the USACE's jurisdiction was restricted to navigable waters, their tributaries, and wetlands that are adjacent to these navigable waterways and tributaries. The decision leaves the majority of "isolated" wetlands unregulated by the CWA. Therefore, most wetlands that are not adjacent to, or contiguous with, any other "waters of the U.S." via a surface drain such as a swale, ditch, or stream are considered isolated and thus no longer jurisdictional by the USACE.

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

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

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

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

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

water may still be determined to have a significant nexus on a case-specific basis under paragraph (a)(8) of the rule and, thus, be a “water of the United States” (EPA 2015).

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

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

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

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

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

2.2 Waters of the State

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

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

2.3 Wetlands

Wetlands are a category of “waters of the U.S.” for which a specific identification methodology has been developed. As described in detail in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), wetland boundaries are delineated using three criteria:

hydrophytic vegetation, hydric soils, and wetland hydrology. In addition to the criteria defined in the 1987 Manual, the procedures described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory, 2010) were used to evaluate the Study Area for the presence of wetlands.

2.3.1 Hydrophytic Vegetation

On June 1, 2012, the National Wetland Plant List (NWPL), formerly called the National List of Plant Species that Occur in Wetlands (Reed 1988), went into effect after being released by the U.S. Army Corps of Engineers (USACE) as part of an interagency effort with the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (Lichvar and Kartesz, 2009). The NWPL, along with the information implied by its wetland plant species status ratings, provides general botanical information about wetland plants and is used extensively in wetland delineation, restoration, and mitigation efforts. The NWPL consists of a comprehensive list of wetland plant species that occur within the United States along with their respective wetland indicator statuses by region. An indicator status reflects the likelihood that a particular plant species occurs in a wetland or upland (Lichvar et al. 2012). Definitions of the five indicator categories are presented below.

OBL (Obligate Wetland Plants): almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.

FACW (Facultative Wetland Plants): usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

FAC (Facultative Plants): occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

FACU (Facultative Upland Plants): usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

UPL (Upland Plants): almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

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

coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total.

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

2.3.2 Hydric Soils

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

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

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

2.3.3 Wetland Hydrology

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

2.3.4 Wetland Definition Summary

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

2.4 Streams, Rivers, Watercourses & Jurisdictional Ditches

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

The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

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

2.5 Endangered Species Act

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

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

3 Background Information

3.1 Existing Maps

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

3.1.1 National Wetland Inventory

The NWI map of the area (Figure 1) identified one PUBGx (Palustrine, Unconsolidated Bottom, Intermittently Exposed, Excavated) freshwater pond within the Study Area.

3.1.2 National Hydrography Dataset

The NHD dataset did not identified any surface waters within the Study Area.

3.1.3 Soil Survey

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

Table 3-2 Soil Map Units within the F7581/F7582/F5689 – 138kV Garver Substation TLoop Study Area

Symbol	Description	Hydric
Pa	Patton silty clay loam, 0 to 2 percent slopes	Y
PrB	Princeton sandy loam, 2 to 8 percent slopes	N
Rn	Ross loam, 0 to 2 occasionally flooded	N

4 Methodology and Description

4.1 Regulated Waters Investigation

The delineation of regulated waters within the Study Area was based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory, 2010) as required by current USACE policy.

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

4.1.1 Site Photographs.

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

4.1.2 Delineation Data Sheets.

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

4.2 Technical Descriptions

Complete wetland field data sheets from the site investigation are located in Appendix B for the Duke Energy F7581/F7582/F5689 – 138kV Garver Substation TLoop. The project included the review of an approximate 11.58 acre Study Area, centered on existing and proposed overhead electric transmission line ROW and existing substation infrastructure located in Middletown, Butler County, Ohio (see Figure 1). The Duke Energy F7581/F7582/F5689 – 138kV Garver Substation TLoop project initiates east of Cincinnati Dayton Road (39.4651 N, -84.34733 W) and south of Garver Substation (39.46549 N, -84.35351 W). The project terminates at the Garver Substation (39.46687 N, -84.35283 W). The Study Area consisted of a mix of habitats including secondary growth deciduous forest, forested wetland, emergent wetland, scrub shrub, and fallow field. The project Study Area is located entirely within Shaker Creek watershed (14-digit HUC 05080002-050-060).

4.2.1 Wetland and Stream Descriptions

Pond 1 (3.3 acres with 0.4 located within the Study Area)

Pond 1 was a freshwater excavated pond in hydric soils located in the southeastern portion of the Study Area. A box culvert was located in the southwest corner of Pond 1. It is our best professional judgement based on desktop review and topography that this culvert discharges off site into Shaker Creek, a tributary to Dicks Creek that ultimately flows into the Great Miami River, Traditional Navigable Water. Due to this connection, Pond 1 should be considered a jurisdictional water of the United States.

Wetland 1 (0.65 acre with 0.3 located within the Study Area)

Wetland 1 was a palustrine forested wetland, located approximately 640 LF from Shaker Creek within the 100YR floodplain to Shaker Creek, a tributary to Dicks Creek which ultimately flows into the Great Miami River, Traditional Navigable Water. Therefore, Wetland 1 should be considered a jurisdictional water of the United States. The ORAM score for Wetland 1 was 38, categorizing the wetland as a category 2, or moderate quality, wetland.

Wetland Data Point

Data Point 01 (DP01)

Dominant vegetation in the vicinity of DP01 included shell-bark hickory (*Carya laciniosa*, FACW) in multiple strata, common hackberry (*Celtis occidentalis*, FAC), and white grass (*Leersia virginica*, FACW). In addition, non-dominant vegetation observed included Amur honeysuckle (*Lonicera maackii*, UPL), green ash (*Fraxinus pennsylvanica*, FACW), Muskingum sedge (*Carex muskingumensis*, OBL), and limestone-meadow sedge (*Carex granularis*, FACW). The plants at this data point qualified as hydrophytic vegetation. The soil from 0-16" had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 15%, and a texture of clay loam. The soil at the data point was mapped as Patton silty clay loam (Pa) and met the depleted matrix (F3), and redox depressions (F8) hydric soil criteria. Secondary indicators of hydrology observed included geomorphic position (D2), and the FAC-neutral test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 02 (DP02)

Dominant vegetation in the vicinity of dp04 included quaking aspen (*Populus tremuloides*, FAC), American basswood (*Tilia americana*, FACU), and Amur honeysuckle (*Lonicera maackii*, UPL).

In addition, non-dominant vegetation observed included Amur honeysuckle (*Lonicera maackii*, UPL), and groundivy (*Glechoma hederacea*, FACU). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil at the data point was mapped as Patton silty clay loam (Pa) and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Wetland 2 (0.01 acre within the Study Area)

Wetland 2 was a small depressional palustrine emergent wetland, located approximately 450 LF from Shaker Creek within the 100YR floodplain to Shaker Creek, a tributary to Dicks Creek which ultimately flows into the Great Miami River, Traditional Navigable Water. Therefore, Wetland 2 should be considered a jurisdictional water of the United States. The ORAM score for Wetland 2 was 17, categorizing the wetland as a category 1, or low quality, wetland.

Wetland Data Point

Data Point 03 (DP03)

Dominant vegetation in the vicinity of DP03 included black locust (*Robinia pseudoacacia*, FACU), and reed canary grass (*Phalaris arundinacea*, FACW). In addition, non-dominant vegetation observed included white mulberry (*Morus alba*, FAC), green ash (*Fraxinus pennsylvanica*, FACW), ash-leaf maple (*Acer negundo*, FAC), indian-hemp (*Apocynum cannabinum*, FAC), white heath American-aster (*Symphotrichum ericoides*, FACU), curly dock (*Rumex crispus*, FAC), Fuller's teasel (*Dipsacus fullonum*, FACU), and burr oak (*Quercus macrocarpa*, FAC). The plants at this data point qualified as hydrophytic vegetation. The soil from 0-16" had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 10% and a texture of clay loam. The soil at the data point was mapped as Patton silty clay loam (Pa), and met the depleted matrix (F3), and redox depressions (F8) hydric soil criteria. Secondary indicators of hydrology observed included geomorphic position (D2), and the FAC-neutral test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 04 (DP04)

Dominant vegetation in the vicinity of DP04 included black locust (*Robinia pseudoacacia*, FACU) in multiple strata, Canadian goldenrod (*Solidago canadensis*, FACU), and reed canary grass (*Phalaris arundinacea*, FACW). In addition, non-dominant vegetation observed included quaking aspen (*Populus tremuloides*, FAC), white heath American-aster (*Symphotrichum ericoides*, FACU), Amur honeysuckle (*Lonicera maackii*, UPL), creeping-jenny (*Lysimachia nummularia*, FACW), white mulberry (*Morus alba*, FAC), and Eastern poison ivy (*Toxicodendron radicans*, FAC). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil from 0-16" had a matrix soil color of 10YR 4/2 with a texture of clay loam. The soil at the data point was mapped as Patton silty clay loam (Pa), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

4.3 Endangered, Threatened and Rare Species

The potential for listed species known to occur within Butler County were evaluated based on the habitat observed within the Study Area. A walking survey of the Study Area was performed in which all observed Endangered, Threatened and Rare (ETR) species or specific known special habitats were noted. Coordination with the U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources Division of Wildlife (ODNR-DOW) occurred as it related to the Natural Heritage Database search results for the Study Area.

Appendix C contains the results of ETR species as they relate to the habitat observed within the Study Area are included with this report.

4.3.1 Bat Roost Habitat

The Indiana Bat (*Myotis sodalis*, federally endangered) and Northern Long-eared Bat (*Myotis septentrionalis*, federally threatened) are protected under the Endangered Species Act, which is overseen by the USFWS. Typical guidance from USFWS regarding potential bat roost trees is avoidance of cutting trees from April through October. The Study Area was assessed for potential bat roosting habitat with respect to any indicated clearing activities. Potential bat roost trees include dead or dying trees (including live shagbark hickories) with at least 10-percent exfoliating bark, a diameter at breast height (DBH) of at least 3 inches, and solar exposure for maternity roost trees (the tree is on a wooded edge or in a canopy gap). Correspondence from USFWS regarding Indiana Bat and Northern Long-eared Bat is included within Appendix C.

The entire project Study Area was surveyed to identify potential Indiana bat and northern long-eared bat roost trees. Based on our field inspection and our best professional judgment, suitable bat roost habitat was observed within approximately 1.57 acres of the Study Area that consisted of secondary growth forest located within the new projected powerline ROW. Dominant canopy species included shell-bark hickory (*Carya laciniosa*), quaking aspen (*Populus tremuloides*), American basswood (*Tilia americana*), bur oak (*Quercus macrocarpa*), and red oak (*Quercus rubra*). Average diameter at breast height (DBH) for these canopy species was approximately eight (8) to ten (10) inches with a maximum of approximately 30 inches. Understory vegetation was dominated by dense Amur Honeysuckle (*Lonicera maackii*) and saplings of the canopy species.

5 Jurisdictional Analysis

5.1 U.S. Army Corps of Engineers

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

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

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

5.2 Ohio Environmental Protection Agency

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

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

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

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

6 Summary and Conclusion

6.1 Summary

Cardno inspected the F7581/7582/5689 – 138kV Garver Substation TLoop Study Area on November 7, 2018.

6.1.1 Wetlands and Waterways

One (1) jurisdictional forested wetland, one (1) jurisdictional forested wetland, and one (1) pond were identified within the F7581/7582/5689 – 138kV Garver Substation TLoop Study Area.

Feature Name	USGS/ NWI Identified	Feature Class	Regulatory Status ¹	QHEI/HHEI/ ORAM Score		Acreage (AC)	
Pond 1	Yes	Perennial	Jurisdictional	N/A		0.09	
Wetland 1	No	PFO	Jurisdictional	52		0.65	
Wetland 2	No	PEM	Jurisdictional	17		0.01	
Totals			Ponds		Perennial		0.09
			Wetlands		PFO	JD	0.65
					PEM	JD	0.01

¹ Regulatory Status is based on our “professional judgment” on experience; however, the USACE makes the final determination.

6.1.2 Endangered, Threatened, and Rare Species

Several sources of information were consulted to further define the potential habitat of listed species that occur within the county of the Study Area. The table presented in Appendix C

contains the list of ETR species known to occur within Butler County and their potential to occur within the Study Area based on their habitat requirements and field observations.

Correspondence letters to the ODNR-DOW and the USFWS regarding RTE species located within a ½-mile of the Study Area were sent on November 9, 2018. The USFWS response letter was received on November 19, 2018. The copies of the correspondence and response letters are located in Appendix D.

6.1.3 Indiana Bat and Northern Long-eared Bat Roost Habitat

Suitable bat roost habitat was observed within the approximate 1.57-acre portion of the Study Area, which consisted of secondary growth forest located within proposed new ROW.

However, based on our current project understanding and our best professional judgment, we do not recommend any further survey options for this site at this time if the USFWS recommendation that all tree clearing activities shall occur between October 1 and March 31 is adhered to. If tree clearing activities cannot be completed within the USFWS recommended October 1 through March 31 window mist-net surveys for the Indiana bat and Northern Long-eared bat will need to occur following the *USFWS 2018 Range-wide Indiana Bat Summer Survey Guidelines* (April 2018) protocol. According to the range-wide guidelines, net surveys shall incorporate either nine net nights per square 0.5 kilometer (123 acres) of project area, or four net nights per kilometer for linear projects. Due to the presence of white-nose syndrome in Ohio, the ODNR-DOW and USFWS Ohio Field Office has determined that mist-net surveys in Ohio should be conducted between June 1 and August 15.

The USFWS is the regulatory authority that makes the final determination as to the status of the Indiana Bat and Northern Long-eared Bat in the Study Area. Correspondence with the USFWS and ODNR-DOW regarding RTE located within a ½-mile of the Study Area were sent on November 9, 2018. The USFWS response letter was received on November 19, 2018. The correspondence and response letters are located in Appendix D.

6.2 Conclusion

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

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

7 References

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

Environmental Laboratory. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region*, ERDC/EL TR-10-16, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

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

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

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

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

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

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

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

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

DUKE ENERGY
F7581/F7582/F5689—138kV
GARVER SUBSTATION TLOOP

FIGURES