Photo 9. ROW Corridor, Fallow Field Vegetation, facing West.

Photo 10 ROW Corridor, Stream, facing Northeast.

Regulated Waters Delineation Report

Garver to AK Steel – 138kV

Middletown, Butler County, Ohio

January 17, 2019

Cardno

Document Information

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Acronyms

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

NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
NWP	Nationwide Permit
NWPL	National Wetland Plant List
OBL	Obligate Wetland Plant
OEPA	Ohio Environmental Protection Agency
ODNR-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 Garver to AK Steel – 138kV project in Middletown, Butler County, Ohio. This field investigation was performed on December 12, 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 Garver to AK Steel—138kV Project Study Area

Township	Range	Section
2E	4N	7
2E	4N	8

The total size of the Project Study Area was approximately 14.36 acres. The Project Study Area consisted of a mix of habitats including secondary growth deciduous forest, forested wetland, emergent wetland, scrub shrub, fallow field, and maintained turf.

This report identifies the jurisdictional status of the Project 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 immediately adjacent to the Project Study Area.

3.1.2 National Hydrography Dataset

The NHD dataset (Figure 4) identified two (2) surface waters (Stream 1 and Stream 3, Dicks Creek) within the Project Study Area. Stream 1 crosses the Study Area at two separate locations.

3.1.3 Soil Survey

The NRCS Soil Survey identified five (5) 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 M107753 Garver to AK Steel – 138kV Study Area

Symbol	Description	Hydric
ElB2	Eldean loam, 2 to 6 percent slopes, eroded	N
Pa	Patton silty clay loam, 0 to 2 percent slopes	Y
Rn	Ross Loam, 0 to 2 percent slopes, occasionally flooded	N
Ud	Udorthents	N
UsA	Urban land-Patton complex, nearly level	N

4 Methodology and Description

4.1 Regulated Waters Investigation

The delineation of regulated waters within the Project 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 stream field data sheets from the site investigation are located in Appendix B and wetland field data sheets are located in Appendix C for the Duke Energy Ohio Garver to AK Steel – 138kV. The project included the review of an approximate 14.36 acre Study Area, centered on the proposed overhead electric transmission line ROW and existing substation infrastructure located in Middletown, Butler County, Ohio (see Figure 1). The Duke Energy Ohio Garver to AK Steel – 138kV project initiates at the Duke Energy Ohio Garver Substation (39.46722 N, -84.35305 W) and terminates at the Duke Energy Ohio AK Steel Substation (39.4822 N, -84.3509 W). The Study Area consisted of a mix of habitats including secondary growth deciduous forest, forested wetland, emergent wetland, scrub shrub, fallow field, and maintained turf. The Project Study Area is located within Dicks Creek (14-digit HUC 05080002-050-050) and Shaker Creek watershed (14-digit HUC 05080002-050-060).

4.2.1 Wetland and Stream Descriptions

Stream 1 (Unnamed tributary to Dicks Creek) (214 linear feet within the Project Study Area)

Stream 1 was a perennial stream that flowed south through the Project Study Area. This stream was at base flow conditions at the time of the stream survey. The dominant substrates was silt. Bank Full width was approximately fifty feet and depth was ten to fifteen feet. Stream 1 flows directly into the Project Study Area then into North Branch Dicks Creek, a tributary to the Miami River, a Traditional Navigable Water. Due to this connection, this stream should be considered a jurisdictional water of the United States. The QHEI score was 17.5 for Stream 1.

Stream 2 (Unnamed tributary to Dicks Creek) (951 linear feet outside the Project Study Area)

Stream 2 was a perennial stream located west of the Project Study Area. This stream was at base flow conditions at the time of the stream survey. The dominant substrates was silt. Bank Full width was approximately thirty feet and depth was ten to fifteen feet. Stream 2 flows directly into Stream 1 which flows into North Branch Dicks Creek a tributary to the Miami River, a Traditional Navigable Water. Due to this connection, Stream 2 should be considered a jurisdictional water of the United States. The QHEI score was 19.5 for Stream 2.

Stream 3 (Dicks Creek to Miami River) (101 linear feet within the Project Study Area)

Stream 3 was a perennial stream that flowed west through the Project Study Area. This stream was at base flow conditions at the time of the stream survey. Both banks had a narrow width (less than fifteen feet) riparian corridor, with the floodplain land use predominantly industrial or maintained right of way/riparian. The stream had no sinuosity observed within the survey reach. The dominant substrates were silt and gravel. Ordinary High Water Mark (OHWM) width was twenty feet and depth was 4 feet. Bank Full width was forty feet and depth was fifteen feet. The maximum pool depth observed was approximately 3 feet. Stream 3 is a relatively permanent water

(RPW) and flows into the Miami River, a Traditional Navigable Water (TNW). Due to this connection, this stream should be considered a jurisdictional water of the United States. Stream 1 had a QHEI score of 24.

Pond 1 (0.41 acre outside the Project Study Area)

Pond 1 was a freshwater excavated pond located west of the Project Study Area. Stream 2 flows into Pond 1 from the north and exits the pond to the south via culverts, which flows into North Branch Dicks Creek, a tributary of the Miami River. Due to this connection this pond should be considered a jurisdictional water of the United States.

Pond 2 (0.03 acre outside the Project Study Area)

Pond 2 was a freshwater excavated pond located west of the Project Study Area. Stream 2 flows into Pond 1 from the north and exits the pond to the south via culverts into Pond 2, then exits the pond to the south via culverts, which flows into North Branch Dicks Creek, a tributary of the Miami River. Due to this connection this pond should be considered a jurisdictional water of the United States.

Wetland 1 (0.65 acres with 0.27 acre within the Project Study Area)

Wetland 1 was a palustrine forested wetland. This wetland discharges flow south and ultimately drains to Miller Creek. Miller Creek flows into Shaker Creek, a tributary to Dicks Creek which ultimately discharges into the Great Miami River. 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 03 (DP03)

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 04 (DP04)

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 (0.03 acre with 0.019 acre within the Project Study Area)

Wetland 2 was a palustrine emergent wetland located east of the Project Study Area within a drainage ditch which flows into Stream 1. This wetland appeared to be hydraulically connected to a jurisdictional water of the United States. The ORAM score for Wetland 2 was 18, categorizing the wetland as a category 1, or low quality, wetland.

Wetland Data Point

Data Point 01 (DP01)

Dominant vegetation in the vicinity of DP01 included lesser poverty rush (*Juncus tenuis*, FAC). In addition, non-dominant vegetation observed included dark-green bulrush (*Scirpus atrovirens*, OBL), cattail (*Typha X glauca*, OBL), shallow sedge (*Carex lurida*, OBL), Canadian horseweed (*Erigeron canadensis*, FACU), and broom-sedge (*Andropogon virginicus*, FACU). The plants at this data point qualified as hydrophytic vegetation. The soil from 0-12" had a matrix soil color of 10YR 4/1 with concentrations in the matrix at 25 percent, and a texture of clay loam. The soil at the data point was mapped as Urban land-Patton complex, nearly level (UsA), and met the depleted matrix (F3), and redox depressions (F8) hydric soil criteria. The primary indicator of hydrology observed was saturation (A3), and the secondary indicator of hydrology, geomorphic position (D2). This data point qualified as a wetland.

Upland Data Point

Data Point 02 (DP02)

Dominant vegetation in the vicinity of DP02 included red fescue (*Festuca rubra*, FACU). In addition, non-dominant vegetation observed included broom-sedge (*Andropogon virginicus*, FACU), Canadian goldenrod (*Solidago canadensis*, FACU), Canadian horseweed (*Erigeron canadensis*, FACU), Queen Anne's-lace (*Daucus carota*, UPL), and Eastern red-cedar (*Juniperus virginiana*, FACU). The plants at this data point did not qualify as hydrophytic vegetation criteria. The soil from 0-12" had a matrix soil color of 10YR 4/3 with concentrations in the matrix at 5 percent, and a texture of clay loam. The soil at the data point was mapped as Urban land-Patton complex, nearly level (UsA), 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) Division of Wildlife occurred as it related to the Natural Heritage Database search results for the Study Area.

Tables summarizing 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 D.

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 the approximate 4 acre of the Study Area that consisted of secondary growth forest located within the proposed new transmission ROW. Dominant canopy species included shell-bark hickory (*Carya laciniosa*), black walnut (*Juglans nigra*), hackberry (*Celtis occidentalis*), 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 25 inches. Understory vegetation was dominated by dense Amur Honeysuckle (*Lonicera maackii*).

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 Garver-AK Steel – 138kV Project Study Area on December 12, 2018.

6.1.1 Wetlands and Waterways

Three (3) perennial streams, two (2) ponds, and two (2) wetlands were identified within or directly adjacent to the Garver-AK Steel – 138kV Study Area.

Table 6-1 Features Identified within the Garver-AK Steel – 138kV Study Area

Feature Name	USGS/ NWI Identified	Feature Class	Regulatory Status[1]	Riffles / Pools	Dimensions (ft)		Substrate	QHEI/ ORAM Score	Linear Footage (LF)	Acreage (AC)
					Width	Depth				
Stream 1	Yes	Perennial	Jurisdictional	No	25	3	Si	17.5	214	0.12
Stream 2	Yes	Perennial	Jurisdictional	No	15	2	Si	19.5	951	0.33
Stream 3	Yes	Perennial	Jurisdictional	No	35	3	Si-G	24	101	0.08
Pond 1	Yes	Perennial	Jurisdictional	N/A	N/A	N/A	N/A	N/A	N/A	0.41
Pond 2	Yes	Perennial	Jurisdictional	N/A	N/A	N/A	N/A	N/A	N/A	0.03
Wetland 1	No	PFO	Jurisdictional	N/A	N/A	N/A	N/A	52	N/A	0.65
Wetland 2	No	PEM	Jurisdictional	N/A	N/A	N/A	N/A	18	N/A	0.03
Totals			**Streams**		**Perennial**		**1,266 LF**			**0.47**
			Ponds		**Perennial**		**---**			**0.44**
			Wetlands		**PFO**	**JD**	**---**			**0.65**
			Wetlands		**PEM**	**JD**	**---**			**0.03**

[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 Project Study Area. The table presented in Appendix D 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 with the ODNR-DOW and the USFWS regarding RTE species located within a ½-mile of the Study Area was sent November 9, 2018. Results from the USFWS were received on November 19, 2018. The copies of the correspondence 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 an approximate 4 acre portion of the Study Area which consisted of secondary growth forest located within proposed 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 November 9, 2018. Results from the USFWS was received on November 19, 2018. This correspondence is 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

Ohio Environmental Protection Agency Technical Report. 2012. *Biological and Water Quality Study of the Lower Great Miami River Watershed Butler, Hamilton, Montgomery, Preble, and Warren Counties*. https://epa.ohio.gov/portals/35/documents/GMR2012TSD.pdf

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

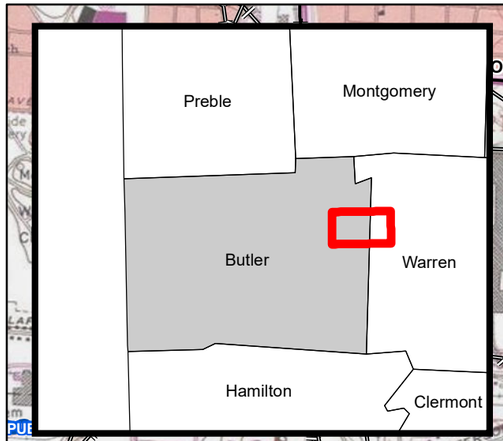
United States Department of Agriculture, Natural Resource Conservation Service (NRCS). Web Soil Survey. Soil Survey of Butler County, OH.

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 OHIO
Garver-AK Steel – 138kV

FIGURES



M170053 – Garver-AK Steel 138 kV Line Project Area

AK SUBSTATION

GARVER SUBSTATION

SR-122

PROJECT LOCATION

BUTLER COUNTY, OHIO

REFERENCE:
USGS 7.5' TOPOGRAPHIC QUADRANGLES: CINCINNATI EAST AND CINCINNATI WEST, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 10/2018

- Existing Facility
- Project Centerline
- Railroad
- Interstate
- State Highway
- US Highway
- Study Area
- NWI Wetland

DUKE ENERGY

Cardno

0 500 1,000 2,000 Feet

FIGURE 1
REGULATED WATERS DELINEATION REPORT
Garver-AK Steel 138 kV Line

DUKE ENERGY

PROJECT VICINITY MAP

DRAWN BY: DKT DATE: 1/30/2019
CHECKED: DKT APPROVED: MWW

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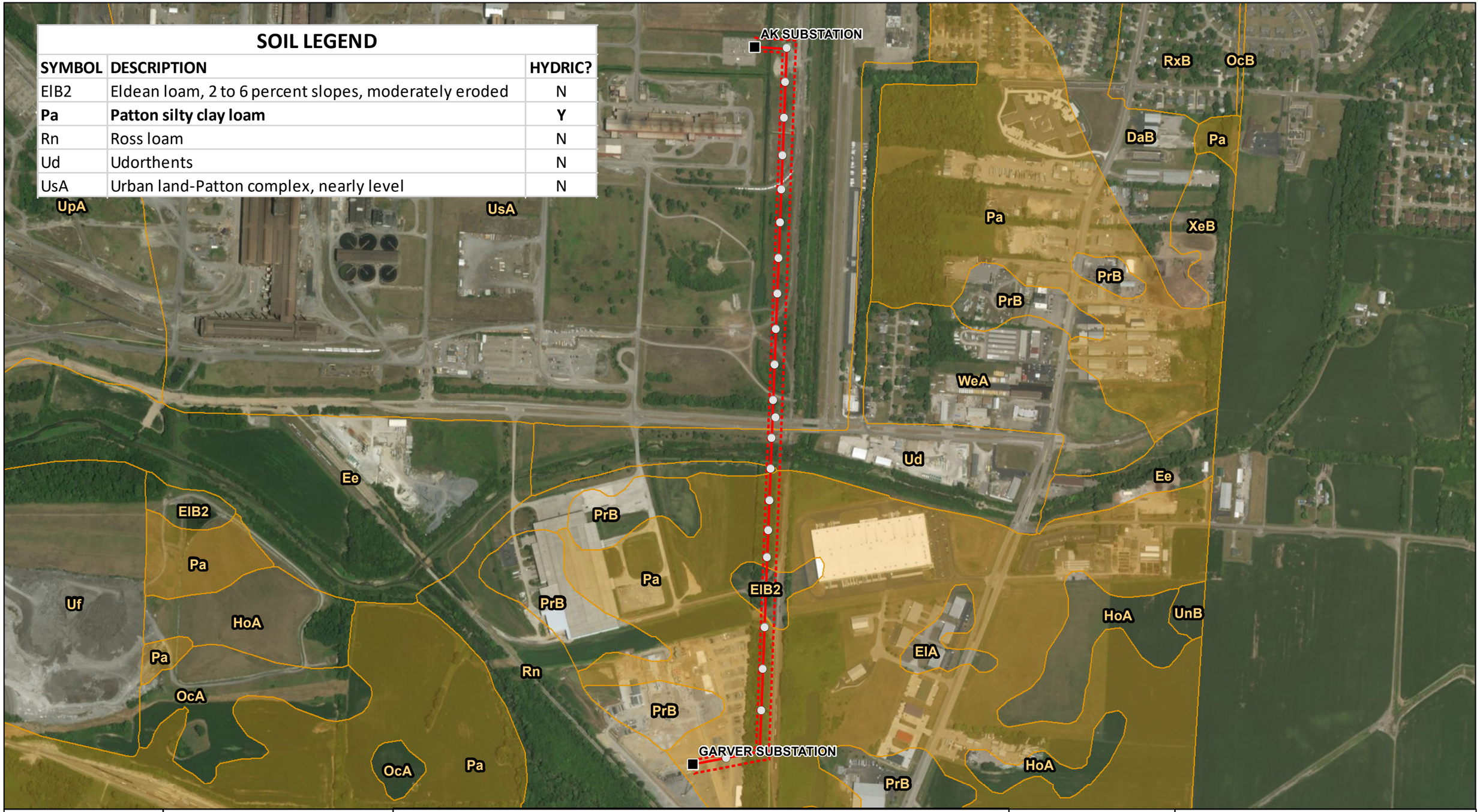
SOIL LEGEND

SYMBOL	DESCRIPTION	HYDRIC?
ElB2	Eldean loam, 2 to 6 percent slopes, moderately eroded	N
Pa	**Patton silty clay loam**	**Y**
Rn	Ross loam	N
Ud	Udorthents	N
UsA	Urban land-Patton complex, nearly level	N



PROJECT LOCATION

BUTLER COUNTY, OHIO

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

- Proposed Structure
- Existing Facility
- Existing Structure
- Project Centerline
- Study Area
- Interstate
- State Highway
- US Highway
- Railroad
- Soil Unit
- Soil Unit - Hydric

DUKE ENERGY

Cardno

0 350 700 Feet

FIGURE 2
REGULATED WATERS DELINEATION REPORT
Garver-AK Steel 138 kV Line

DUKE ENERGY

SOIL SURVEY MAP

DRAWN BY: DKT
CHECKED: DKT
DATE: 1/30/2019
APPROVED: MWW

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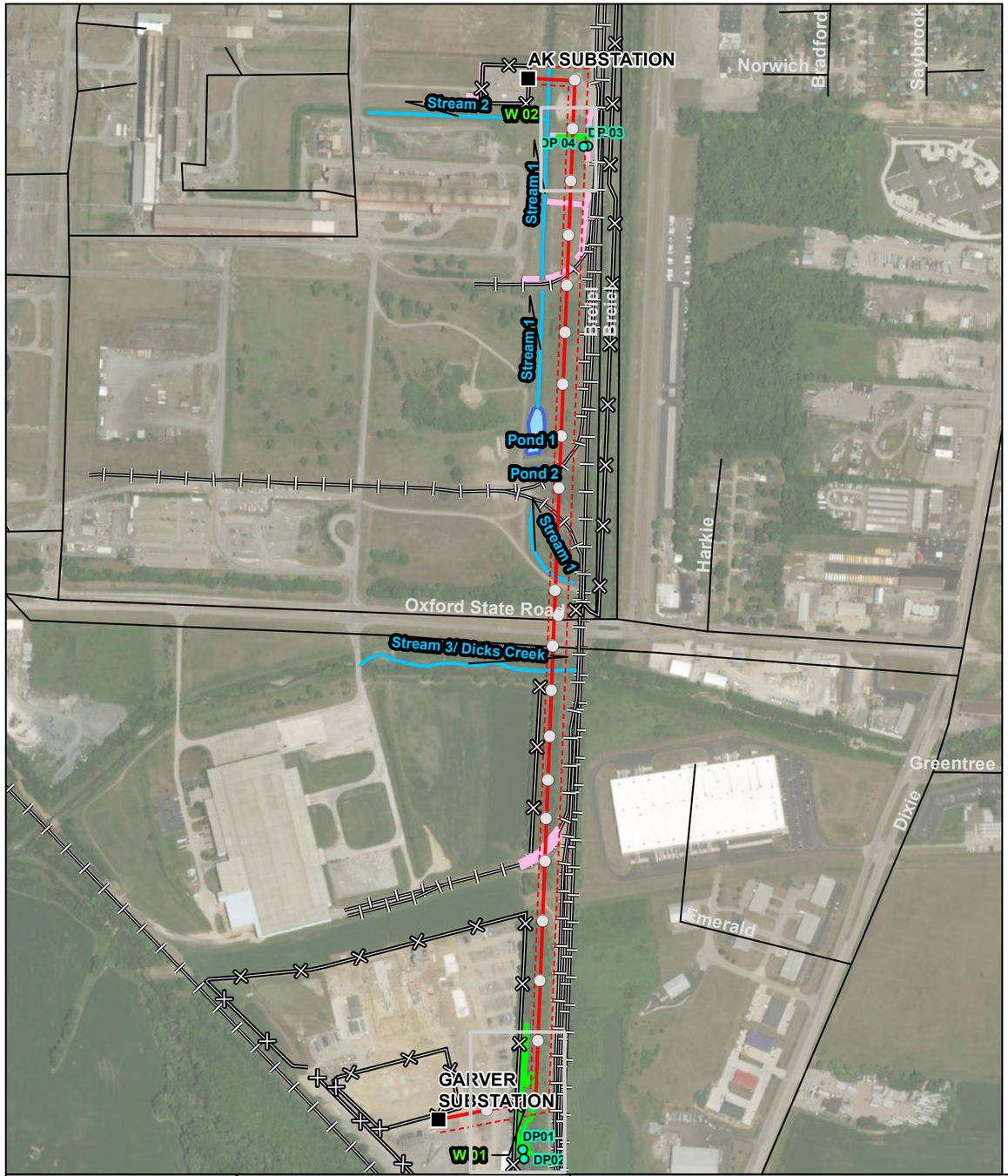
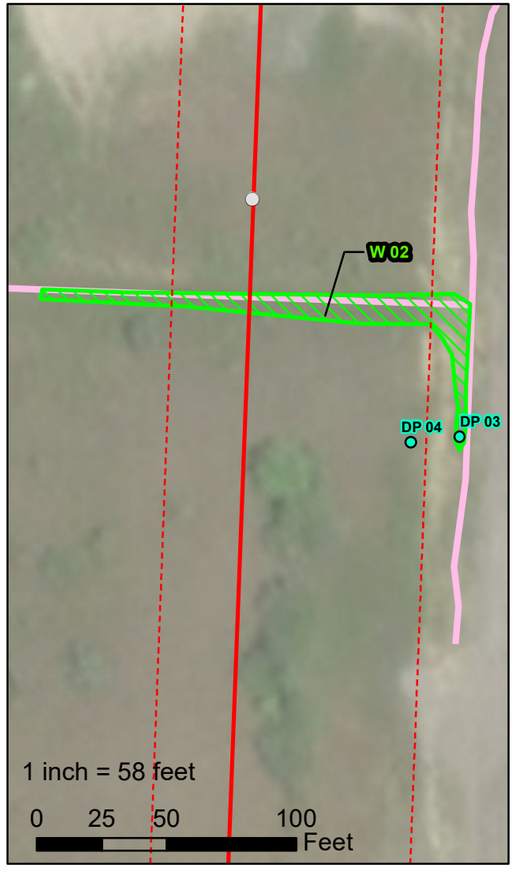




PROJECT LOCATION

BUTLER COUNTY, OHIO

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

- Existing Facility
- Wetland Data Point
- Existing Structure
- Proposed Structure
- Fence Line
- Project Centerline
- Study Area
- Local Road
- Interstate
- Ditch
- Delineated Stream
- Delineated Pond
- State Highway
- US Highway
- Railroad
- Delineated Wetland

DUKE ENERGY

Cardno

0 700 Feet

FIGURE 3
REGULATED WATERS DELINEATION REPORT
Garver-AK Steel 138 kV Line

DUKE ENERGY

REGULATED WATERS DELINEATION

DRAWN BY: DKT DATE: 1/30/2019
CHECKED: DKT APPROVED: MWW

R:\Projects\15\156\156720M_DukeEnergy9193\M72_SOW33_AKSteel_138kV\GIS\MXD_AKSteel_Garver\Delineation_AKSteel\F3_M72_WDR_Delineation.mxd

DUKE ENERGY OHIO
Garver-AK Steel – 138kV

APPENDIX

A

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.

Project Number:
J156720M76

Site Photographs

Wetland Delineation
M170053 Garver to AK STeel—138kV
Duke Energy
Middletown, Butler County, Ohio

Cardno

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.

DUKE ENERGY OHIO
Garver-AK Steel – 138kV

APPENDIX

B

OHIO QHEI FORMS

OhioEPA

Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 17.5

River Code: ***RM:*** ***Stream:*** Stream 1-Unnamed Tributary

Date: 12/12/2018 ***Location:*** Middletown, Ohio

Scorers Full Name: K Hillier and C Jansing ***Affiliation:*** Cardno

1.) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	Pool	Riffle		Pool	Riffle
☐ ☐ BLDR/SLBS (10)			☐ ☐ GRAVEL (7)	10	
☐ ☐ BOULDER (9)			☐ ☐ SAND (6)		
☐ ☐ COBBLE (8)	10		☐ ☐ BEDROCK (5)		
☐ ☐ HARDPAN (4)			☐ ☐ DETRITUS (3)		
☐ ☐ MUCK (2)			☐ ☐ ARTIFICIAL (0)		
☑ ☐ SILT (2)	80		NOTE: Ignore Sludge Originating From Point Sources		

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☐ 4 or More (2)
☑ 3 or Less (0)

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE))
☐ LIMESTONE (1)
☑ TILLS (1)
☐ WETLANDS (0)
☐ HARDPAN (0)
☐ SANDSTONE (0)
☐ RIP/RAP (0)
☐ LACUSTRINE (0)
☐ SHALE (-1)
☐ COAL FINES (-2)

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE))
SILT:
☑ SILT HEAVY (-2)
☐ SILT MODERATE (-1)
☐ SILT NORMAL (0)
☐ SILT FREE (1)
☑ EXTENSIVE (-2)
EMBEDDEDNESS:
☐ MODERATE (-1)
☐ NORMAL (0)
☐ NONE (1)

Substrate: 1 Max 20

COMMENTS: Entrenched channel, entire study reach a run

2.) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)		TYPE: Score All that Occur			
1	UNDERCUT BANKS (1)	0	POOLS >70 cm (2)	0	OXBOWS, BACKWATERS (1)
1	OVERHANGING VEGETATION (1)	0	ROOTWADS (1)	0	AQUATIC MACROPHYTES (1)
0	SHALLOWS (IN SLOW WATER) (1)	0	BOULDERS (1)	0	LOGS AND WOODY DEBRIS (1)
0	ROOTMATS (1)				

COMMENTS:

AMOUNT: (Check ONLY One or Check 2 & AVERAGE)
☐ EXTENSIVE >75% (11)
☐ MODERATE 25-75% (7)
☐ SPARSE 5-25% (3)
☑ NEARLY ABSENT <5%

Cover: 3 Max 20

3.) CHANNEL MORPHOLOGY (Check ONLY One per Category OR Check 2 & AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS / OTHER
☐ HIGH (4)	☐ EXCELLENT (7)	☐ NONE (6)	☐ HIGH (3)	☐ SNAGGING ☐ IMPOUND
☐ MODERATE (3)	☐ GOOD (5)	☑ RECOVERED (4)	☑ MODERATE (2)	☑ RELOCATION ☐ ISLANDS
☐ LOW (2)	☐ FAIR (3)	☑ RECOVERING (3)	☐ LOW (1)	☐ CANOPY REMOVAL ☐ LEVEED
☑ NONE (1)	☑ POOR (1)	☐ RECENT OR NO RECOVERY (1)		☐ DREDGING ☑ BANK SHAPING
				☐ ONE SIDE CHANNEL MODIFICATIONS

Channel: 7.5 Max 20

COMMENTS:

4.) RIPARIAN ZONE AND BANK EROSION (Check ONE box per bank OR Check 2 & AVERAGE per bank)

River Right Looking Downstream

RIPARIAN WIDTH (Per Bank) L	R	FLOOD PLAIN QUALITY (Past 100 ft Riparian) (Most Predominant Per Bank) L	R		BANK EROSION (Per Bank) L	R	
☐	☐ WIDE >50M (4)	☐	☐ FOREST, SWAMP (3)	☐ ☐ CONSERVATION TILLAGE (0)	☑	☑	NONE / LITTLE (3)
☐	☐ MODERATE 10-50M (3)	☐	☐ SHRUB OR OLD FIELD (2)	☑ ☑ URBAN OR INDUSTRIAL (0)	☐	☐	MODERATE (2)
☐	☐ NARROW 5-10M (2)	☐	☐ RESIDENTIAL, PARK, NEW FIELD (1)	☐ ☐ OPEN PASTURE, ROWCRO (0)	☐	☐	HEAVY / SEVERE (1)
☑	☑ VERY NARROW <5M (1)	☐	☐ FENCED PASTURE (1)	☐ ☐ MINING/CONSTRUCTION (0)			
☐	☐ NONE (0)						

Riparian: 4 Max 10

COMMENTS:

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ >1m (6)
☐ 0.7-1m (4)
☐ 0.4-0.7m (2)
☐ 0.2-0.4m (1)
☑ <0.2m (pool = 0)

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐ POOL WIDTH > RIFFLE WIDTH (2)
☑ POOL WIDTH = RIFFLE WIDTH (1)
☐ POOL WIDTH < RIFFLE WIDTH (0)

CURRENT VELOCITY (POOLS & RIFFLES!) (Check All that Apply)
☐ EDDIES (1)
☐ FAST (1)
☐ MODERATE (1)
☑ SLOW (1)
☐ TORRENTIAL (-1)
☐ INTERSTITIAL (-1)
☐ INTERMITTENT (-2)
☐ VERY FAST (1)

Pool/Current: 2 Max 12

COMMENTS:

CHECK ONE OR CHECK 2 & AVERAGE

RIFFLE DEPTH
☐ *BEST AREAS >10cm (2)
☐ BEST AREAS 5-10cm (1)
☐ BEST AREAS <5cm (RIFFLE=0)

RUN DEPTH
☐ MAX >50cm (2)
☐ MAX <50cm (1)

RIFFLE/RUN SUBSTRATE
☐ STABLE (e.g., Cobble, Boulder (2)
☐ MOD. STABLE (e.g., Large Gravel (1)
☐ UNSTABLE (Fine Gravel, Sand (0)

RIFFLE/RUN EMBEDDEDNESS
☐ NONE (2)
☐ LOW (1)
☐ MODERATE (0)
☐ EXTENSIVE (-1)

Riffle/Run: 0 Max 8

COMMENTS: ☑ NO RIFFLE (Metric = 0)

Gradient: 2 Max 10

6.) GRADIENT (ft/mi): **DRAINAGE AREA** (sq. mi.): 0.85 **%POOL:** 0 **%GLIDE:** 0

%RIFFLE: 0 **%RUN:** 100

**Best areas must be large enough to support a population of riffle-obligate species*

Is Sampling Reach Representative of the Stream? (Y/N) Yes In Not, Explain

Major Suspected Sources of Impacts (Check All That Apply):	
None	
Industrial	
WWTP	
Ag	
Livestock	
Silviculture	
Construction	
Urban Runoff	
CSOs	
Suburban Impacts	
Mining	
Channelization	
Riparian Removal	
Landfills	
Natural	
Dams	
Other Flow Alterations	
Other:	

Subjective Rating (1-10)	Aesthetic Rating (1-10)
3	1

	Gear:	Distance:	Water Clarity:	Water Stage:	Canopy % Open:
First Sampling Pass					

Gradient:

[X] Low [ ] Moderate [ ] High

Stream Measurements:

Average Width (ft)	Average Depth (ft)	Maximum Depth (ft)	Av Bankfull Width (ft)	Bankfull Mean Depth (ft)	W/D Ratio	Bankfull Max Depth (ft)	Floodprone Area Width (ft)	Entrench. Ratio
25	3	15	50	15	3.33	20	50	1.00

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 – Cover type absent: 1 – Cover type present in very small amounts or if more common of marginal quality; 2 – Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 – Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No	
	X Is Stream Ephemeral (no pools, totally dry or only damp spots)?
	X Is There Water Upstream?
How Far:	
	X Is There Water Close Downstream?
How Far:	
	X Is Dry Channel Mostly Natural?

OhioEPA

Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 19.5

River Code: ***RM:*** ***Stream:*** Stream 2-Unnamed Tributary

Date: 12/12/2018 ***Location:*** Middletown, Ohio

Scorers Full Name: K Hillier and C Jansing ***Affiliation:*** Cardno

1.) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	Pool	Riffle		Pool	Riffle
☐ ☐ BLDR/SLBS (10)			☐ ☐ GRAVEL (7)	10	
☐ ☐ BOULDER (9)			☐ ☐ SAND (6)		
☐ ☐ COBBLE (8)			☐ ☐ BEDROCK (5)		
☐ ☐ HARDPAN (4)			☐ ☐ DETRITUS (3)		
☐ ☐ MUCK (2)			☐ ☐ ARTIFICIAL (0)		
☑ ☐ SILT (2)	90		NOTE: Ignore Sludge Originating From Point Sources		

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☐ 4 or More (2)
☑ 3 or Less (0)

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE))
☐ LIMESTONE (1)
☑ TILLS (1)
☐ WETLANDS (0)
☐ HARDPAN (0)
☐ SANDSTONE (0)
☐ RIP/RAP (0)
☐ LACUSTRINE (0)
☐ SHALE (-1)
☐ COAL FINES (-2)

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE))
SILT:
☑ SILT HEAVY (-2)
☐ SILT MODERATE (-1)
☐ SILT NORMAL (0)
☐ SILT FREE (1)
☐ EXTENSIVE (-2)
EMBEDDEDNESS:
☐ MODERATE (-1)
☐ NORMAL (0)
☑ NONE (1)

Substrate: 2 Max 20

COMMENTS: Entrenched channel, entire study reach a run

2.) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)
0 UNDERCUT BANKS (1)
1 OVERHANGING VEGETATION (1)
0 SHALLOWS (IN SLOW WATER) (1)
0 ROOTMATS (1)

TYPE: Score All that Occur
0 POOLS >70 cm (2)
0 ROOTWADS (1)
0 BOULDERS (1)
0 OXBOWS, BACKWATERS (1)
0 AQUATIC MACROPHYTES (1)
0 LOGS AND WOODY DEBRIS (1)

AMOUNT: (Check ONLY One or Check 2 & AVERAGE)
☐ EXTENSIVE >75% (11)
☐ MODERATE 25-75% (7)
☐ SPARSE 5-25% (3)
☑ NEARLY ABSENT <5%

COMMENTS:

Cover: 2 Max 20

3.) CHANNEL MORPHOLOGY (Check ONLY One per Category OR Check 2 & AVERAGE)

SINUOSITY
☐ HIGH (4)
☐ MODERATE (3)
☐ LOW (2)
☑ NONE (1)

DEVELOPMENT
☐ EXCELLENT (7)
☐ GOOD (5)
☐ FAIR (3)
☑ POOR (1)

CHANNELIZATION
☐ NONE (6)
☑ RECOVERED (4)
☑ RECOVERING (3)
☐ RECENT OR NO RECOVERY (1)

STABILITY
☐ HIGH (3)
☑ MODERATE (2)
☐ LOW (1)

MODIFICATIONS / OTHER
☐ SNAGGING
☑ RELOCATION
☐ CANOPY REMOVAL
☐ DREDGING
☐ ONE SIDE CHANNEL MODIFICATIONS
☐ IMPOUND
☐ ISLANDS
☐ LEVEED
☑ BANK SHAPING

Channel: 7.5 Max 20

COMMENTS:

4.) RIPARIAN ZONE AND BANK EROSION (Check ONE box per bank OR Check 2 & AVERAGE per bank)

River Right Looking Downstream

RIPARIAN WIDTH (Per Bank) L	R	FLOOD PLAIN QUALITY (Most Predominant Per Bank) L	R		BANK EROSION (Per Bank) L	R	
☐	☐ WIDE >50M (4)	☐	☐ FOREST, SWAMP (3)	☐ ☐ CONSERVATION TILLAGE (0)	☑	☑	NONE / LITTLE (3)
☐	☐ MODERATE 10-50M (3)	☐	☐ SHRUB OR OLD FIELD (2)	☑ ☑ URBAN OR INDUSTRIAL (0)	☐	☐	MODERATE (2)
☐	☐ NARROW 5-10M (2)	☐	☐ RESIDENTIAL, PARK, NEW FIELD (1)	☐ ☐ OPEN PASTURE, ROWCRO (0)	☐	☐	HEAVY / SEVERE (1)
☑	☑ VERY NARROW <5M (1)	☐	☐ FENCED PASTURE (1)	☐ ☐ MINING/CONSTRUCTION (0)			
☐	☐ NONE (0)						

Riparian: 4 Max 10

COMMENTS:

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ >1m (6)
☐ 0.7-1m (4)
☐ 0.4-0.7m (2)
☐ 0.2-0.4m (1)
☑ <0.2m (pool = 0)

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐ POOL WIDTH > RIFFLE WIDTH (2)
☑ POOL WIDTH = RIFFLE WIDTH (1)
☐ POOL WIDTH < RIFFLE WIDTH (0)

CURRENT VELOCITY (POOLS & RIFFLES!) (Check All that Apply)
☐ EDDIES (1)
☐ FAST (1)
☐ MODERATE (1)
☑ SLOW (1)
☐ TORRENTIAL (-1)
☐ INTERSTITIAL (-1)
☐ INTERMITTENT (-2)
☐ VERY FAST (1)

Pool/Current: 2 Max 12

COMMENTS:

CHECK ONE OR CHECK 2 & AVERAGE

RIFFLE DEPTH
☐ *BEST AREAS >10cm (2)
☐ BEST AREAS 5-10cm (1)
☐ BEST AREAS <5cm (RIFFLE=0)

RUN DEPTH
☐ MAX >50cm (2)
☐ MAX <50cm (1)

RIFFLE/RUN SUBSTRATE
☐ STABLE (e.g., Cobble, Boulder (2)
☐ MOD. STABLE (e.g., Large Gravel (1)
☐ UNSTABLE (Fine Gravel, Sand (0)

RIFFLE/RUN EMBEDDEDNESS
☐ NONE (2)
☐ LOW (1)
☐ MODERATE (0)
☐ EXTENSIVE (-1)

Riffle/Run: 0 Max 8

COMMENTS:
☑ NO RIFFLE (Metric = 0)

Gradient: 2 Max 10

6.) GRADIENT (ft/mi): **DRAINAGE AREA** (sq. mi.): 0.85

%POOL: 0 **%GLIDE:** 0

%RIFFLE: 0 **%RUN:** 100

**Best areas must be large enough to support a population of riffle-obligate species*

Is Sampling Reach Representative of the Stream? (Y/N) Y In Not, Explain

Major Suspected Sources of Impacts (Check All That Apply):	
None	
Industrial	
WWTP	
Ag	
Livestock	
Silviculture	
Construction	
Urban Runoff	
CSOs	
Suburban Impacts	
Mining	
Channelization	
Riparian Removal	
Landfills	
Natural	
Dams	
Other Flow Alterations	
Other:	

Subjective Rating (1-10)	Aesthetic Rating (1-10)
3	1

	Gear:	Distance:	Water Clarity:	Water Stage:	Canopy % Open:
First Sampling Pass					

Gradient:

[X] Low [ ] Moderate [ ] High

Stream Measurements:

Average Width (ft)	Average Depth (ft)	Maximum Depth (ft)	Av Bankfull Width (ft)	Bankfull Mean Depth (ft)	W/D Ratio	Bankfull Max Depth (ft)	Floodprone Area Width (ft)	Entrench. Ratio
15	2	3	30	15	2.00	20	25	0.83

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 – Cover type absent: 1 – Cover type present in very small amounts or if more common of marginal quality; 2 – Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 – Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No	
	X Is Stream Ephemeral (no pools, totally dry or only damp spots)?
	X Is There Water Upstream?
How Far:	
	X Is There Water Close Downstream?
How Far:	
	X Is Dry Channel Mostly Natural?

Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 24

River Code: ***RM:*** ***Stream:*** Stream 3-Dicks Creek

Date: 12/12/2018 ***Location:*** Middletown, Ohio

Scorers Full Name: K Hillier and C Jansing ***Affiliation:*** Cardno

1.) SUBSTRATE

(Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	Pool	Riffle		Pool	Riffle
☐ ☐ BLDR/SLBS (10)			☐ ☐ GRAVEL (7)	30	
☐ ☐ BOULDER (9)			☐ ☐ SAND (6)		
☐ ☐ COBBLE (8)	10		☐ ☐ BEDROCK (5)		
☐ ☐ HARDPAN (4)	10		☐ ☐ DETRITUS (3)		
☐ ☐ MUCK (2)			☐ ☐ ARTIFICIAL (0)		
☑ ☐ SILT (2)	50		NOTE: Ignore Sludge Originating From Point Sources		

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☐ 4 or More (2)
☑ 3 or Less (0)

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE))
☐ LIMESTONE (1)
☑ TILLS (1)
☐ WETLANDS (0)
☐ HARDPAN (0)
☐ SANDSTONE (0)
☐ RIP/RAP (0)
☐ LACUSTRINE (0)
☐ SHALE (-1)
☐ COAL FINES (-2)

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE))
SILT:
☑ SILT HEAVY (-2)
☐ SILT MODERATE (-1)
☐ SILT NORMAL (0)
☐ SILT FREE (1)
☑ EXTENSIVE (-2)
EMBEDDEDNESS:
☐ MODERATE (-1)
☐ NORMAL (0)
☐ NONE (1)

Substrate: 1 Max 20

COMMENTS: entire study area reach was a run

2.) INSTREAM COVER

(Give each cover type a score of 0 to 3; see back for instructions)

(Structure)
1 UNDERCUT BANKS (1)
1 OVERHANGING VEGETATION (1)
0 SHALLOWS (IN SLOW WATER) (1)
0 ROOTMATS (1)

TYPE: Score All that Occur
0 POOLS >70 cm (2)
0 ROOTWADS (1)
0 BOULDERS (1)
0 OXBOWS, BACKWATERS (1)
0 AQUATIC MACROPHYTES (1)
1 LOGS AND WOODY DEBRIS (1)

COMMENTS:

AMOUNT: (Check ONLY One or Check 2 & AVERAGE)
☐ EXTENSIVE >75% (11)
☐ MODERATE 25-75% (7)
☐ SPARSE 5-25% (3)
☑ NEARLY ABSENT <5%

Cover: 4 Max 20

3.) CHANNEL MORPHOLOGY

(Check ONLY One per Category OR Check 2 & AVERAGE)

SINUOSITY
☐ HIGH (4)
☐ MODERATE (3)
☑ LOW (2)
☐ NONE (1)

DEVELOPMENT
☐ EXCELLENT (7)
☐ GOOD (5)
☑ FAIR (3)
☐ POOR (1)

CHANNELIZATION
☐ NONE (6)
☑ RECOVERED (4)
☐ RECOVERING (3)
☐ RECENT OR NO RECOVERY (1)

STABILITY
☐ HIGH (3)
☑ MODERATE (2)
☐ LOW (1)

MODIFICATIONS / OTHER
☐ SNAGGING
☑ RELOCATION
☐ CANOPY REMOVAL
☐ DREDGING
☐ ONE SIDE CHANNEL MODIFICATIONS
☐ IMPOUND
☐ ISLANDS
☐ LEVEED
☐ BANK SHAPING

Channel: 11 Max 20

COMMENTS:

4.) RIPARIAN ZONE AND BANK EROSION

(Check ONE box per bank OR Check 2 & AVERAGE per bank)

River Right Looking Downstream

RIPARIAN WIDTH (Per Bank) L	R	FLOOD PLAIN QUALITY (Most Predominant Per Bank) L	R		BANK EROSION (Per Bank) L	R
☐	☐ WIDE >50M (4)	☐	☐	FOREST, SWAMP (3)	☐	☐ CONSERVATION TILLAGE (0)
☐	☐ MODERATE 10-50M (3)	☐	☐	SHRUB OR OLD FIELD (2)	☑	☑ NONE / LITTLE (3)
☑	☑ NARROW 5-10M (2)	☐	☐	RESIDENTIAL, PARK, NEW FIELD (1)	☑	☑ URBAN OR INDUSTRIAL (0)
☐	☐ VERY NARROW <5M (1)	☐	☐	FENCED PASTURE (1)	☐	☐ MODERATE (2)
☐	☐ NONE (0)				☐	☐ OPEN PASTURE, ROWCRO (0)
					☐	☐ HEAVY / SEVERE (1)
					☐	☐ MINING/CONSTRUCTION (0)

Riparian: 5 Max 10

COMMENTS:

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ >1m (6)
☐ 0.7-1m (4)
☐ 0.4-0.7m (2)
☐ 0.2-0.4m (1)
☑ <0.2m (pool = 0)

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐ POOL WIDTH > RIFFLE WIDTH (2)
☐ POOL WIDTH = RIFFLE WIDTH (1)
☐ POOL WIDTH < RIFFLE WIDTH (0)

CURRENT VELOCITY (POOLS & RIFFLES!) (Check All that Apply)
☐ EDDIES (1)
☐ FAST (1)
☐ MODERATE (1)
☑ SLOW (1)
☐ TORRENTIAL (-1)
☐ INTERSTITIAL (-1)
☐ INTERMITTENT (-2)
☐ VERY FAST (1)

Pool/Current: 1 Max 12

COMMENTS:

CHECK ONE OR CHECK 2 & AVERAGE

RIFFLE DEPTH
☐ *BEST AREAS >10cm (2)
☐ BEST AREAS 5-10cm (1)
☐ BEST AREAS <5cm (RIFFLE=0)

RUN DEPTH
☐ MAX >50cm (2)
☐ MAX <50cm (1)

RIFFLE/RUN SUBSTRATE
☐ STABLE (e.g., Cobble, Boulder (2)
☐ MOD. STABLE (e.g., Large Gravel (1)
☐ UNSTABLE (Fine Gravel, Sand (0)

RIFFLE/RUN EMBEDDEDNESS
☐ NONE (2)
☐ LOW (1)
☐ MODERATE (0)
☐ EXTENSIVE (-1)

Riffle/Run: 0 Max 8

COMMENTS:
☑ NO RIFFLE (Metric = 0)

Gradient: 4 Max 10

6.) GRADIENT (ft/mi): 160 **DRAINAGE AREA** (sq. mi.): 12.4 **%POOL:** 0 **%GLIDE:** 0

%RIFFLE: 0 **%RUN:** 100

**Best areas must be large enough to support a population of riffle-obligate species*

Is Sampling Reach Representative of the Stream? (Y/N) Y In Not, Explain

Major Suspected Sources of Impacts (Check All That Apply):	
None	
Industrial	
WWTP	
Ag	
Livestock	
Silviculture	
Construction	
Urban Runoff	
CSOs	
Suburban Impacts	
Mining	
Channelization	
Riparian Removal	
Landfills	
Natural	
Dams	
Other Flow Alterations	
Other:	

Subjective Rating (1-10)	Aesthetic Rating (1-10)
5	3

	Gear:	Distance:	Water Clarity:	Water Stage:	Canopy % Open:
First Sampling Pass					

Gradient:

[ ] Low [ ] Moderate [X] High

Stream Measurements:

Average Width (ft)	Average Depth (ft)	Maximum Depth (ft)	Av Bankfull Width (ft)	Bankfull Mean Depth (ft)	W/D Ratio	Bankfull Max Depth (ft)	Floodprone Area Width (ft)	Entrench. Ratio
35	3	5	40	7	5.71	18	140	3.50

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 – Cover type absent: 1 – Cover type present in very small amounts or if more common of marginal quality; 2 – Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 – Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No	
	X Is Stream Ephemeral (no pools, totally dry or only damp spots)?
	X Is There Water Upstream?
How Far:	
	X Is There Water Close Downstream?
How Far:	
	X Is Dry Channel Mostly Natural?

DUKE ENERGY OHIO
GARVER TO AK STEEL-138kV

APPENDIX

C

OHIO RAPID ASSESSMENT METHOD 5.0 FORM AND USACE WETLAND DELINEATION DATA SHEETS

ORAM v 5.0 Field Form Quantitative Rating

Site: Garver-AK Steel – 138kV	Rater(s): K. Hillier and D. Thom	Date: November 7, 2018

Project: Garver-AK Steel – 138kV

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

2	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

14	18
max 30 pts.	subtotal

Metric 3. Hydrology

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

15	33
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed

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

33
subtotal this page

ORAM v 5.0 Field Form Quantitative Rating

Site:	Garver-AK Steel – 138kV	Rater(s):	K. Hillier and D. Thom	Date:	November 7, 2018

5
subtotal this page

Site: Garver-AK Steel – 138kV

0 | 0
max 10 pts | subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

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

5 | 5
max 20 pts | subtotal

Metric 6. Plant communities, interspersion, microtopograhy.

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

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

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

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

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

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

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

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

38 Grand Total (max 100 pts)

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

Comments:

ORAM v 5.0 Field Form Quantitative Rating

Site: Garver-AK Steel – 138kV	Rater(s): K. Hillier & C.Jansing	Date: December 12, 2018

Project: Garver-AK Steel – 138kV

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

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

1	1
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

11	12
max 30 pts.	subtotal

Metric 3. Hydrology

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

6.5	19
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed

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

19
subtotal this page

ORAM v 5.0 Field Form Quantitative Rating

Site:	Garver-AK Steel – 138kV	Rater(s):	K. Hillier & C.Jansing	Date:	December 12, 2018

-1
subtotal this page

Site: Garver-AK Steel – 138kV

0 | 0
max 10 pts | subtotal

Metric 5. Special Wetlands

Check all that apply and score as indicated.

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

-1 | -1
max 20 pts | subtotal

Metric 6. Plant communities, interspersion, microtopograhy.

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

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

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

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

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

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

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

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

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

18 Grand Total (max 100 pts)

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

Comments:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Garver-AK Steel – 138kV | City/County: Middletown/Butler | Sampling Date: 11/7/2018

Applicant/Owner: Duke Energy | State: OH | Sampling Point: dp01

Investigator(s): Kaitlin Hillier and Danielle Thompson | Section, Township, Range: S7 T2E R4N

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

Slope (%): | Lat: 39.46665 | Long: -84.35136 | Datum: NAD83 UTM16N

Soil Map Unit Name: Patton silty clay loam (Pa) | NWI classification: none

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

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

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

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

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

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carya laciniosa*	60%	Yes	FACW
2. *Celtis occidentalis*	20%	Yes	FAC
3.			
4.			
5.			
	80%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Carya laciniosa*	5%	Yes	FACW
2. *Lonicera maackii*	1%	No	UPL
3.			
4.			
5.			
	6%	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Leersia virginica*	70%	Yes	FACW
2. *Fraxinus pennsylvanica*	5%	No	FACW
3. *Carex muskingumensis*	3%	No	OBL
4. *Carex granularis*	1%	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	79%	= Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	A/B
That Are OBL, FACW, or FAC:			
OBL species	3%	x1 =	0.03
FACW species	141%	x2 =	2.82
FAC species	20%	x3 =	0.6
FACU species		x4 =	
UPL species	1%	x5 =	0.05
Column Totals:	1.65 (A)		3.5 (B)

Prevalence Index = B/A = 2.12

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No

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

SOIL

Sampling Point: dp01

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 4/2	85	10YR 4/4	15	C	M	Clay Loam	

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

Hydric Soil Indicators[3]:

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

Test Indicators of Hydric Soils:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	NA
Water Table Present?	Yes X No ___	Depth (inches):	8"
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	NA

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Garver-AK Steel – 138kV City/County: Middletown/Butler Sampling Date: 11/7/2018

Applicant/Owner: Duke Energy State: OH Sampling Point: dp02

Investigator(s): Kaitlin Hillier and Danielle Thompson Section, Township, Range: S7 T2E R4N

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

Slope (%): Lat: 39.46651 Long: -84.35133 Datum: NAD83 UTM16N

Soil Map Unit Name: Patton silty clay loam (Pa) NWI classification: none

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

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

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

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

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

Remarks:

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	20%	Yes	FAC
2. *Tilia americana*	15%	Yes	FACU
3.			
4.			
5.			
	35%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera maackii*	75%	Yes	UPL
2.			
3.			
4.			
5.			
	75%	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Lonicera maackii*	3%	No	UPL
2. *Glechoma hederacea*	1%	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	4%	= Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species		x1 =	
FACW species		x2 =	
FAC species	20%	x3 =	0.6
FACU species	16%	x4 =	0.64
UPL species	78%	x5 =	3.9
Column Totals:	1.14 (A)		5.14 (B)

Prevalence Index = B/A = 4.51

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes No X

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

SOIL

Sampling Point: dp02

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 4/2	85					Clay Loam	

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

Hydric Soil Indicators[3]:

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

Test Indicators of Hydric Soils:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Garver-AK Steel – 138kV City/County: Middletown/Butler Sampling Date: 12/12/2018

Applicant/Owner: Duke Energy State: OH Sampling Point: dp03

Investigator(s): Kaitlin Hillier and Cori Jansing Section, Township, Range: S8 T2E R4N

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

Slope (%): 1% Lat: 39.481355 Long: -84.349869 Datum: NAD83 UTM16N

Soil Map Unit Name: Urban land-Patton complex, nearly level (UsA) NWI classification: none

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

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

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

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

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

Remarks:

VEGETATION -- Use scientific names of plants.

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

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

Herb Stratum (Plot size: 5' radius)			
1. *Juncus tenuis*	60%	Yes	FAC
2. *Scirpus atrovirens*	20%	No	OBL
3. *Typha X glauca*	10%	No	OBL
4. *Carex lurida*	10%	No	OBL
5. *Erigeron canadensis*	5%	No	FACU
6. *Andropogon virginicus*	3%	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	108%	= Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species	40%	x1 =	0.4
FACW species		x2 =	
FAC species	60%	x3 =	1.8
FACU species	8%	x4 =	0.32
UPL species		x5 =	
Column Totals:	1.08 (A)		2.52 (B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

____ 1-Rapid Test for Hydrophytic Vegetation

X 2-Dominance Test is >50%

X 3-Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

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

SOIL

Sampling Point: dp03

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/1	75	10YR 5/6	25	C	M	Clay Loam	

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

Hydric Soil Indicators[3]:

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

Test Indicators of Hydric Soils:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	NA
Water Table Present?	Yes ___ No X	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	3"

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Garver-AK Steel – 138kV | City/County: Middletown/Butler | Sampling Date: 12/12/2018

Applicant/Owner: Duke Energy | State: OH | Sampling Point: dp04

Investigator(s): Kaitlin Hillier and Cori Jansing | Section, Township, Range: S8 T2E R4N

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

Slope (%): | Lat: 39.481324 | Long: -84.349917 | Datum: NAD83 UTM16N

Soil Map Unit Name: Urban land-Patton complex, nearly level (UsA) | NWI classification: none

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

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

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

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

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

Remarks:

VEGETATION -- Use scientific names of plants.

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

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

Herb Stratum (Plot size: 5' radius)			
1. *Festuca rubra*	75%	Yes	FACU
2. *Andropogon virginicus*	15%	No	FACU
3. *Solidago canadensis*	10%	No	FACU
4. *Erigeron canadensis*	5%	No	FACU
5. *Daucus carota*	3%	No	UPL
6. *Juniperus virginiana*	3%	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
	111%	= Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
That Are OBL, FACW, or FAC:			A/B
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species	108%	x4 =	4.32
UPL species	3%	x5 =	0.15
Column Totals:	1.11 (A)		4.47 (B)

Prevalence Index = B/A = 4.03

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes No X

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

SOIL

Sampling Point: dp04

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/3	95	10YR 4/6	5	C	M	Clay Loam	

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

Hydric Soil Indicators[3]:

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

Test Indicators of Hydric Soils:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

DUKE ENERGY
GARVER TO AK STEEL-138kV

APPENDIX

D

ENDANGERED, THREATENED, AND RARE SPECIES CORRESPONDANCE

Kaitlin Hillier

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>
Sent: Monday, November 19, 2018 12:00 PM
To: Danielle Thompson
Cc: nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
Subject: Duke Energy F581/F7582/F5689 - 138 kV Garver Substation, Cincinnati, Hamilton Co.

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994

TAILS# 03E15000-2019-TA-0297

Dear Ms. Thompson,

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

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

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

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

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

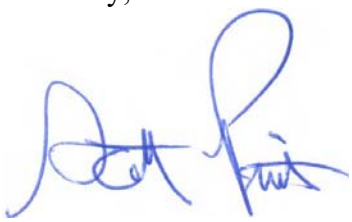
If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend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

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

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

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

Sincerely,



Scott Pruitt
Acting Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW

November 9, 2018

Cardno

11121 Canal Road
Cincinnati, Ohio 45241
USA

Phone 513 489 2402
Fax 513 489 2404

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

RE: Duke Energy F7581/F7582/F5689—138kV Garver Substation
Rare, Threatened, and Endangered Species Consultation
Middletown, Butler County, Ohio

Dear Mr. Kessler:

Duke Energy (Duke) is proposing to remove and replace approximately 1.18 miles of existing transmission line, encompassing a total study corridor of 75.4 acres of existing 150-foot wide Duke Energy transmission line corridor Right-Of-Way (ROW). A field investigation of the study corridor was conducted on November 7, 2018.

The project study area is located in Middletown, Butler County, Ohio. The location of the proposed Project is depicted on the attached Monroe (OH) USGS 7.5-minute topographic map excerpt (Figure 1).

Cardno was contracted by Duke to perform a boundary delineation and assessment of regulated waters, including wetlands, streams, ditches, and/or other federally regulated open waters, rare, threatened, endangered, and special habitat located within the proposed 0.7 miles of existing 150-ft wide ROW. The project study area was dominated by fallow field, scrub shrub, secondary growth forest, forested wetland, and emergent wetland vegetation assemblages. Cardno botanists and ecologists conducted a habitat assessment to identify the presence of regulated waters, and potential Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and Running Buffalo Clover *(Trifolium stoloniferum)* habitat.

In accordance with the ODNR-DOW Environmental Review coordination requirements; the Project study area and its habitat characteristics has been summarized for you below.

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

3439 Cincinnati Dayton Rd, Middletown (Butler County), OH 45044

Initiates: 39.464914, -84.347482
Terminates: 39.465534, -84.354644

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

The proposed Duke Energy F7581/F7582/F5689—138kV Garver Substation Project is necessary in order to maintain the integrity of existing Duke structures to ensure adequate power supplies to current and future utility customers in the area. The project is also needed to ensure safety within the existing easements and remain in compliance with current transmission line standards. The three transmission line routes consist of an existing and new transmission line corridor and Duke Energy easement.

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

Project construction is expected to begin in April 2019.

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

The proposed Duke Energy F7581/F7582/F5689—138kV Garver Substation Project is linear in scope and will take place entirely within existing transmission line corridor, new transmission line corridor, and Duke Energy easement (Figure 1 & 2). There are five regulated waters identified within the project's Study Area. Specific attention was given to the presence of habitat suitable for federally endangered and threatened species – specifically, the Indiana bat (*Myotis sodalis),* the Northern Long-Eared bat (*Myotis septentrionalis),* and Running Buffalo Clover *(Trifolium stoloniferum).* To evaluate the potential habitat for rare, threatened, and endangered species a general site reconnaissance of the project study area was performed by Cardno botanists and ecologists. The result of these habitat assessments can be found below.

Secondary Growth Forest

The secondary growth forest vegetation assemblage was located within the proposed study area. Dominant canopy species in this habitat type consisted of quaking aspen (*Populus tremuloides),* shellbark hickory (*Carya laciniosa*), and bur oak (*Quercus macrocarpa*). Understory vegetation was dominated by Amur honeysuckle (*Lonicera maackii*) and saplings of the canopy species. Although a formal study was not part of this scope, there was potential habitat for federally listed species identified within this habitat.

Forested Wetland
The forested wetland vegetation assemblage was located within the proposed study area. Dominant canopy species in this habitat type consisted of shellbark hickory and hackberry (*Celtis occidentalis*). Understory vegetation was dominated by green ash (*Fraxinus pennsylvanica*) saplings, white grass (*Leersia virginica*), sedge species (*Carex* spp.), and saplings of the canopy species. Although a formal study was not part of this scope, there was potential habitat for federally listed species identified within this habitat.

Emergent Wetland
The emergent wetland vegetation assemblage was located within the proposed study area. Understory vegetation was dominated by reed canary grass (*Phalaris arundiancea*), and dogbane (*Apocynum cannabinum*).

Scrub Shrub
The scrub shrub vegetation assemblage was located within the proposed study area. Dominant shrub species in this habitat type consisted of Amur honeysuckle, Callery pear (*Pyrus calleryana*), and Autumn olive (*Elaeagnus umbellata*). Understory vegetation was dominated by teasel (*Dipsacus fullonum*), Johnson grass (*Sorghum halapense*), and Canada goldenrod (*Solidago canadensis*).

Fallow Field
The fallow field vegetation assemblage was located within the proposed study area. Dominant species in this habitat type consisted of teasel, tall fescue (*Schedonorus arundianceaus*), hairy aster (*Symphyotrichum pilosum*), yellow foxtail (*Setaria pumila*), and fall panic grass (*Panicum dichotomiflorum*).

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

Tree clearing is anticipated in positioning of new towers and transmission line right of way to be installed as a part of this project scope. Based on the current project alignment, wetland impacts would also be incurred; however, Duke Energy is exploring alternate placement locations outside wetland boundaries.

5. Proposed Best Management Practices

Best management practices will be followed for all potential stormwater impacts or runoff areas. These will include the use of fiber roll to collect any runoff/sediment. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to project construction, and if needed, an NPDES permit will also be obtained.

Conclusion

Based on the physical site characteristics, the site contains some fair quality habitat for the federally endangered Indiana and NLE bat based on the woody species composition and intensity of surrounding land use. All tree clearing activities will be conducted during the USFWS recommended winter tree clearing window between October 1 and March 31.

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

If you have any questions concerning this request or would like additional information, please do not hesitate to contact me at (513) 404-6251 or danielle.thompson@cardno.com.

Sincerely,

Danielle K. Thompson,
Senior Project Scientist for Cardno

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

Attachments

USGS Map
Aerial Location Map
Photo Log