

**Appendix 8-2**  
**Correspondence with Ohio Department of**  
**Natural Resources and U.S. Fish & Wildlife**  
**Service**

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# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / FAX (614) 416-8994



September 28, 2022

Project Code: 2022-0078635

Dear Mr. Abbott:

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees  $\geq 3$  inches diameter at breast height between October 1 and March 31) to avoid impacts to the endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or 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, coordination with the Service should be initiated to assess any potential impacts.


Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then 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 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. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio ([https://epa.ohio.gov/portals/47/facts/ohio\\_wetlands.pdf](https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf)). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army 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. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at [mike.pettegrew@dnr.state.oh.us](mailto:mike.pettegrew@dnr.state.oh.us).

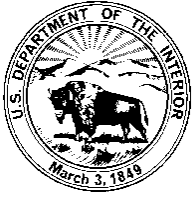
If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or [ohio@fws.gov](mailto:ohio@fws.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Patrice Ashfield", is written over a light gray rectangular background.

Patrice Ashfield  
Field Office Supervisor

# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / FAX (614) 416-8994



September 28, 2022

Project Code: 2022-0079353

Dear Mr. Abbott:

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened and endangered species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees  $\geq 3$  inches diameter at breast height between October 1 and March 31) to avoid impacts to the endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or 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, coordination with the Service should be initiated to assess any potential impacts.

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Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio ([https://epa.ohio.gov/portals/47/facts/ohio\\_wetlands.pdf](https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf)). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army 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. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.





# Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

## Office of Real Estate

*John Kessler, Chief*

2045 Morse Road – Bldg. E-2

Columbus, OH 43229

Phone: (614) 265-6621

Fax: (614) 267-4764

October 28, 2022

Matt Abbott  
Jacobs  
2 Crowne Point Court  
Cincinnati, OH 45241

**Re:** 22-0957; Route A Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

**Project:** The proposed project involves the construction of a new approximately 9.5-mile 345 kV transmission line with a proposed right-of-way (ROW) width of 150 feet.

**Location:** The proposed project is located in York, Pike, and Fulton Townships, Fulton County, Ohio.

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

**Natural Heritage Database:** The Natural Heritage Database has the following data at or within one mile of the specified project area:

Kirtland's Snake (*Clonophis kirtlandii*), state threatened

The review was performed on the specified project area as well as an additional one-mile radius. Records searched date from 1980. The species listed above is recorded within the footprint of the specified project area.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area

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

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

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH  $\geq 20$  if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "[OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING](#)". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Eileen Wyza at [Eileen.Wyza@dnr.ohio.gov](mailto:Eileen.Wyza@dnr.ohio.gov)).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "[RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED BAT SURVEY GUIDELINES](#)." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Eileen Wyza for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

The project is within the range of the greater redhorse (*Moxostoma valenciennesi*), a state threatened fish. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

The Kirtland's snake (*Clonophis kirtlandii*), a state threatened species, is known from Fulton Pond Wildlife Area, and has the potential to be present in the project area. This secretive species prefers grasslands, wet meadows and other wetlands. The DOW recommends that an approved herpetologist conducts a habitat suitability survey to determine if suitable habitat is present within the project area, and if project activities will impact suitable habitat and/or Kirtland's snakes. If suitable habitat is determined to be present; the DOW recommends that an avoidance/minimization plan be developed and implemented by the approved herpetologist. A list of [approved herpetologists](#) has been provided for your convenience.

The project is within the range of the Blanding's turtle (*Emydoidea blandingii*), a state threatened species. This species inhabits marshes, ponds, lakes, streams, wet meadows, and swampy forests. Although essentially aquatic, the Blanding's turtle will travel over land as it moves from

one wetland to the next. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the blue-spotted salamander (*Ambystoma laterale*), a state endangered species. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the lark sparrow (*Chondestes grammacus*), a state endangered bird. This sparrow nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. In the Oak Openings area west of Toledo, lark sparrows occupy open grass and shrubby fields along sandy beach ridges. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 through July 31. If this type of habitat will not be impacted, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

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

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

The [local floodplain administrator](#) should be contacted concerning the possible need for any floodplain permits or approvals for this project.

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at [mike.pettegrew@dnr.ohio.gov](mailto:mike.pettegrew@dnr.ohio.gov) if you have questions about these comments or need additional information.

Mike Pettegrew  
Environmental Services Administrator



# Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

## Office of Real Estate

*John Kessler, Chief*

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October 28, 2022

Matt Abbott  
Jacobs  
2 Crowne Point Court  
Cincinnati, OH 45241

**Re:** 22-0959; Route C Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

**Project:** The proposed project involves the construction of a new approximately 9.5-mile 345 kV transmission line with a proposed right-of-way (ROW) width of 150 feet.

**Location:** The proposed project is located in Swan Creek and York Townships, Fulton County, Ohio.

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

**Natural Heritage Database:** The Natural Heritage Database has the following data at or within one mile of the project area:

Yellow False Indigo (*Baptisia tinctoria*), P  
Sweet-fern (*Comptonia peregrina*), E  
Hairy Pinweed (*Lechea mucronata*), P  
Plains Puccoon (*Lithospermum carolinense*), T  
Wild Lupine (*Lupinus perennis*), P  
Mountain Phlox (*Phlox latifolia*), E  
Racemed Milkwort (*Polygala polygama*), T  
Greater Redhorse (*Moxostoma valenciennesi*), T  
Eastern Box Turtle (*Terrapene carolina*), SC  
Creek Heelsplitter (*Lasmigona compressa*), SC

Conservation status abbreviations are as follows: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; U = state status under review; X = presumed extirpated in Ohio; FE = federally endangered, and FT = federally threatened.

The review was performed on the specified project area as well as an additional one-mile radius. Records searched date from 1980. Of the species listed above, only the Greater Redhorse is recorded within the footprint of the project area.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

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

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

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH  $\geq 20$  if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "[OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING](#)". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Eileen Wyza at [Eileen.Wyza@dnr.ohio.gov](mailto:Eileen.Wyza@dnr.ohio.gov)).

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The project is within the range of the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel. This project must not have an impact on native mussels. This applies to both listed and non-listed species, as all species of mussel are protected in Ohio. Per the Ohio Mussel Survey Protocol (2022), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore,

if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the [Ohio Mussel Survey Protocol](#). If there is no in-water work proposed, impacts to mussels are not likely.

The project is within the range of the greater redhorse (*Moxostoma valenciennesi*), a state threatened fish. The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact this or other aquatic species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet meadows and other wetlands. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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The project is within the range of the blue-spotted salamander (*Ambystoma laterale*), a state endangered species. Due to the location, the type of habitat within the project area, and the type of work proposed, this project is not likely to impact this species.

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Mike Pettegrew  
Environmental Services Administrator



Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Acting Environmental Services Administrator, at (614) 265-6387 or at [mike.pettegrew@dnr.state.oh.us](mailto:mike.pettegrew@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](mailto:ohio@fws.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Patrice Ashfield", is written over a light gray rectangular background.

Patrice Ashfield  
Field Office Supervisor



**Appendix 8-3A**  
**Wetland and Waterbody Delineation Report**  
**for the Preferred Route**

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# Wetland and Waterbody Delineation Report

Dowling-Fulton 345 kV Transmission Line Tap to  
Melbourne Substation Project – Preferred Route  
Fulton County, Ohio

Prepared for



February 2023

## Jacobs

Jacobs Engineering Group Inc.  
2 Crowne Point Court, Suite 100  
Cincinnati, OH 45241

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# Acronyms and Abbreviations

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ATSI	American Transmission Systems, Incorporated
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESB	environmental survey boundary
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GNSS	global navigation satellite system
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
Jacobs	Jacobs Engineering Group Inc.
kV	kilovolt
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	obligate wetland
OEPA	Ohio Environmental Protection Agency
OHWM	ordinary high water mark
ORAM	Ohio Rapid Assessment Method
PEM	palustrine emergent
PFO	palustrine forested
Project	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
PUB	palustrine unconsolidated bottom
QHEI	Qualitative Habitat Evaluation Index
ROW	right-of-way
TNW	traditionally navigable water
UPL	upland
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

# 1 Introduction

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This wetland and waterbody delineation report (Report) summarizes the results of the wetland and waterbody delineation surveys conducted on the Dowling-Fulton 345-kilovolt (kV) Transmission Line Tap to Melbourne Substation Project (Project) in Fulton County, Ohio by Jacobs Engineering Group Inc. (Jacobs), for American Transmission Systems, Incorporated (ATSI), a wholly-owned subsidiary of FirstEnergy Corporation. ATSI has proposed a Preferred and Alternate route as part of the Project submitted to the Ohio Power Siting Board. This Report includes the results of the surveys conducted along the Preferred route, which consists of approximately 9.5 miles of new 345 kV transmission line right-of-way (ROW). The Preferred Route alignment crosses the townships of York, Pike, and Fulton, Ohio (Figure 1). The 350-foot-wide environmental survey boundary (ESB) included the proposed 150-foot right-of-way (ROW) plus a 100-foot buffer on each side. This Report contains the following components:

- Figure 1 in Appendix A provides an overview map of the ESB overlain on ArcGIS Online USA topographic maps.
- Figures 2-1 to 2-22 in Appendix A show U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil map units, the location of National Wetland Inventory (NWI) polygons, national hydrography dataset (NHD) streams, and Federal Emergency Management Agency (FEMA) 100-year floodplain and floodway information. Table 2-1 summarizes recent precipitation data and Table 2-2 lists the 12-digit hydrologic unit codes crossed by the Project. Table 3-1 lists the soils types identified within the ESB and Table 3-2 lists the NWI wetland types identified within the ESB.
- Figures 3-1 to 3-22 in Appendix A provide the location of all features mapped during the delineation by Jacobs biologists. This includes all wetlands, data points, and waterbodies. Tables 4-1 (wetlands) and 4-2 (streams) follow the text, providing detailed information for all delineated features within the ESB. Tables 4-3 (wetlands), 4-4 (QHEI streams), and 4-5 (HHEI streams) are within the text, providing a summary of information for all delineated features within the ESB.
- U.S. Army Corps of Engineers (USACE) wetland determination field data forms are in Appendix B.
- Ohio Rapid Assessment Method for Wetlands (ORAM) two-page forms are in Appendix C.
- Qualitative Habitat Evaluation Index (QHEI) Stream Forms are in Appendix D.
- Headwater Habitat Evaluation Index (HHEI) Stream Forms are in Appendix E.
- Jacobs Open Water/Pond Data Forms are in Appendix F.

## 2 Background Information

The Project area consists of the Preferred route which begins at a tie-in with the existing Dowling-Fulton transmission line and ends at the proposed Melbourne Substation. The Preferred Route alignment crosses the townships of York, Pike, and Fulton, Ohio (Figure 1).

Review of the USGS 7.5-minute topographic maps indicates that the ESB is within two USGS 7.5-minute topographic quadrangles: Delta and Swanton. Additional review of the USGS 7.5-minute topographic maps of the area indicates that ditches and streams drain the ESB, including Swan Creek, Bad Creek, and unnamed tributaries of these waterways. Topographic relief is generally flat, with a few sloped areas associated with waterbodies. The project area ranges from 696 to 779 feet above sea level (Figure 1).

Land use and natural communities observed within the ESB include agricultural, industrial, maintained lawn, old field, park, residential, road, railroad, scrub/shrub, and upland forested.

### 2.1 Annual Precipitation

Precipitation history for Wauseon, Ohio was reviewed prior to completing environmental surveys to determine if climatic conditions were normal at the time of the surveys. Rainfall recorded in Wauseon ranged from above average to below average prior to and during the surveys conducted in fall 2022 (Table 2-1; USDA, 2022), suggesting that climatic conditions were approximately normal for the region and time of year. This was taken into consideration during the delineation.

TABLE 2-1: Recent Precipitation Data

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project*

Precipitation Data	Jul	Aug	Sep	Oct	Nov	Dec	Total
2022 Monthly Sum <sup>1,3</sup>	3.22	5.82	1.51	1.10	2.21	1.95	15.81
Normal Precipitation <sup>2,3</sup>	2.25-3.92	2.28-4.48	1.90-3.76	1.76-3.10	1.86-3.51	1.57-2.91	11.62-21.68
Monthly climatic condition	Average	Above average	Below average	Below average	Average	Average	Average

<sup>1</sup>Monthly weather summary from weather station WAUSEON WATER PLANT, OH

<sup>2</sup>USDA WETS Station Climate Data 1971-2000 (USDA 2022)

<sup>3</sup>Displayed in inches

### 2.2 Drainage Basins

The Project is within the Lower Maumee watershed, corresponding to 8-digit Hydrologic Unit Code (HUC) 04100009. More specifically it is within the four 12-digit HUCs outlined in Table 2-2 (USGS, 2020).

TABLE 2-2: 12-Digit Hydrologic Unit Codes Crossed by the Project

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project*

HUC 12-Digit Code	HUC 12-Digit Name
04100009 04 02	North Turkeyfoot Creek
04100009 03 02	Lower Bad Creek
04100009 07 02	Fewless Creek-Swan Creek

04100009 07 01

Ai Creek

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Source: USGS 2020

## 2.3 Traditional Navigable Waters

The U.S. Environmental Protection Agency (EPA) and USACE assert jurisdiction over “all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce including all waters which are subject to the ebb and flow of the tide” (USACE and EPA, 2008). These waters are considered traditionally navigable waters (TNW). No TNW directly cross the ESB.



## 3 Wetland and Waterbody Delineation

### 3.1 Desktop Review

Prior to conducting the field investigations, Jacobs reviewed the following resources to identify the potential for wetlands within the ESB:

- Aerial photo-based maps (ArcGIS Online, World Imagery Map, 2018)
- Topographic maps (ArcGIS Online, USA Topo Maps, 2019)
- NRCS Web Soil Survey (USDA-NRCS, 2021)
- NWI shapefile (USFWS, 2020)
- National Hydrography Dataset (NHD) (USGS, 2020)

According to the NRCS soil survey of Fulton County (USDA-NRCS, 2021), the ESB consists of 26 soil map units (Figures 2-1 to 2-22). Of these, seven units are listed as nonhydryc, 13 are predominantly nonhydryc, and six are predominantly hydryc (Table 3-1). Hydryc or predominantly hydryc soils comprise 54 percent of the ESB.

Generally, hydryc soils are those soils that indicate through their color and structure that they have experienced dominantly reducing (i.e. oxygen poor) conditions. Oxygen-poor conditions result from inundation and/or saturation by water. Partially hydryc soils have both hydryc and non-hydryc soil components identified in the soil map unit.

TABLE 3-1: Soil Map Units

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Soil type	Soil type description	Hydryc status	Acres (ac) within ESB
BrB	Boyer loamy sand, 1 to 6 percent slopes	Nonhydryc	2.6
ByA	Brady sandy loam, 0 to 3 percent slopes	Predominantly Nonydryc	0.4
CoB	Colonie fine sand, 1 to 6 percent slopes	Predominantly Nonydryc	10.0
CoC	Colonie fine sand, 6 to 12 percent slopes	Predominantly Nonydryc	0.7
DmA	Digby loam, 0 to 3 percent slopes	Predominantly Nonydryc	4.9
Gf	Gilford fine sandy loam	Predominantly Hydryc	17.2
GnB2	Glynwood loam, 2 to 6 percent slopes, eroded	Predominantly Nonydryc	0.6
GnD2	Glynwood loam, 12 to 18 percent slopes, eroded	Nonhydryc	2.9
GoC3	Glynwood clay loam, 6 to 12 percent slopes, severely eroded	Nonhydryc	4.0
HkA	Haskins loam, 0 to 3 percent slopes	Predominantly Nonydryc	45.3
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydryc	90.3
Mf	Mermill loam	Predominantly Hydryc	77.0
Mo	Millgrove loam	Predominantly Hydryc	7.2
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Nonydryc	37.5
NnB	Nappanee loam, 2 to 6 percent slopes	Nonhydryc	5.2
OaB	Oakville fine sand, 0 to 6 percent slopes	Predominantly Nonydryc	0.0
OtB	Ottokee fine sand, 0 to 6 percent slopes	Predominantly Nonydryc	8.8
RbB	Rawson sandy loam, 2 to 6 percent slopes	Predominantly Nonydryc	0.2
RnA	Rimer loamy fine sand, 0 to 3 percent slopes	Predominantly Nonydryc	26.4
SdB	Seward loamy fine sand, 2 to 6 percent slopes	Predominantly Nonydryc	9.3
So	Sloan silty clay loam, frequently flooded	Predominantly Hydryc	17.7

TdA	Tedrow loamy fine sand, 0 to 3 percent slopes	Predominantly Nonydric	15.3
TuB	Tuscola fine sandy loam, 3 to 8 percent slopes	Nonhydric	0.6
Uo	Udorthents, loamy	Nonhydric	7.1
W	Water	Nonhydric	5.4
Wf	Wauseon fine sandy loam	Predominantly Hydric	9.1

NWI data were obtained from the USFWS for review of potential wetlands that may occur within the ESB. The NWI data (USFWS, 2020) identify the type of wetland or open water present at a location using the USFWS classification system (Cowardin et al., 1979). The NWI data indicated that there are 19 NWI features within the ESB (Figure 2-1 to 2-22; USFWS, 2020). This included scrub-shrub/forested complexes, pond, lake, and riverine NWI wetland types (Table 3-2). The presence of an NWI feature is not a definitive indicator that a wetland or waterbody is present. The information on NWI maps is obtained largely from aerial interpretation, may be outdated, and is only sporadically field-checked.

TABLE 3-2: Mapped National Wetland Inventory Features

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project- Preferred Route*

Wetland Type	Description	Count of Mapped Features	Acres (ac) within ESB
L1UBHx	Lacustrine limnetic unconsolidated bottom, permanently flooded, excavated	2	1.2
PFO1/SS1C	Palustrine forested, broad-leaved deciduous, and palustrine scrub-shrub, broad-leaved deciduous, seasonally flooded	2	1.7
PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	4	5.9
R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	1	0.5
R4SB3C	Riverine intermittent streambed, cobble-gravel, seasonally flooded	1	0.2
R4SBC	Riverine intermittent streambed, seasonally flooded	8	9.6
R5UBH	Riverine unknown perennial unconsolidated bottom, permanently flooded	1	0.3

As shown on the FEMA floodplain panels (Figures 2-1 to 2-22), floodplains associated with Bad Creek and Swan Creek cross the ESB (FEMA, 2019).

## 3.2 Field Survey Methodology

In September, October, and December of 2022, Jacobs biologists surveyed the ESB by walking the area and evaluating for wetlands and other waters of the U.S. The boundaries of each wetland and waterbody within the ESB were delineated and recorded using handheld global navigation satellite system (GNSS) receivers. For waterbodies identified within the Project area, the ordinary high-water mark (OHWM) was used as the jurisdictional boundary.

Wetland data were recorded on USACE Northcentral and Northeast Regional Supplement wetland determination data forms, stream data were recorded on Qualitative Habitat Evaluation Index (QHEI) forms and Headwater Habitat Evaluation Index (HHEI) forms, and pond data were recorded on Jacobs pond/open water forms. All other land use, habitat, and other supplemental data were collected in a digital geodatabase during the environmental survey.

### 3.2.1 Wetland Delineation

Wetland boundaries were field-delineated according to using the routine onsite methodology described in the Technical Report Y-87-1 *Corps of Engineers Wetlands Delineation Manual* and subsequent guidance documents (Environmental Laboratory, 1987) and according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0) (USACE, 2012). Wetland delineation data were recorded on the USACE Regional Supplement wetland determination data forms. Representative wetland and upland data points were recorded during the wetland delineation to determine the presence/absence of wetlands and/or to document upland conditions within the Project area. Upland data points were determined not to be within wetlands because they did not have positive indicators of one or more of the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

#### 3.2.1.1 Soils

Jacobs biologists examined soils using a shovel to extract soil cores, which were examined for hydric soil characteristics. A *Munsell Soil Color Chart* (Munsell Color, 2012) was used to identify the hue, value, and chroma of the matrix and concentrations/depletions of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (Environmental Laboratory, 1987). In sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are hydric soils.

#### 3.2.1.2 Hydrology

The *1987 Manual* requires that an area be inundated or saturated to the surface for an absolute minimum of five percent of the growing season. Areas saturated between five percent and 12.5 percent of the growing season may or may not be wetlands, while areas saturated over 12.5 percent of the growing season fulfill the hydrology requirements for wetlands. The *Regional Supplement* states that the growing season dates are determined through onsite observations of the following indicators of biological activity in a given year; (1) above-ground growth and development of vascular plants, and/or (2) soil temperature (12-in. depth is 41 degrees Fahrenheit or higher) as an indicator of soil microbial activity. Therefore, the beginning of the growing season in a given year is indicated by whichever condition occurs earlier, and the end of the growing season by whichever persists later.

The soils and ground surface were examined by Jacobs biologists for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the *1987 Manual* and the *Regional Supplement*. Evidence indicating wetland hydrology typically includes primary indicators such as surface water, saturation, water marks, drift deposits, water-stained leaves, sediment deposits, and oxidized rhizospheres on living roots; and secondary indicators such as drainage patterns, geomorphic position, microtopographic relief, and a positive Facultative (FAC)-neutral test (USACE, 2012).

#### 3.2.1.3 Vegetation

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb, and woody vine) and an indicator status (obligate wetland [OBL], facultative wetland [FACW], facultative [FAC], facultative upland [FACU], upland [UPL]) was assigned to each plant species based on the 2020 National Wetland Plant List. Under normal circumstances, an area is determined to have hydrophytic vegetation when any of the following are true: all dominant species are OBL or FACW; more than 50 percent of the dominant species are OBL, FACW or FAC; or the average total cover of plants, when weighted based on indicator status, calculates to a prevalence index of less than or equal to three.

Wetland quality was evaluated using the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001). Categorization was conducted in accordance with the latest quantitative score calibration (OEPA, 2000). Wetlands are scored based on hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between Categories 1 and 2 from 30 to 34.9 and between Categories 2 and 3 from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower category (Mack, 2001).

### 3.2.2 Stream Assessment

Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. Per USACE guidance, the OHWM is defined as the "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" (USACE, 2005). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

During the field survey, functional stream assessments were conducted using the methods described in *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index* (OEPA, 2006) and *Field Methods for Evaluating Primary Headwater Streams in Ohio* (OEPA, 2020). The QHEI is used to characterize larger streams (drainage areas greater than one square mile), while the HHEI is appropriate for first-order and second-order headwater streams (drainage areas less than one square mile).

## 4 Field Survey Results

Jacobs biologists surveyed the Project area by walking the ESB and evaluating for wetlands and other waters of the U.S. The Preferred route crossed four wetlands, 11 streams, and five ponds; these features are displayed and identified on the Wetlands and Waterbodies Delineation Map (Figures 3-1 to 3-22). Jacobs defaults to the USACE and OEPA for the final determination of hydrologic connectivity and jurisdiction

### 4.1 Wetlands

Four wetlands, ranging in size from 0.05 to 3.31 acres, were delineated within the ESB. Two of the wetlands were identified as palustrine emergent (PEM) wetlands and two were identified as palustrine forested (PFO) wetlands. These wetlands are depicted in Figures 3-1 to 3-22. The reported wetland acreage only corresponds to areas delineated within the ESB, as some wetlands extended beyond the survey boundary.

Completed USACE wetland and upland determination forms are provided in Appendix B; representative photographs were taken of each wetland during the field survey and are appended to each USACE wetland and upland form. Detailed information for each delineated wetland within the ESB is provided in Table 4-1.

TABLE 4-1: Delineated Wetland Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Wetland ID	Location		Wetland Type <sup>1</sup>	Area (ac) within ESB	ORAM Score, Category
	Latitude	Longitude			
Wetland DFN-01	41.59574	-84.01331	PFO	3.31	29, Category 1
Wetland DFN-02	41.59549	-84.01673	PEM	0.05	24, Category 1
Wetland DFN-03	41.59488	-84.01826	PFO	0.07	34.5, Category 2
Wetland DFN-04	41.57143	-84.05502	PEM	0.60	12.5, Category 1
Total Wetland Area (ac)				4.03	

<sup>1</sup>Cowardin et al. 1979.

#### 4.1.1 Wetland ORAM Results

Three Category 1 wetlands and one Category 2 wetland were identified within the ESB. No Category 3 wetlands were identified within the ESB. Table 4-1 provides summary information regarding wetlands identified within the ESB, and completed ORAM forms are included in Appendix C.

Three Category 1 wetlands were identified within the ESB, including two PEM wetlands and one PFO wetland. These wetlands were classified as Category 1 wetlands based on ORAM scores ranging from 12.5 to 29. Generally, the Category 1 wetlands scored low due to factors such as narrow buffer width, moderate to high intensity surrounding land use, moderate hydrology, poor to fair habitat development, habitat alteration, low quality vegetation communities, lack of horizontal interspersion, presence of invasive species, and minimal microtopography.

One Category 2 wetland was identified within the ESB as a PFO wetland with an ORAM score of 34.5. This Category 2 wetland exhibited much of the same characteristics as a Category 1 wetland with the exception of a greater buffer width, recovery from habitat alteration, and no invasive species cover.

TABLE 4.1.1: Wetland Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Wetland Type	ORAM Category			Number of Wetlands	Acreage within ESB
	Category 1	Category 2	Category 3		
PEM	2	0	0	2	0.65
PFO	1	1	0	2	3.38
Totals	3	1	0	4	4.03

## 4.2 Streams

Eleven streams were identified, totaling 22,281 linear feet within the ESB. Of the 11 streams, five were identified as ephemeral streams, four were intermittent streams, and two were perennial streams. Two streams were assessed using the QHEI methodology (drainage area greater than one square mile) and nine streams were assessed using the HHEI methodology (drainage area less than one square mile).

Completed QHEI and HHEI forms are provided in Appendix D and E, respectively. Representative photographs were taken of each stream during the field survey and are appended to each QHEI and HHEI stream form. Detailed information for each delineated stream within the ESB is provided in Table 4-2.

TABLE 4-2: Delineated Stream Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Stream ID	Location		Flow Regime <sup>1</sup>	Length (ft) within ESB	Average OHWM Width (ft)
	Latitude	Longitude			
Stream DFN-01	41.59948	-83.92022	Ephemeral	2,806	2
Stream DFN-02	41.59919	-83.92658	Intermittent	628	4
Stream DFN-03	41.57434	-83.96970	Intermittent	405	7
Stream DFN-04	41.59942	-83.94043	Ephemeral	5,222	2
Stream DFN-05	41.59901	-83.95346	Intermittent	1,149	6
Stream DFN-06	41.59766	-83.96963	Ephemeral	2,799	2
Stream DFN-07	41.59781	-83.97269	Perennial	589	7
Stream DFN-08	41.59739	-83.98687	Ephemeral	6,997	2
Stream DFN-09	41.59733	-84.00818	Intermittent	949	6
Stream DFN-10	41.59504	-84.01893	Perennial	370	40
Stream DFN-11	41.59079	-84.03934	Ephemeral	367	5
Total Stream Length (ft)				22,281	

<sup>1</sup>Flow regime estimated based on analysis of drainage area, gradient, and observations at the time of survey

### 4.2.1 QHEI Results

Two streams, totaling 959 linear feet within the ESB, were evaluated using QHEI methodology. One was classified as a Fair Warmwater stream and one was classified as a Good Warmwater stream. The completed QHEI forms are included in Appendix D and Table 4-5 provides a summary of streams identified within the ESB that were assessed using the QHEI.

TABLE 4-5: QHEI Stream Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Flow Regime	QHEI Narrative Category					Number of Streams	Length (feet) within ESB
	Very Poor Warmwater	Poor Warmwater	Fair Warmwater	Good Warmwater	Excellent Warmwater		
Perennial	0	0	1	1	0	2	959
Total	0	0	1	1	0	2	959

### 4.2.2 HHEI Results

Nine headwater streams, totaling 21,322 linear feet within the ESB, were evaluated using the HHEI methodology. Six of the streams were categorized as Modified Class I, two were categorized as Modified Class II, and one was categorized as Class II. Of the nine streams, five were ephemeral and four were intermittent streams. Completed HHEI forms are provided in Appendix E and Table 4-6 provides a summary of streams identified within the ESB that were assessed using the HHEI.

TABLE 4-6: HHEI Stream Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Flow Regime <sup>1</sup>	HHEI Class						Number of Streams	Length (feet) within ESB
	Modified Class I	Class I	Modified Class II	Class II	Modified Class III	Class III		
Ephemeral	5	0	0	0	0	0	5	18,191
Intermittent	1	0	2	1	0	0	4	3,131
Perennial	0	0	0	0	0	0	0	0
Total	6	0	2	1	0	0	9	21,322

<sup>1</sup>Flow regime estimated based on analysis of drainage area, gradient, and observations at the time of survey

## 4.3 Ponds/Open Water

Five ponds totaling 7.27 acres were identified within the ESB and can be found on Figures 3-1 to 3-22. Detailed information for each delineated pond within the ESB is provided in Table 4-3. Representative photographs and more detailed information on pond conditions can be found in Appendix F.

TABLE 4-3: Delineated Pond Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Preferred Route*

Pond ID	Location		Area (ac) within ESB
	Latitude	Longitude	
Pond DFN-01	41.59541	-84.01178	1.38
Pond DFN-02	41.59521	-84.01552	1.15
Pond DFN-03	41.59072	-84.03541	0.7
Pond DFN-04	41.59054	-84.04005	3.15
Pond DFN-05	41.59021	-84.05079	0.89
Total Pond Area (ac)			7.27

## 5 Conclusion

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Jacobs conducted an environmental survey of the Preferred Route of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project in September, October, and December 2022. Four wetlands, 11 streams, and five ponds were delineated within the environmental survey boundary. The four wetlands totaled 4.03 acres within the ESB and were identified as two PEM wetlands and two PFO wetlands. Of the four wetlands, three were identified as Category 1 wetlands and one was a Category 2 wetland. No Category 3 wetlands were identified within the ESB.

The 11 streams totaled 22,281 linear feet within the ESB and included five ephemeral streams, four intermittent streams, and two perennial streams. Two streams were assessed using the QHEI methodology (drainage area greater than 1 mi<sup>2</sup>) and nine streams were assessed using the HHEI methodology (drainage area less than 1 mi<sup>2</sup>). Additionally, five ponds were identified totaling approximately 7.27 acres within the ESB.

The jurisdiction of all assessed features will be determined by the USACE and state-established water quality standards based on hydrologic connectivity. Further coordination with the USACE and state regulating agency is recommended prior to the submittal of any permit or construction activities.

The results of the wetland and waterbody field survey described in this Report conducted by Jacobs are limited to the what was identified within the ESB. The information contained in this Report is for a study area that may be much larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed in this Report may likely not constitute the actual impacts of the Project at the time of construction. If permits are determined to be necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

The wetland and waterbodies field survey results presented within this Report apply to the site conditions at the time of our assessment. Changes within the environmental survey boundary that may occur with time due to natural processes or human impacts at the project site or on adjacent properties, could invalidate the findings of this Report, especially if Jacobs is unaware and has not had the opportunity to revisit the Project. Additionally, changes in applicable standards and regulations may also occur as a result of legislation or the expansion of information over time. Therefore, the findings of this Report may be invalidated, wholly or in part, by changes that are beyond the control of Jacobs.



## 6 References

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## Appendix A

### Figures

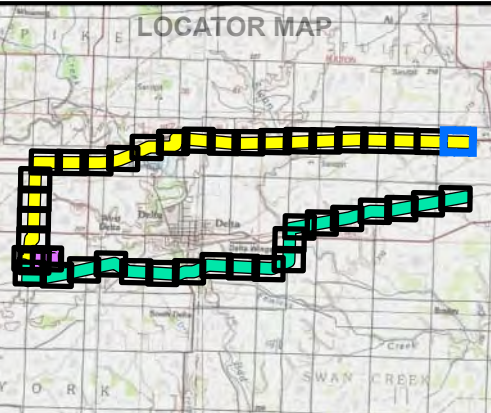
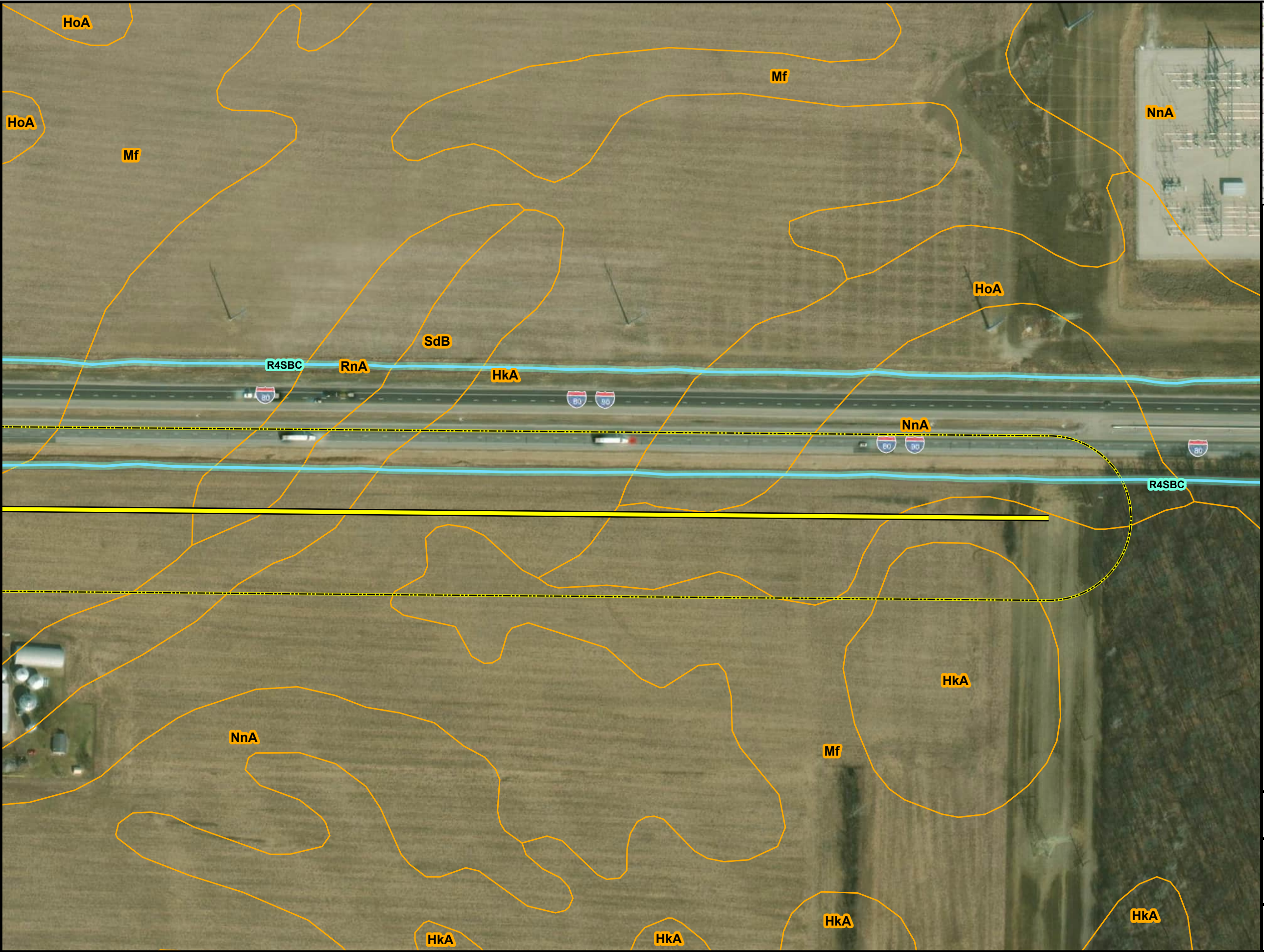
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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET




**ATSI**  
American Transmission Systems, Inc.  
a subsidiary of FirstEnergy Corp.

*Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project*

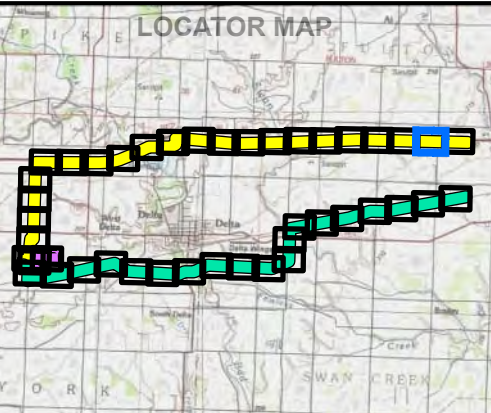
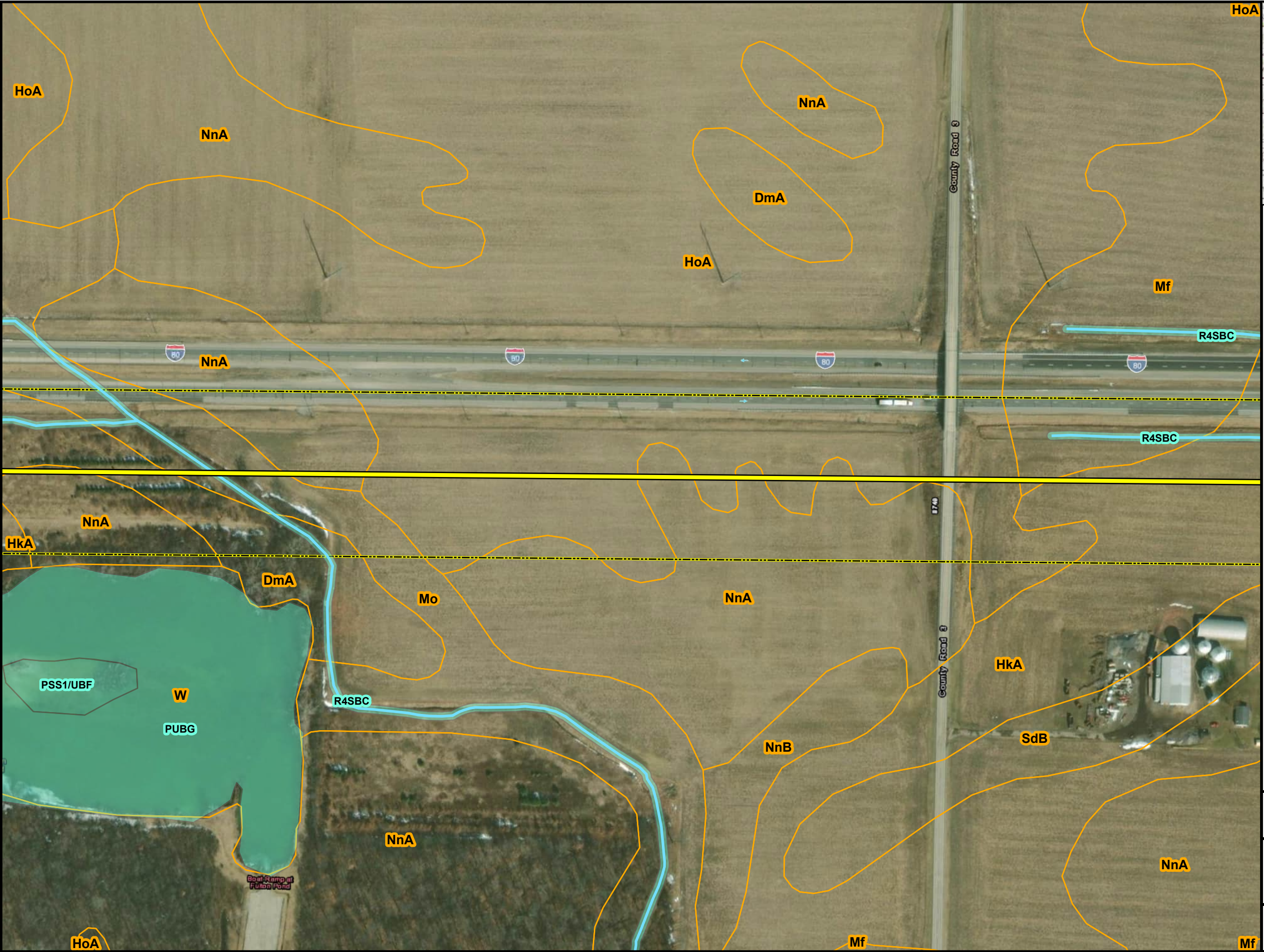
PREFERRED ROUTE  
FIGURE 2-1  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023





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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

**ATSI**  
American Transmission Systems, Inc.  
a subsidiary of FirstEnergy Corp.

Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

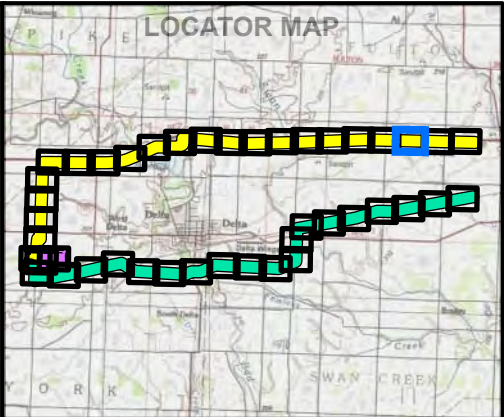
PREFERRED ROUTE  
FIGURE 2-2  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

**Jacobs**

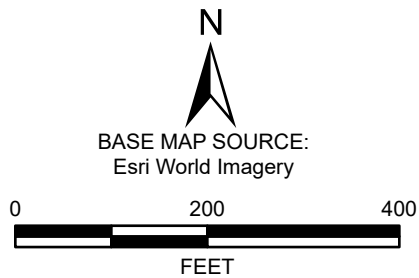



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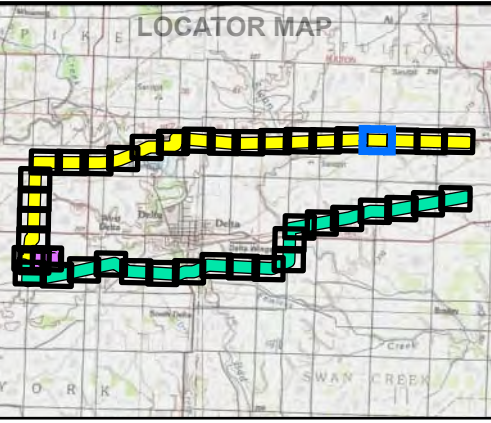
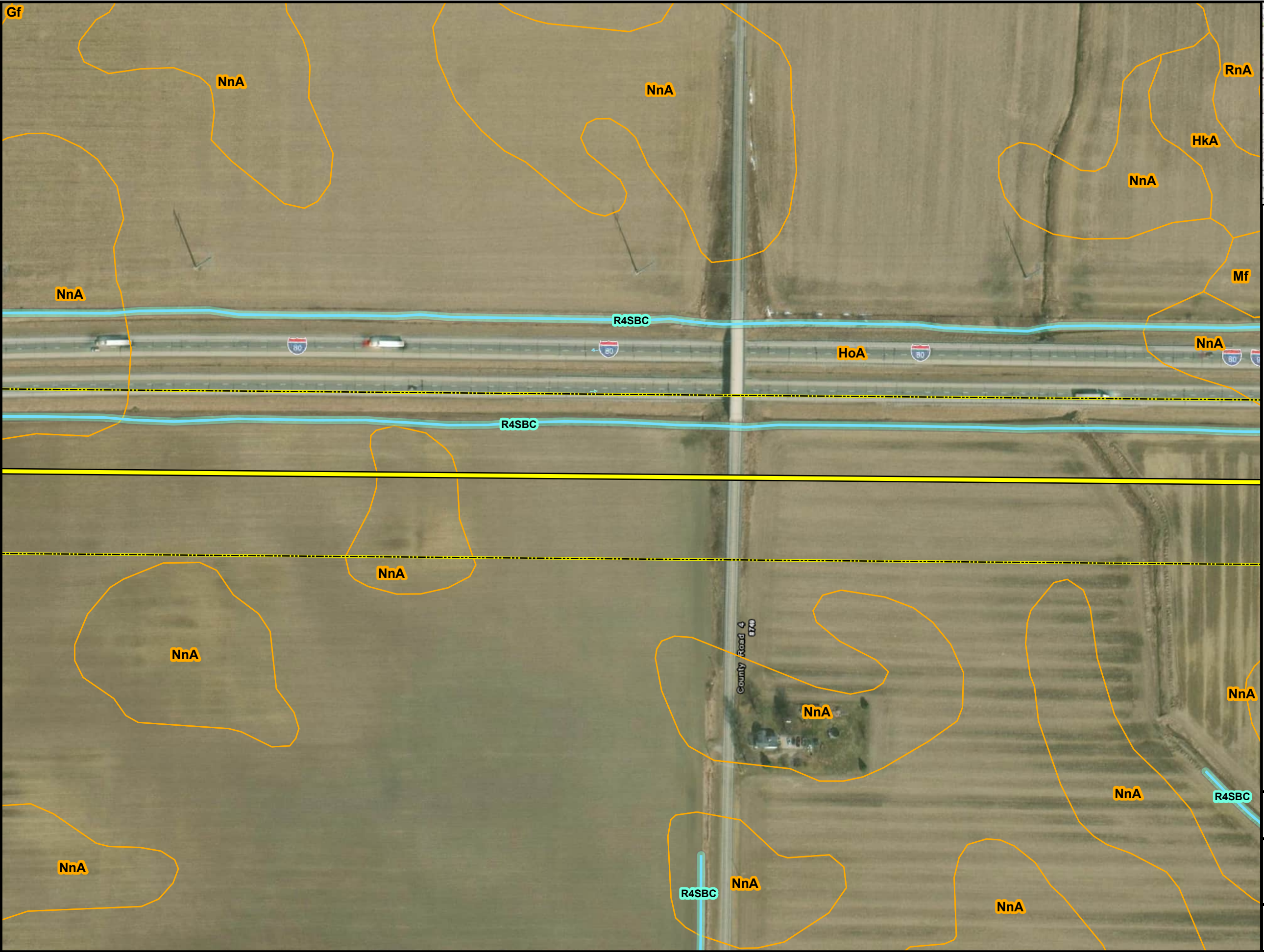
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit



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PREFERRED ROUTE FIGURE 2-3 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

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Transmission Line Tap to  
Melbourne Substation Project

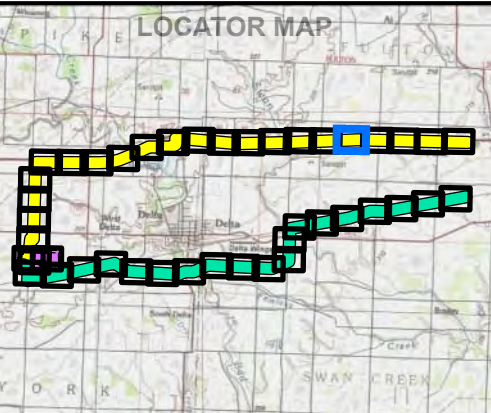
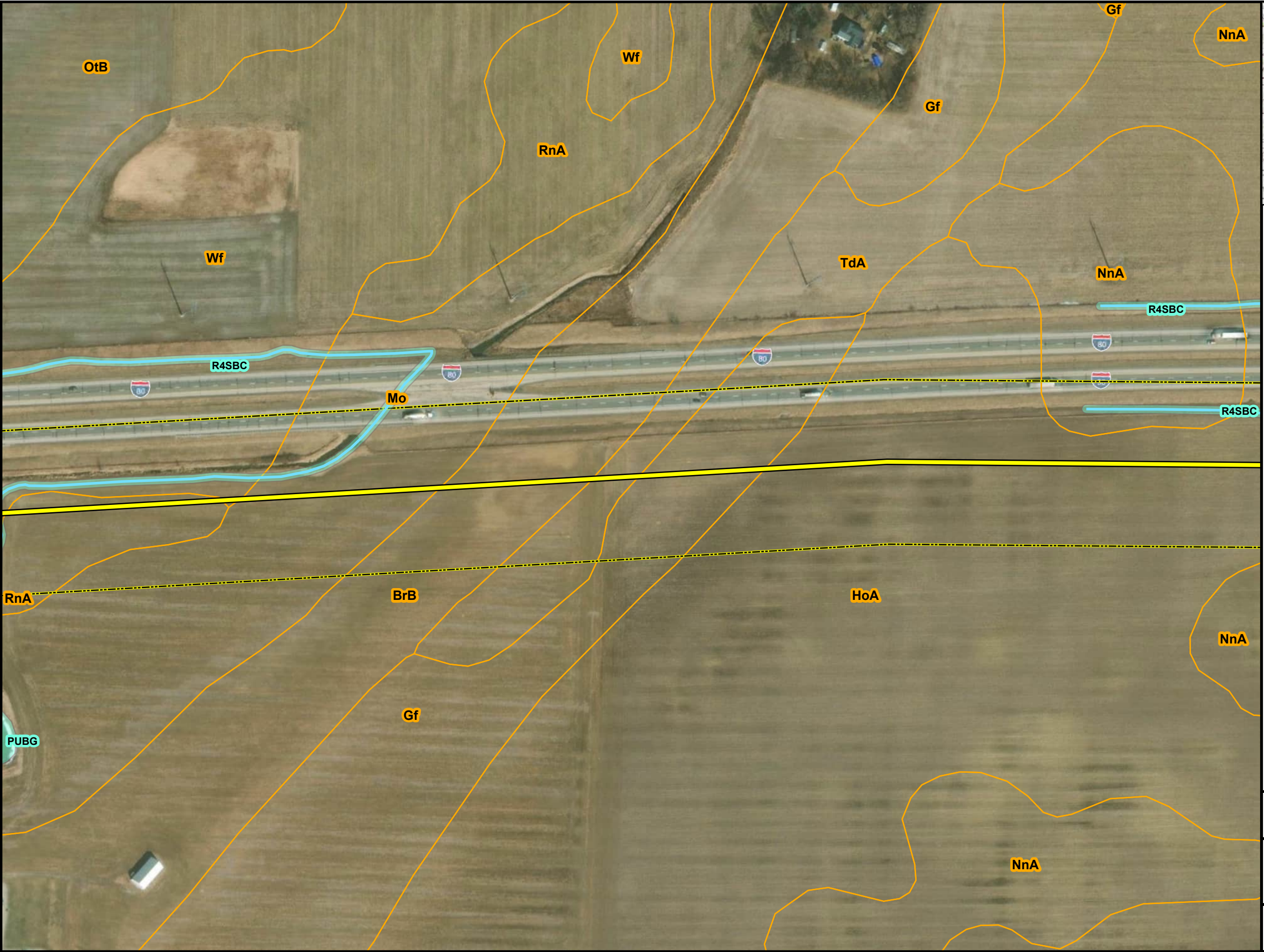
PREFERRED ROUTE  
FIGURE 2-4  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

**Jacobs**



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET




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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

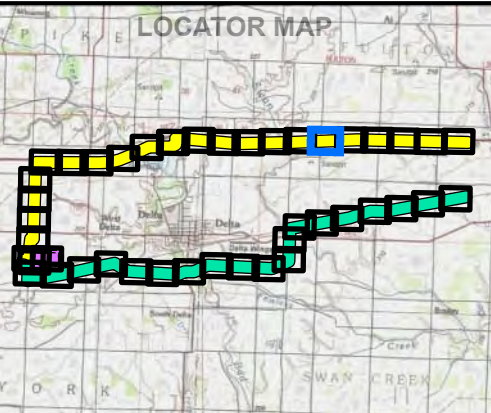
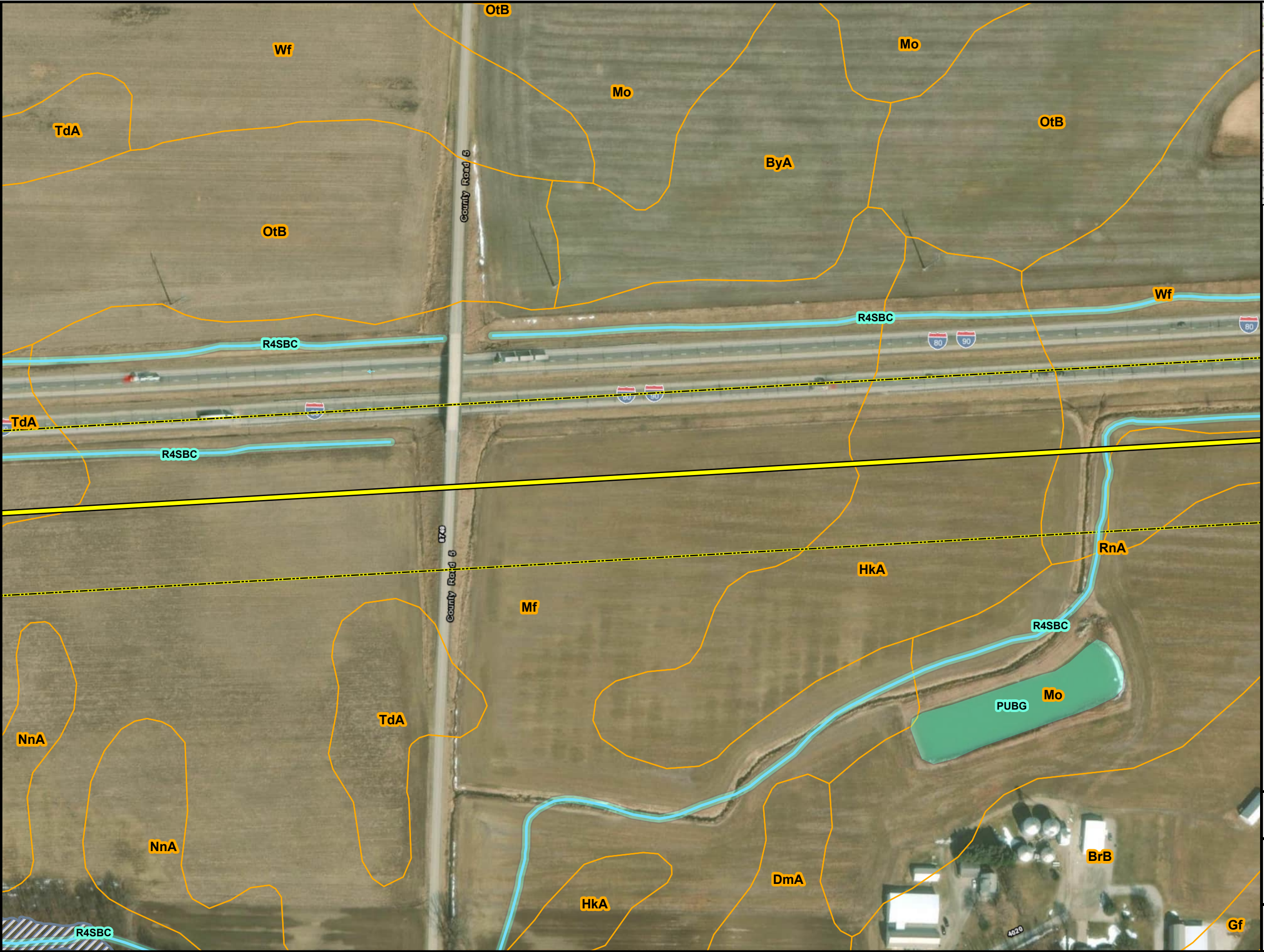
PREFERRED ROUTE  
FIGURE 2-5  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

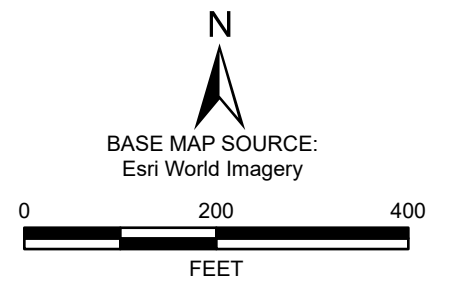





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- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



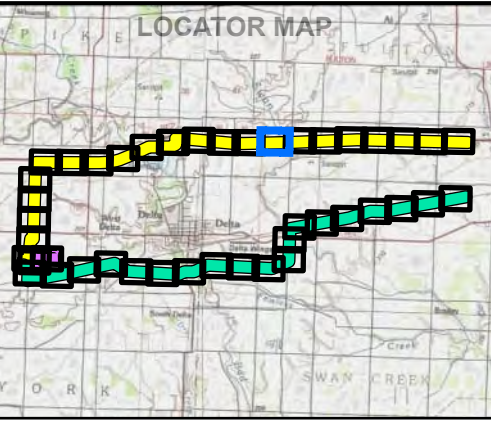
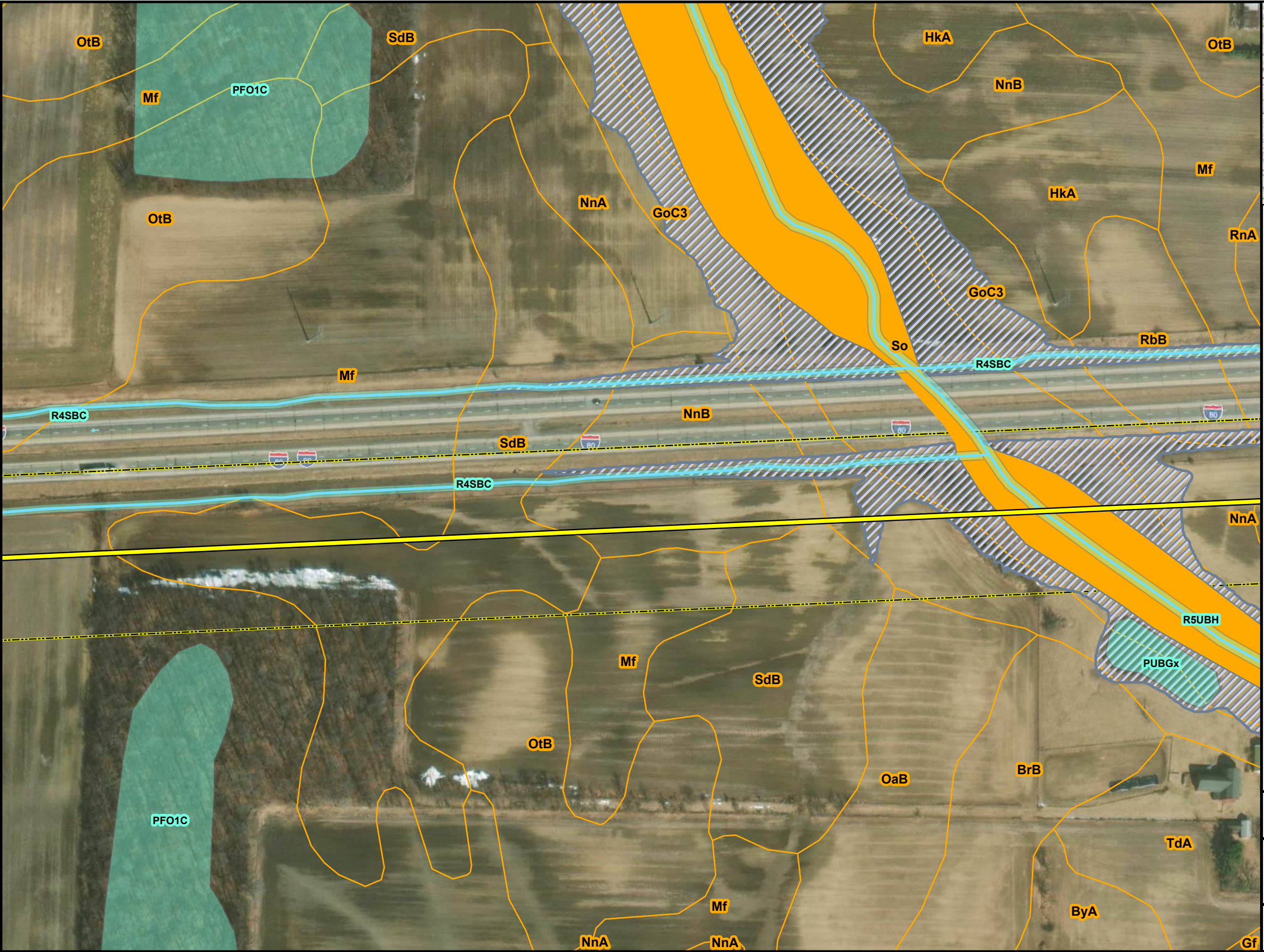
 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.	<i>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</i>
<b>PREFERRED ROUTE FIGURE 2-6 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



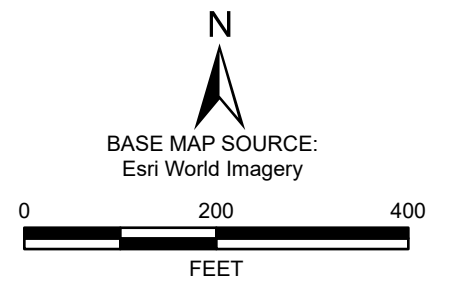




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- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



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Melbourne Substation Project

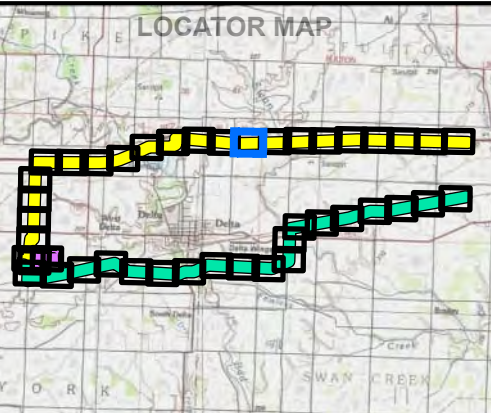
PREFERRED ROUTE  
FIGURE 2-8  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

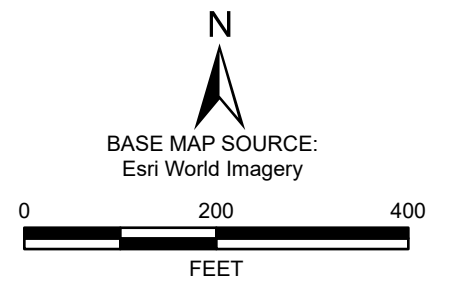
**Jacobs**



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- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



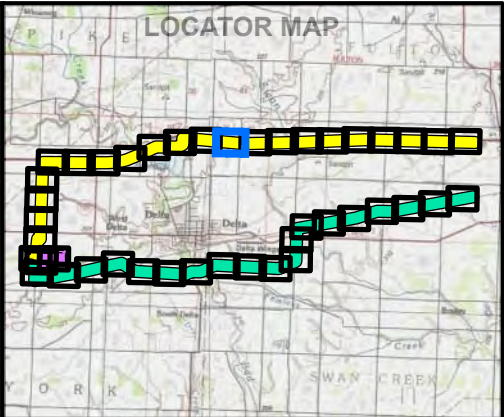
<b>ATSI</b> American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 2-9  
SOILS, NHD, NWI, FEMA MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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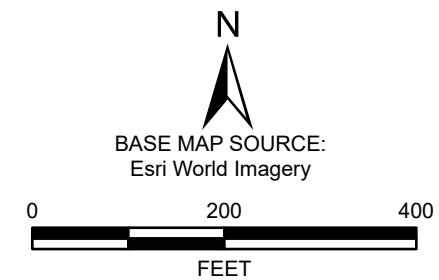



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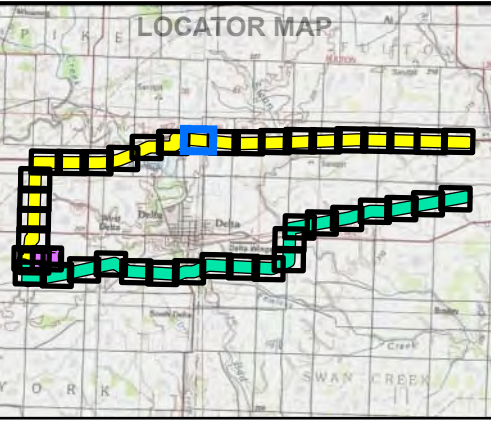
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit



 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
<b>PREFERRED ROUTE FIGURE 2-10 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

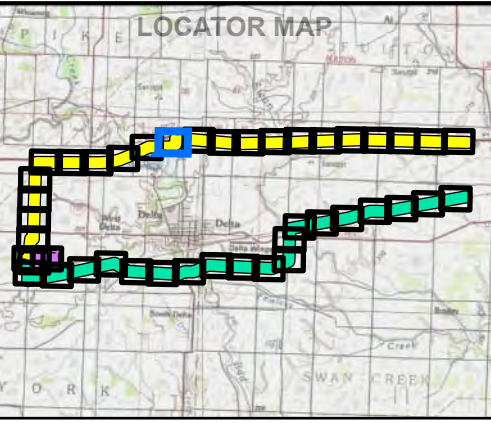
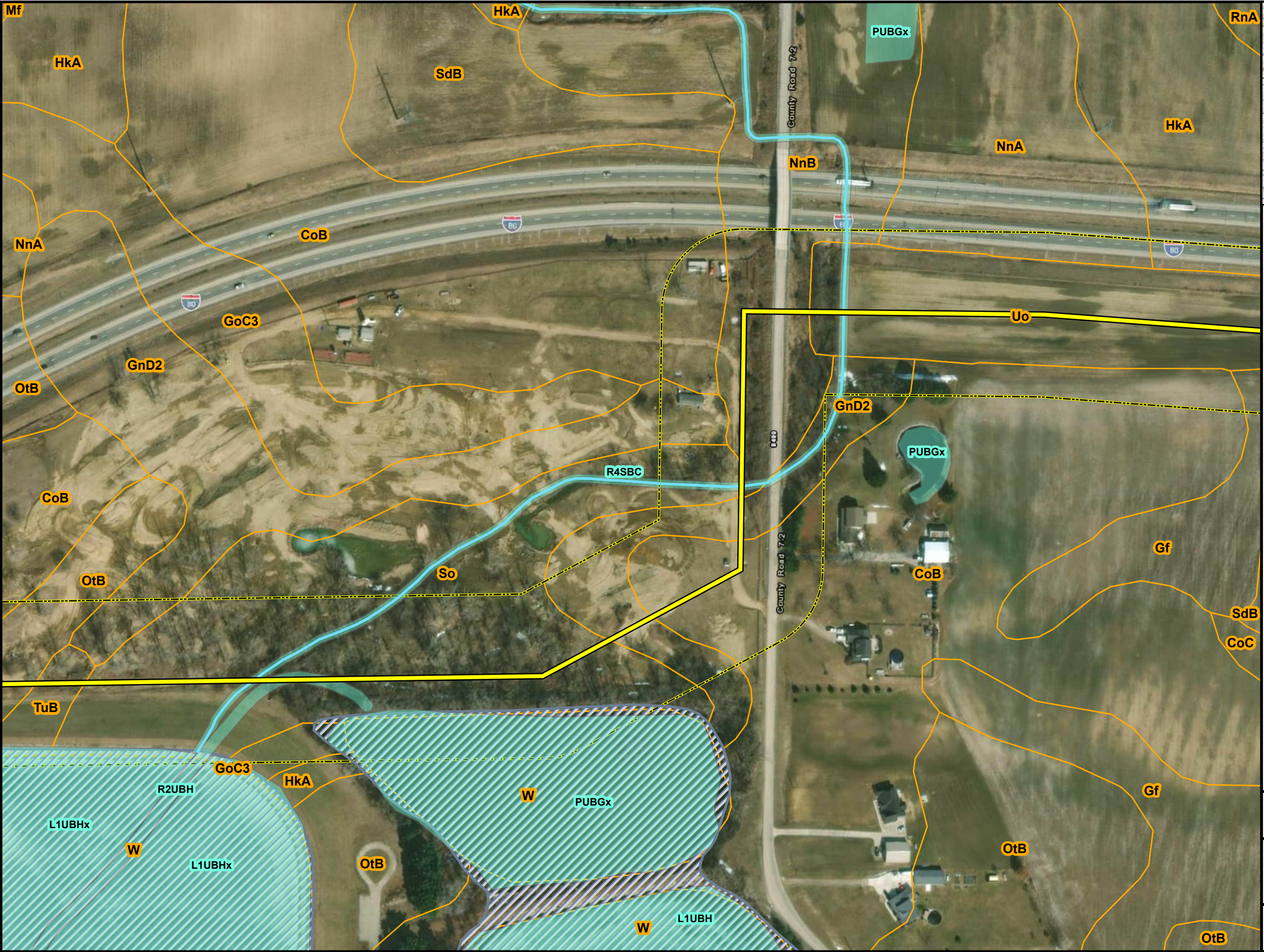
PREFERRED ROUTE  
FIGURE 2-11  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

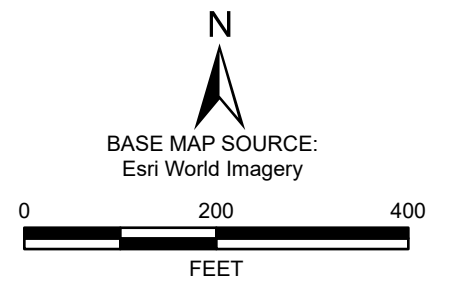
**Jacobs**




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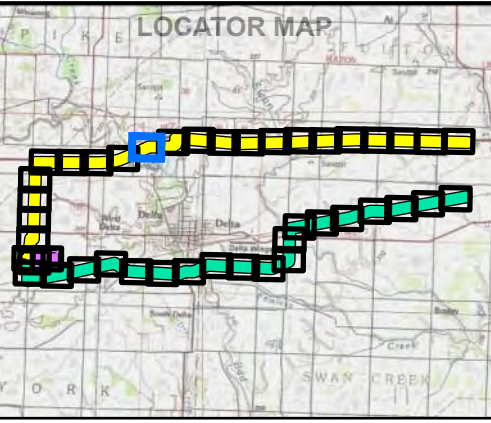
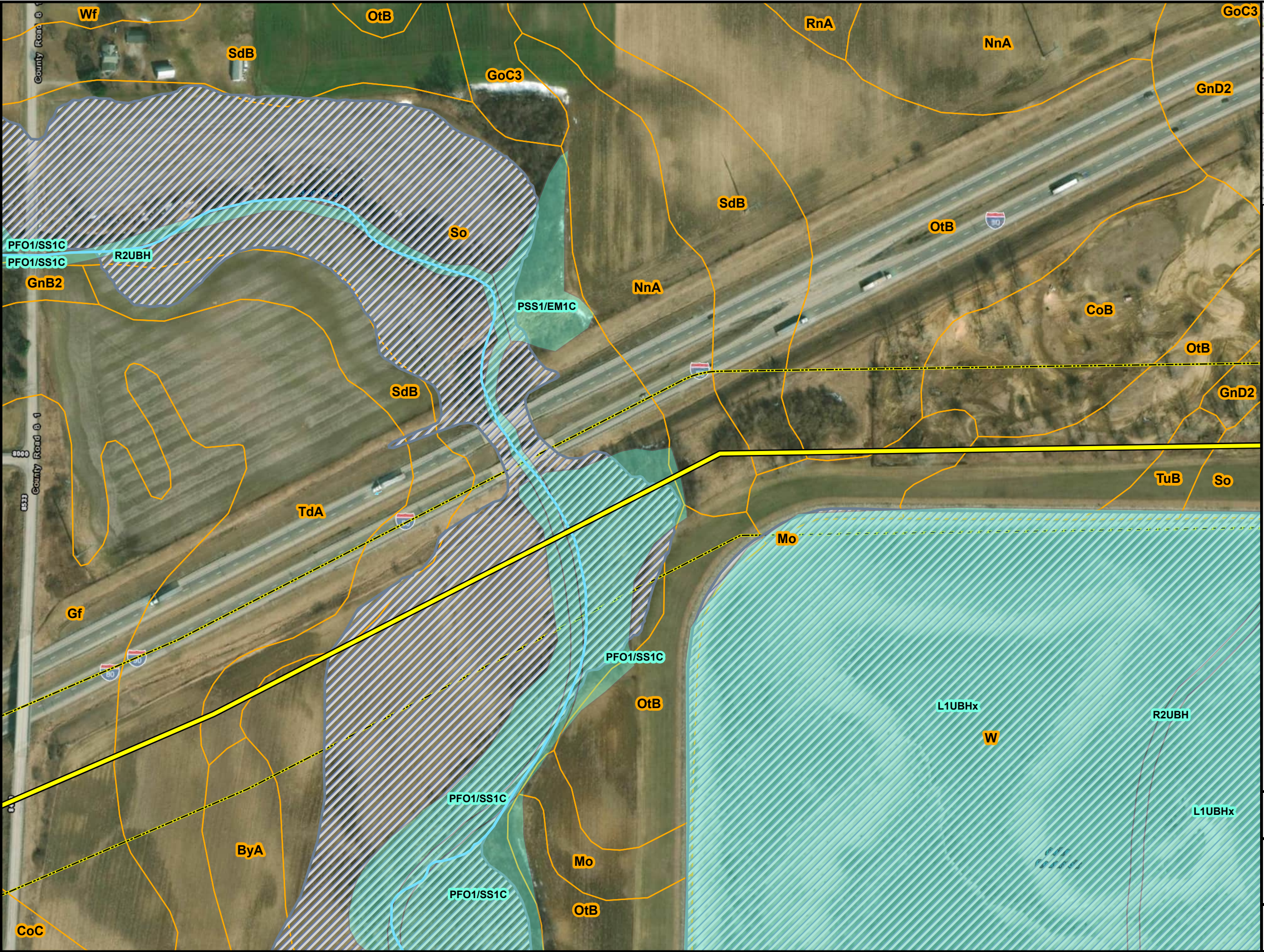
- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
PREFERRED ROUTE FIGURE 2-12 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

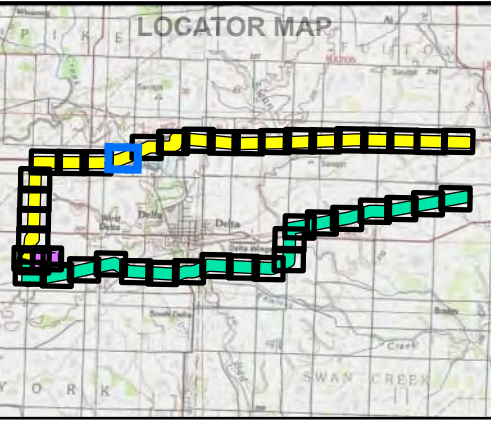
BASE MAP SOURCE:  
Esri World Imagery

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FEET

<b>ATSI</b> American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
PREFERRED ROUTE FIGURE 2-13 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

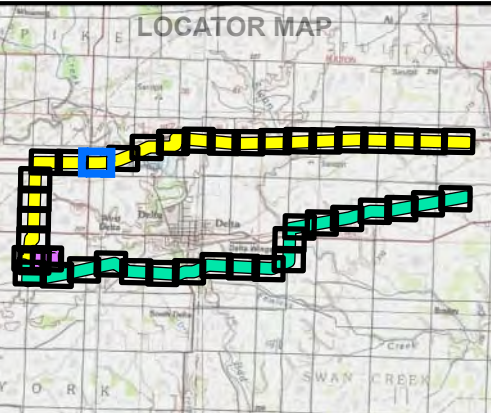
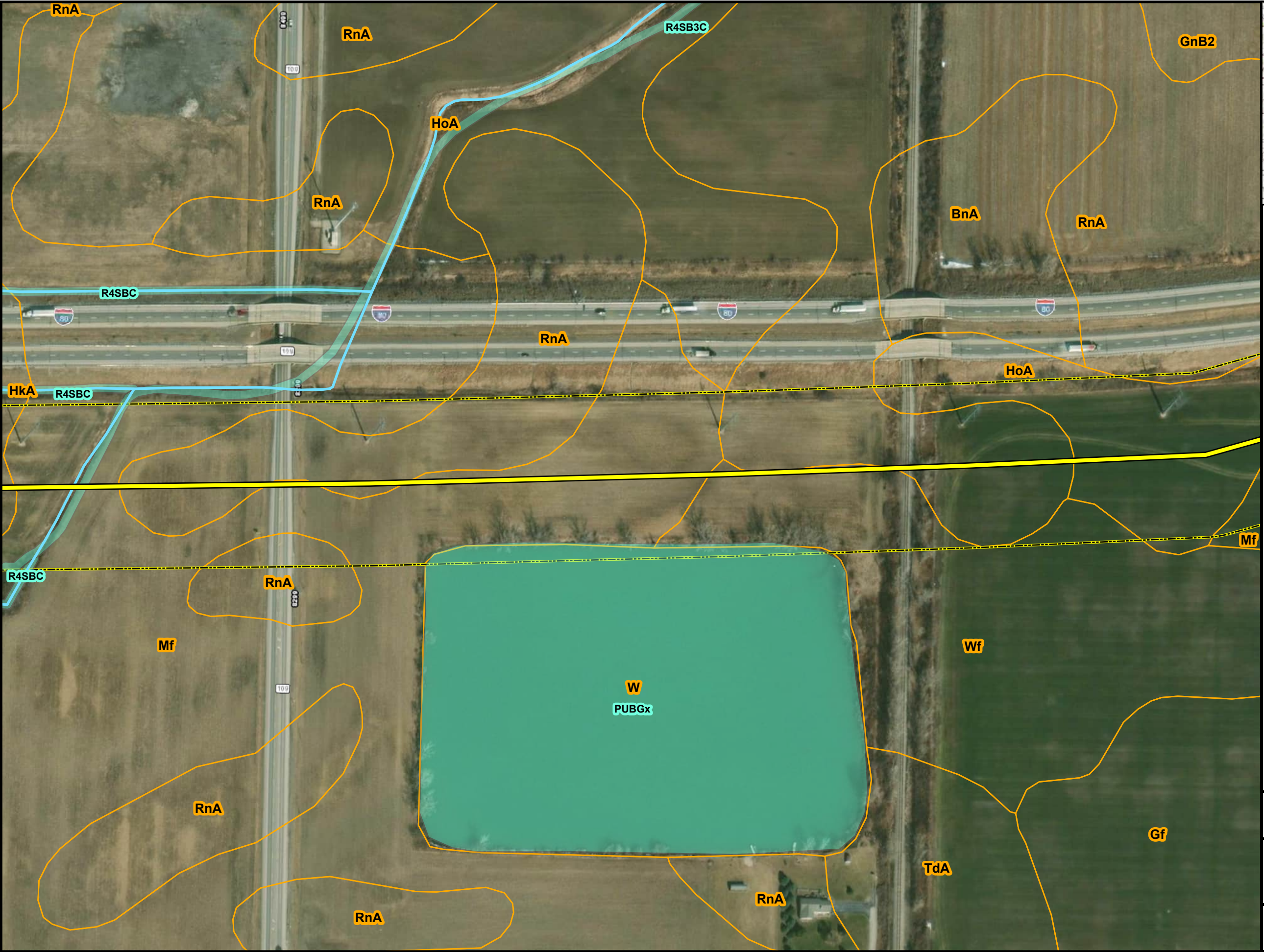
BASE MAP SOURCE:  
Esri World Imagery

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FEET

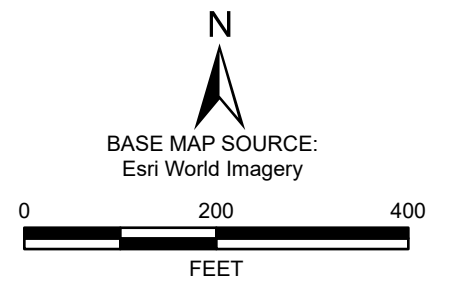
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
PREFERRED ROUTE FIGURE 2-14 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	<b>Jacobs</b>



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- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



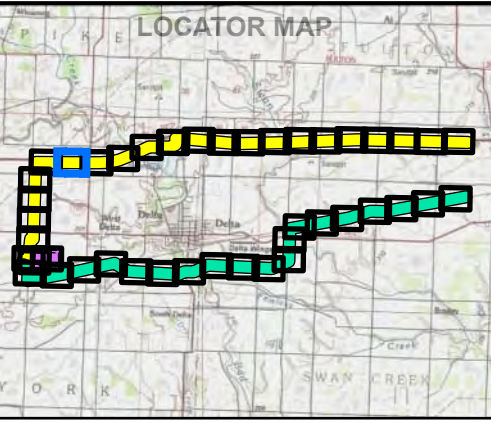
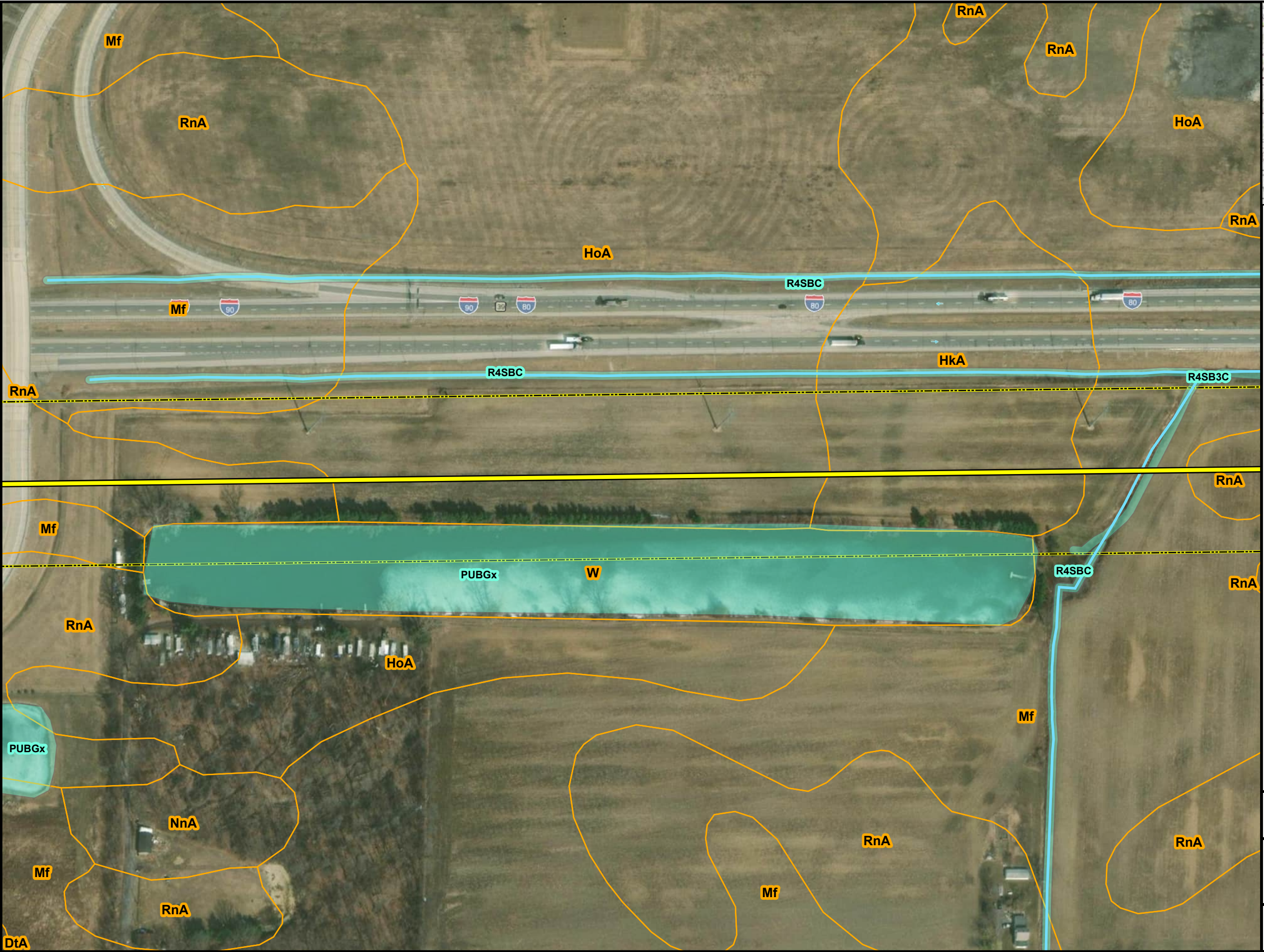
<b>ATSI</b> American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
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PREFERRED ROUTE  
FIGURE 2-15  
SOILS, NHD, NWI, FEMA MAP

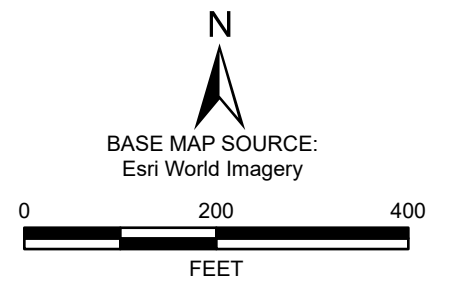
DATE: 2/23/2023	<b>Jacobs</b>
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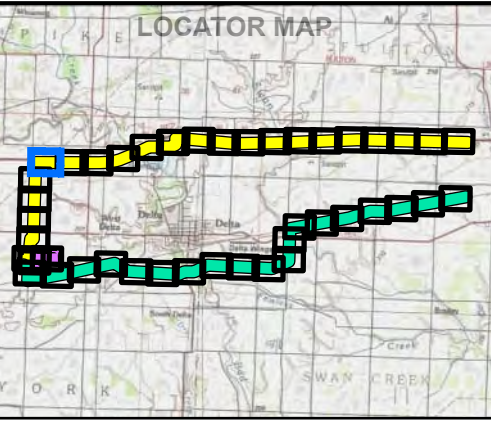
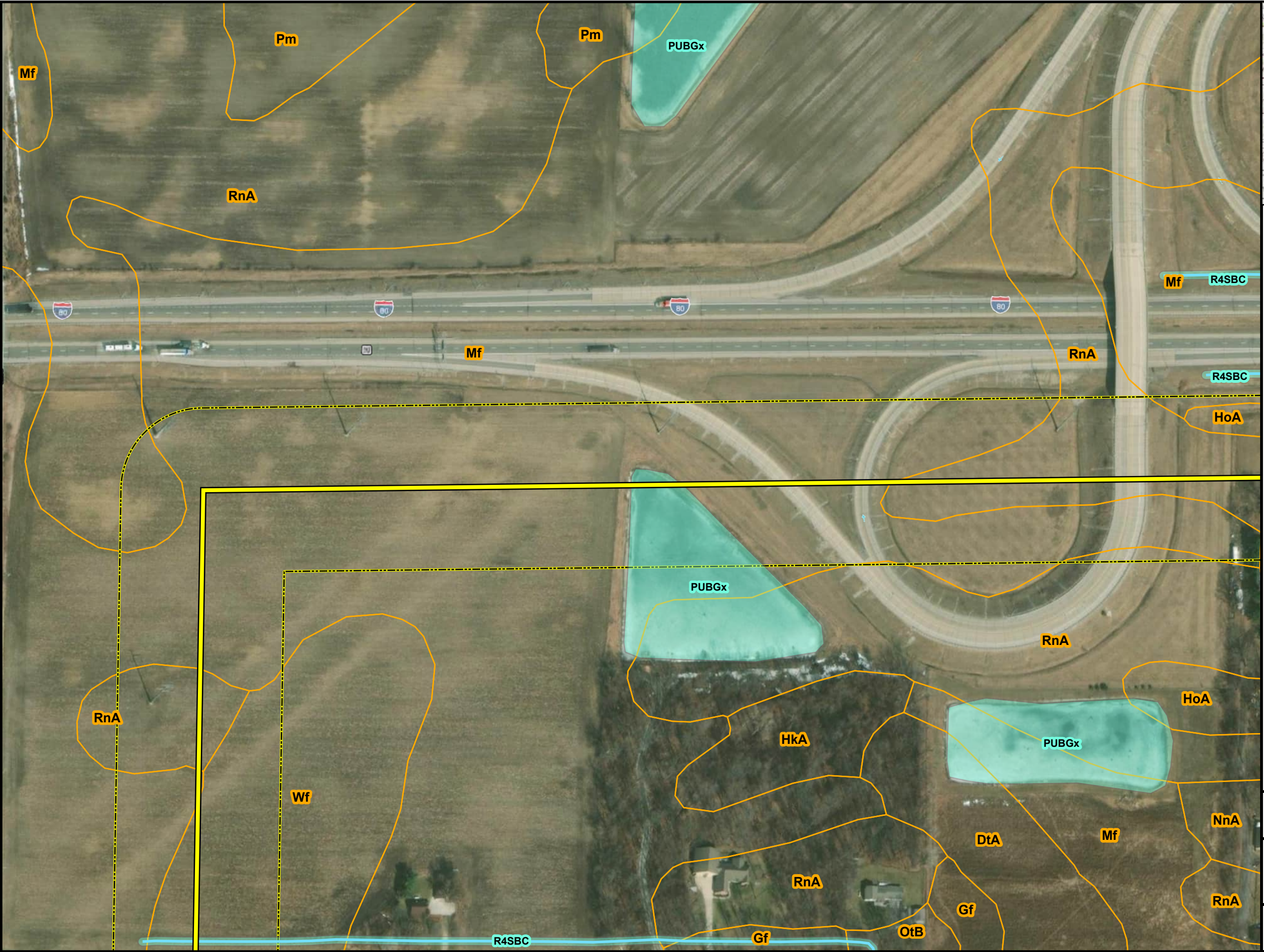
- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



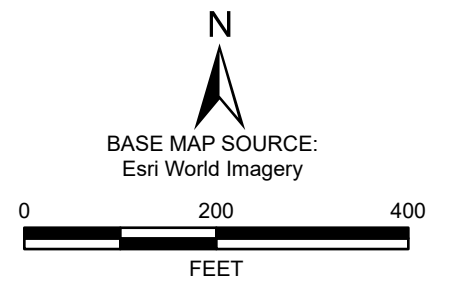
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
PREFERRED ROUTE FIGURE 2-16 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	<b>Jacobs</b>




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- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit






American Transmission Systems, Inc.  
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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

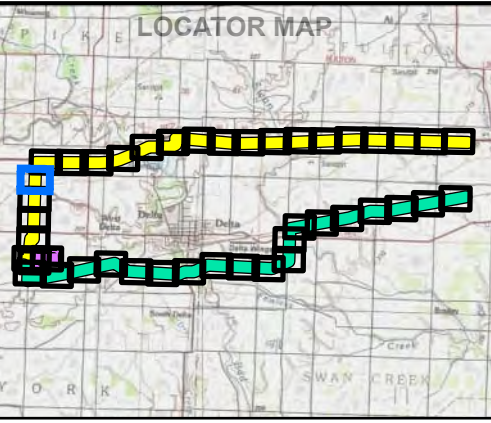
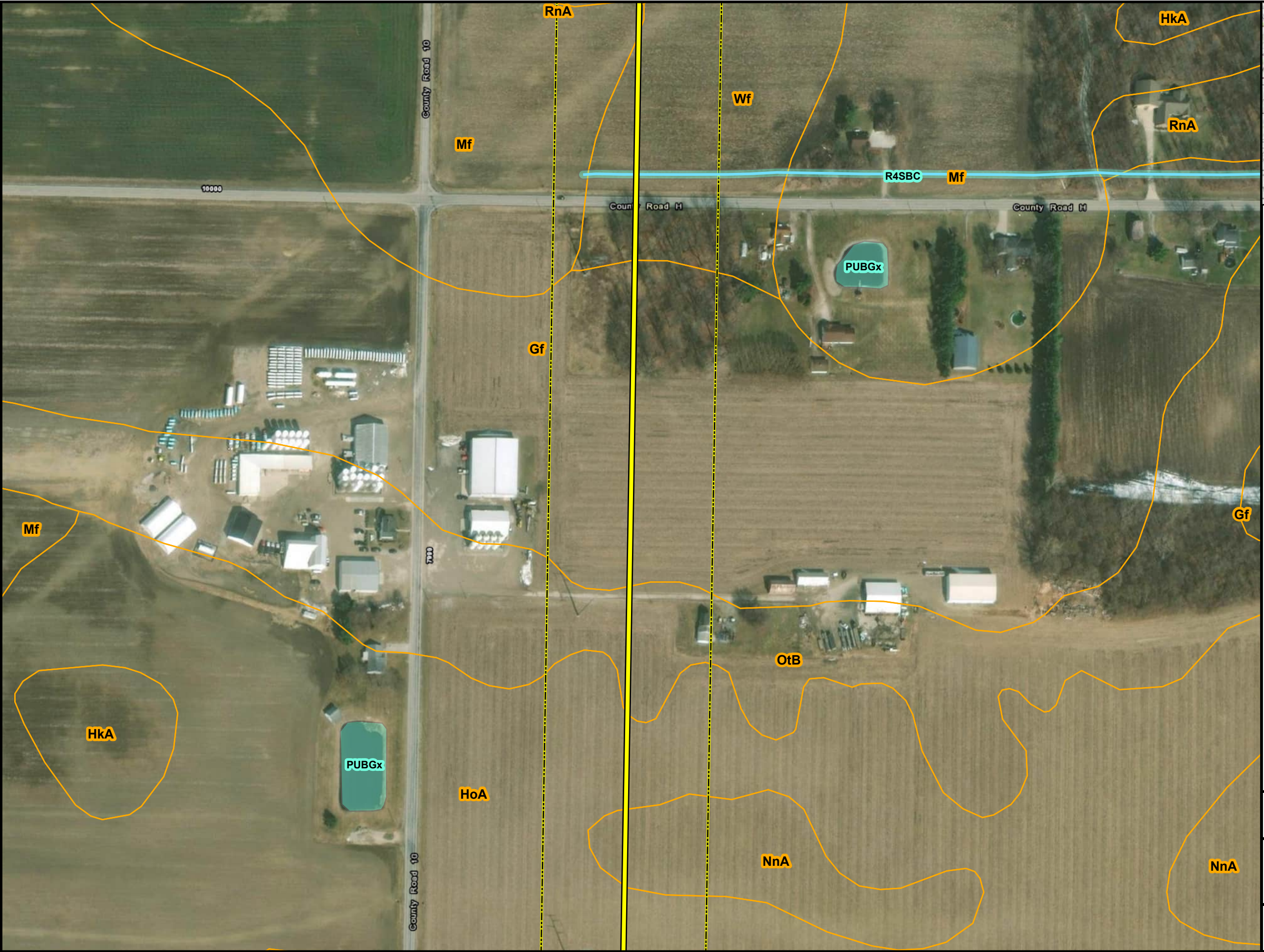
PREFERRED ROUTE  
FIGURE 2-17  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

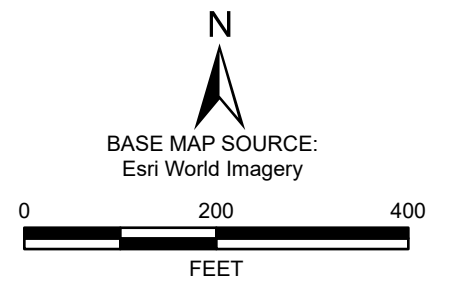




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- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



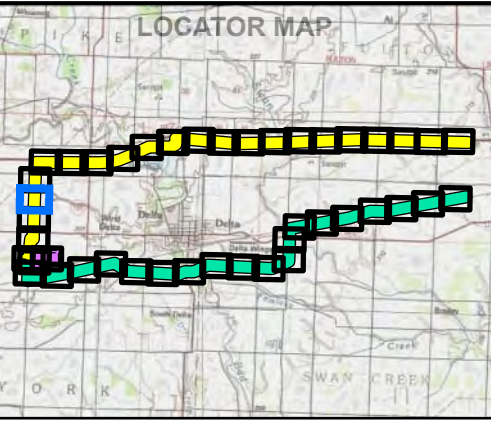
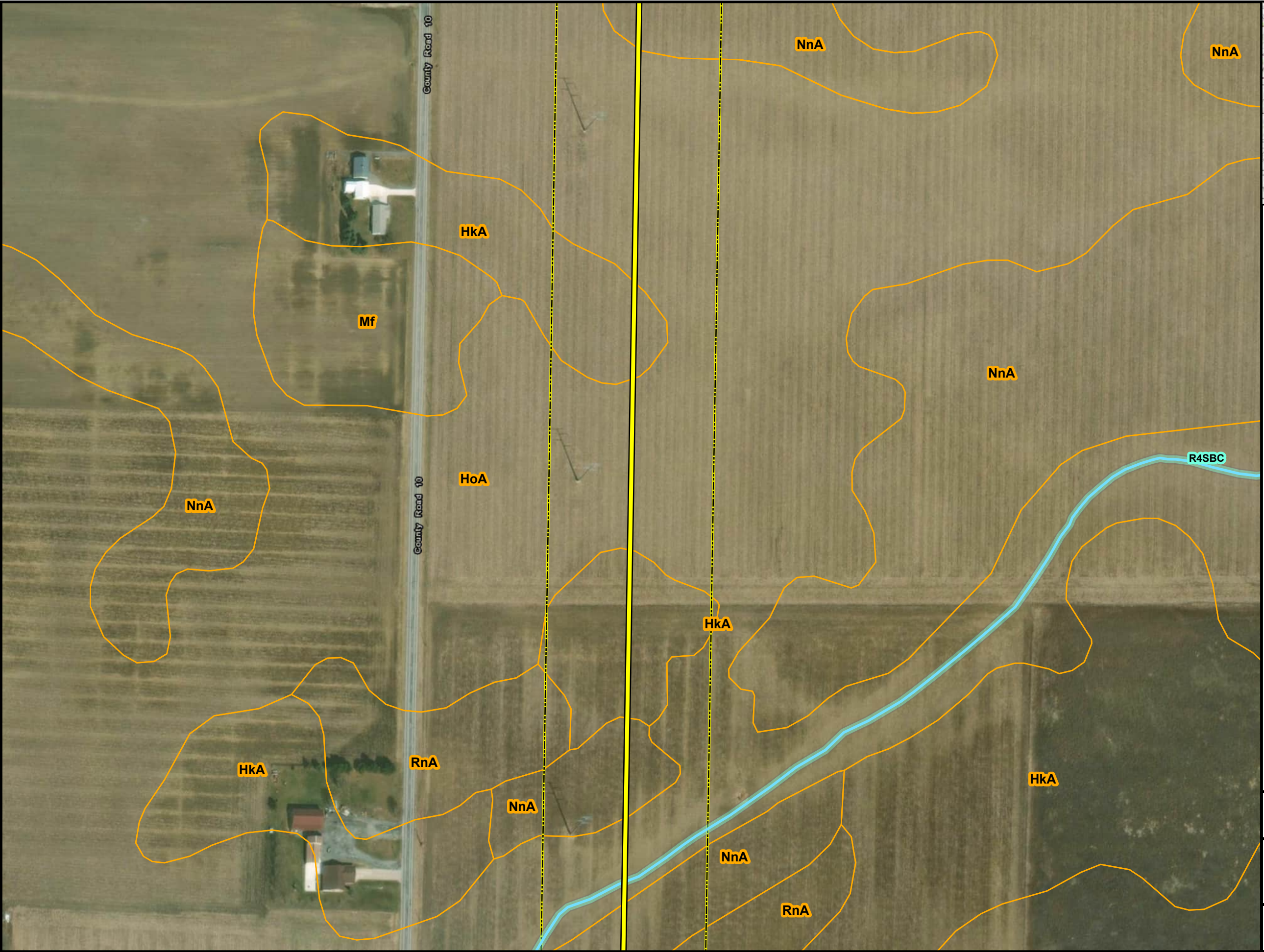
<b>ATSI</b> American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
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PREFERRED ROUTE  
FIGURE 2-18  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023	<b>Jacobs</b>
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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET




American Transmission Systems, Inc.  
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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

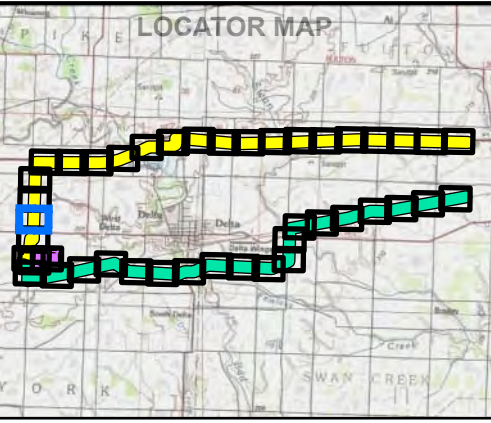
PREFERRED ROUTE  
FIGURE 2-19  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023





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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

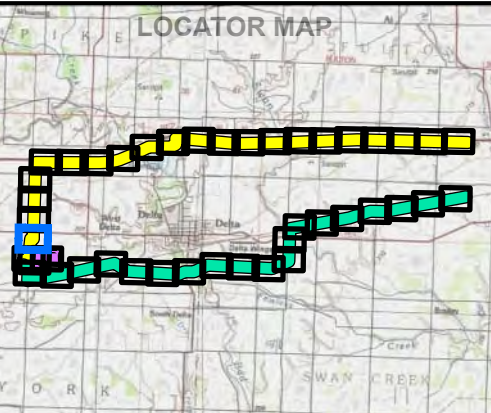
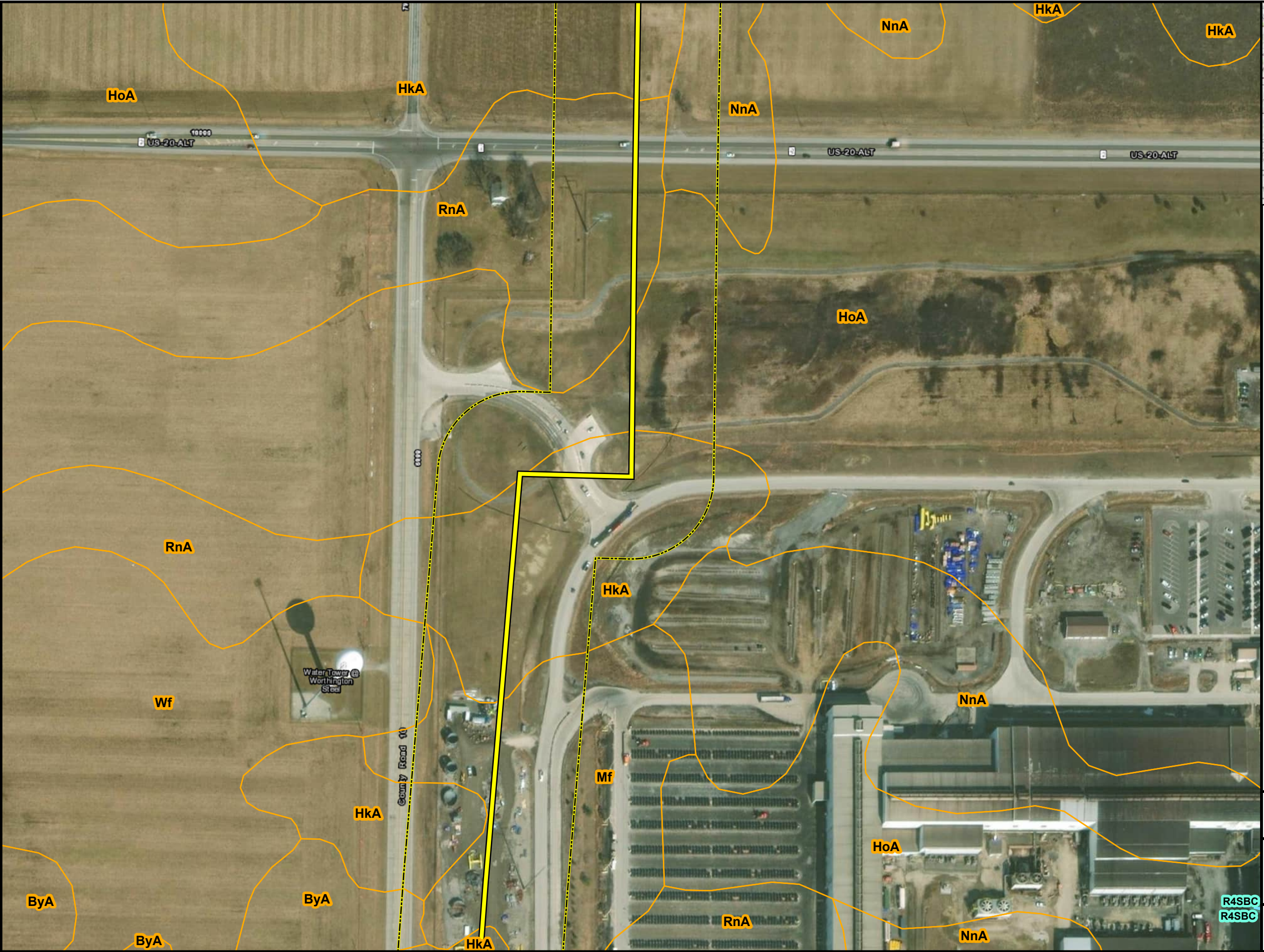
BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

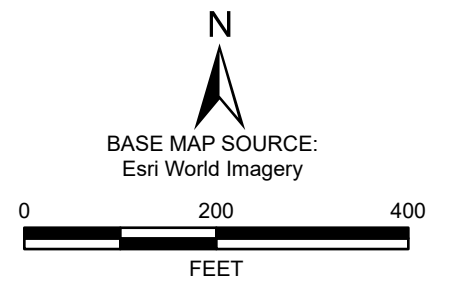
 <b>ATSI</b> <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
<b>PREFERRED ROUTE FIGURE 2-20 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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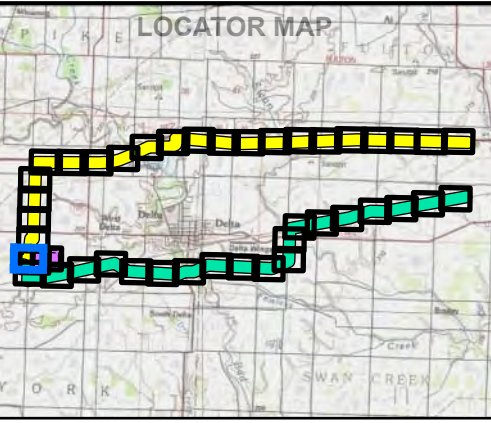
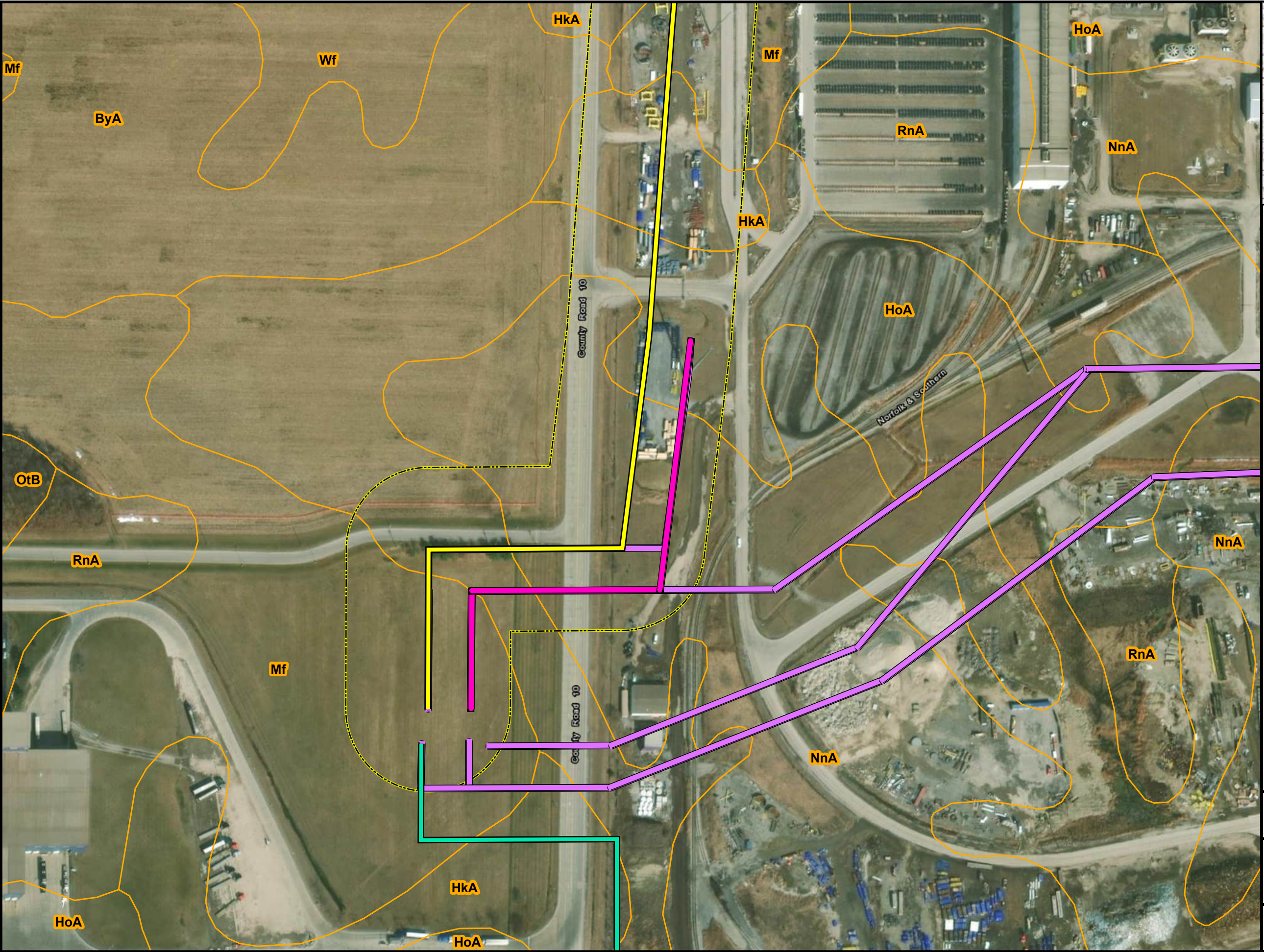
- LEGEND:**
- Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



<b>ATSI</b> <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
<b>PREFERRED ROUTE FIGURE 2-21 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- Extension Line
- Tie Line
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

**ATSI**  
American Transmission Systems, Inc.  
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*Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project*

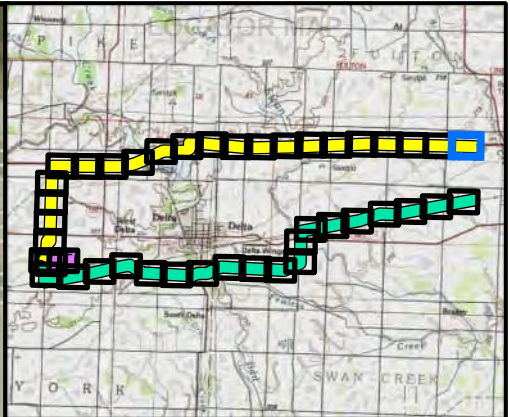
PREFERRED ROUTE  
FIGURE 2-22  
SOILS, NHD, NWI, FEMA MAP



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Stream DFN-01  
OHWM Width: 2 ft  
Ephemeral



**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

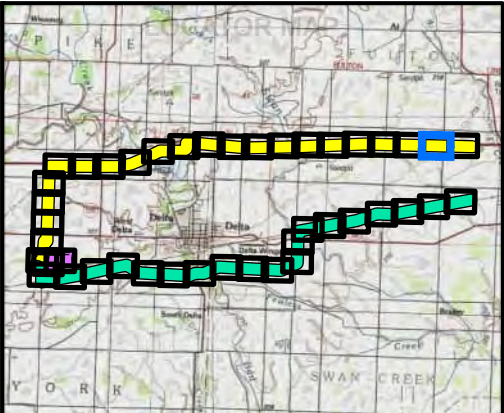
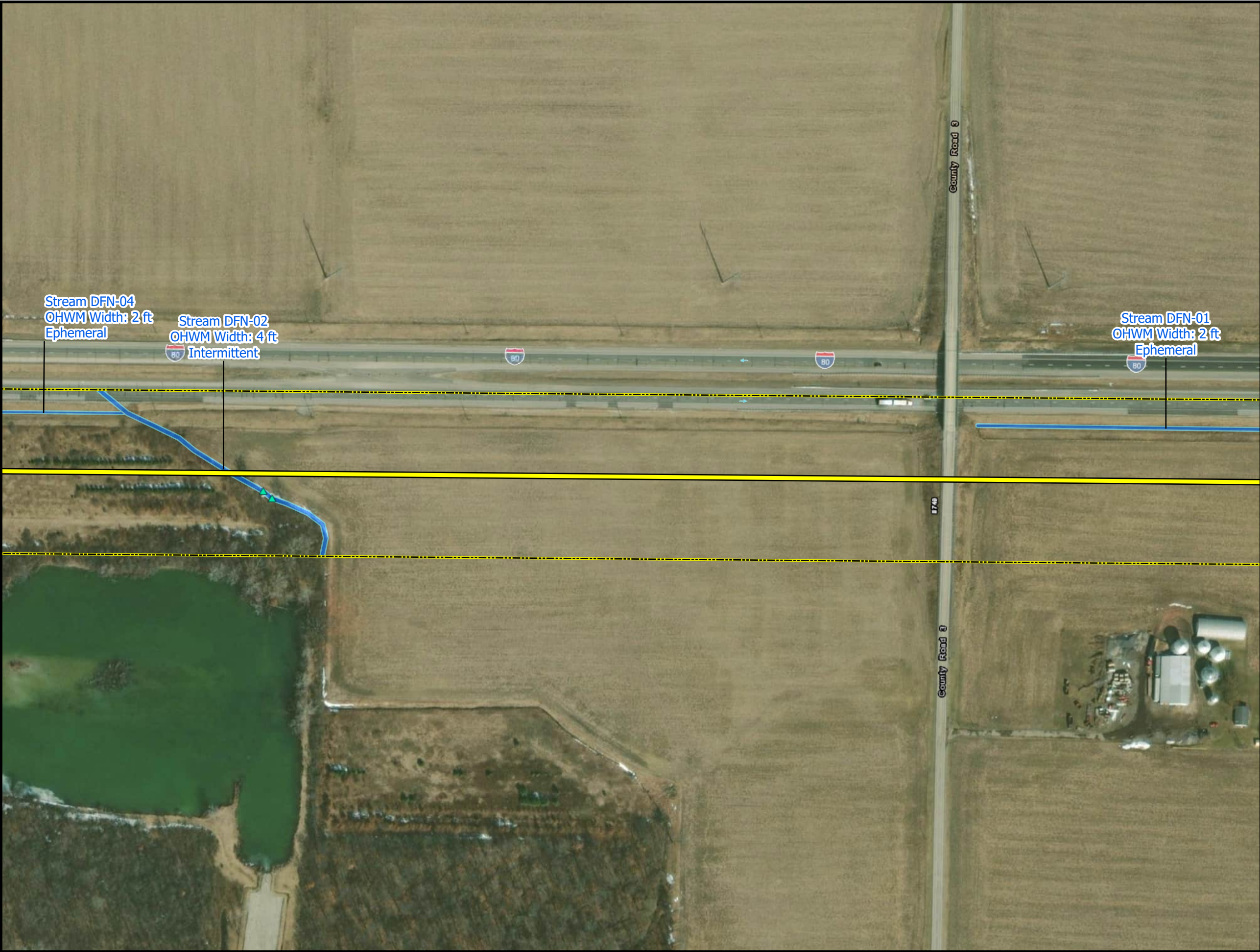
 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-1  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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\\dc1vs01\GIS\Proj\FirstEnergy\North\_Start\Maps\Report\WDR\WDRFigures\New.aprx

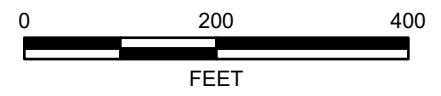


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



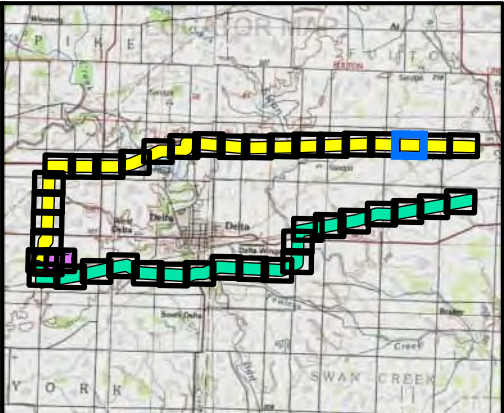
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-2  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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\\dc1vs01\GIS\Proj\FirstEnergy\North\_Star\Maps\Report\WDR\WDRFigures\New.aprx

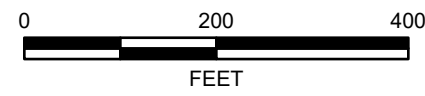


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



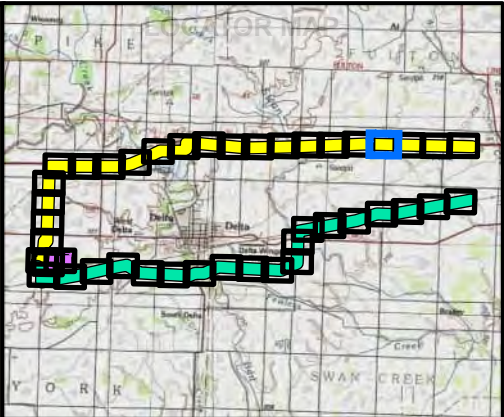
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-3  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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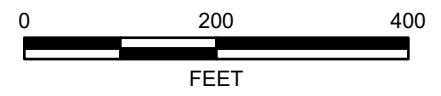


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



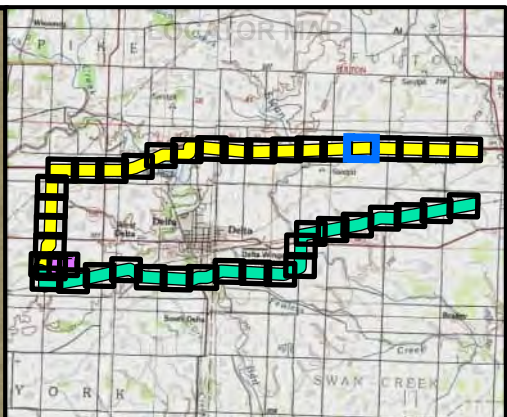
 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-4  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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\\dc1vs01\GIS\Proj\GIS\FirstEnergy\North\_Side\Map\Report\WDR\WDRFigures\New.aprx

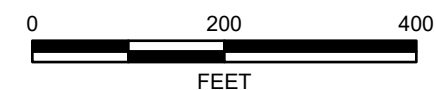


### LEGEND:

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

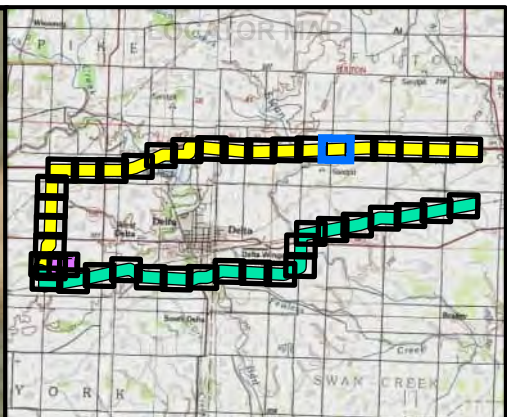
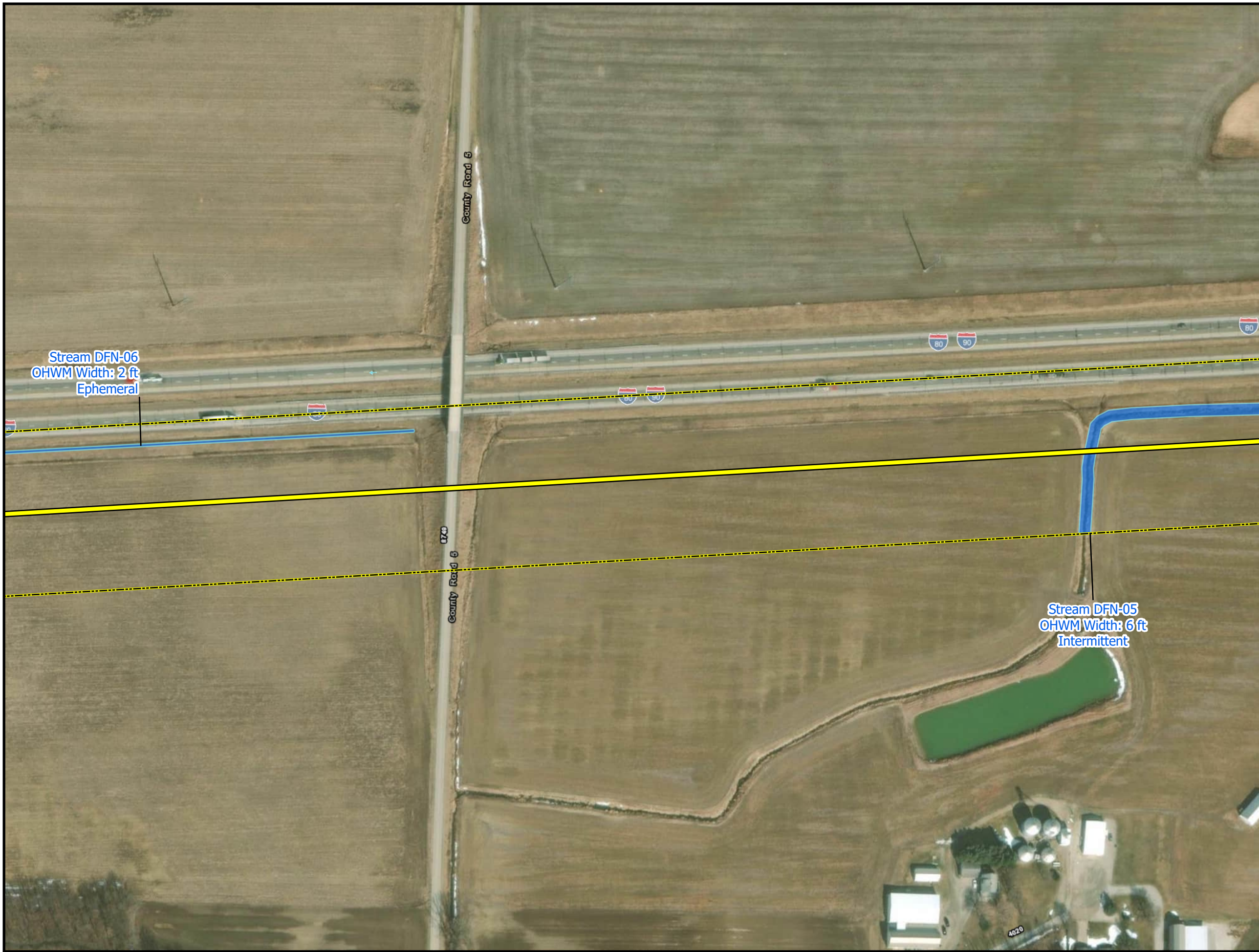
PREFERRED ROUTE  
FIGURE 3-5  
DELINEATED FEATURES MAP

DATE: 2/23/2023

**Jacobs**



\\dc1vs01\GIS\Pro\1\F\FirstEnergy\North\_Side\Map\Report\WDR\WDRFigures\New.aprx

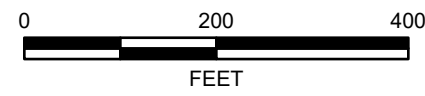


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



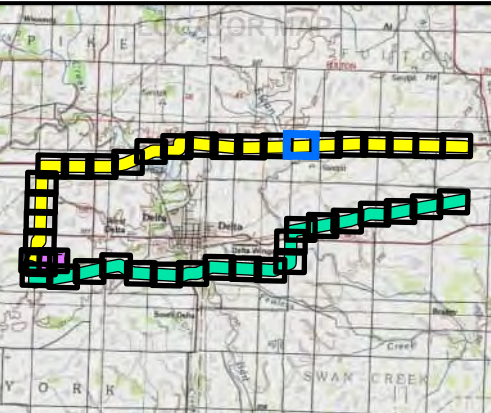
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-6  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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\\dc1vs01\GIS\Proj\FirstEnergy\North\_Side\Map\Report\WDR\WDRFigures\New.aprx

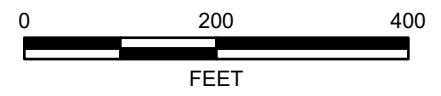


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



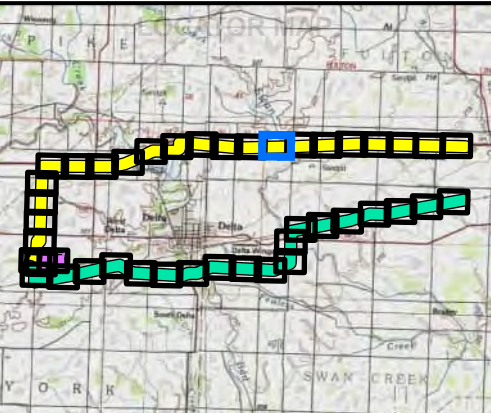
 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-7  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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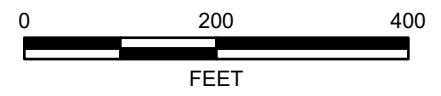


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



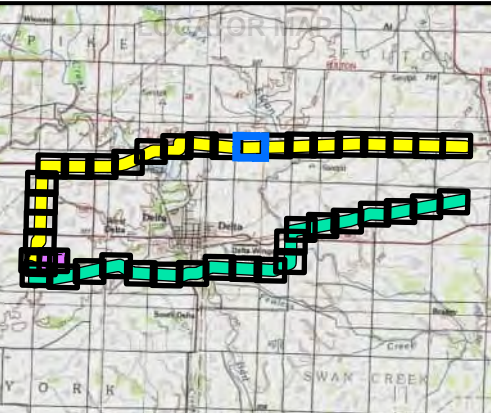
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-8  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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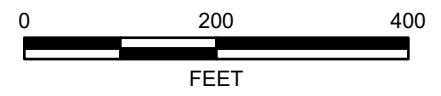


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary




BASE MAP SOURCE:  
Esri World Imagery



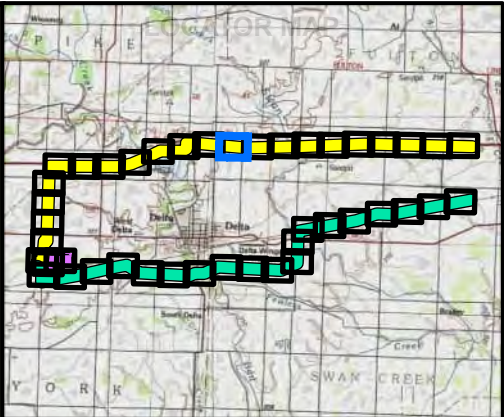
	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-9  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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\\dc1vs01\GISPro\GIS\FirstEnergy\North\_Start\Maps\Report\WDR\WDRFigures\New.aprx

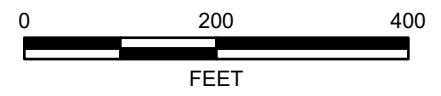


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



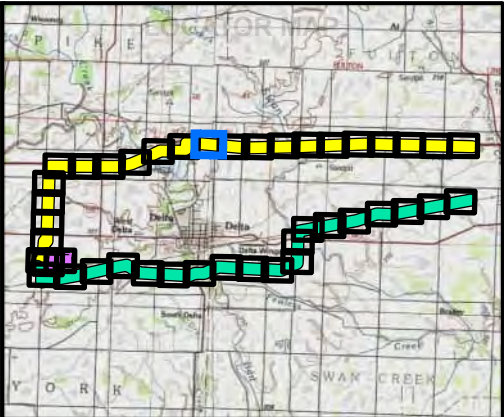
 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-10  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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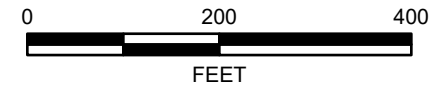


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



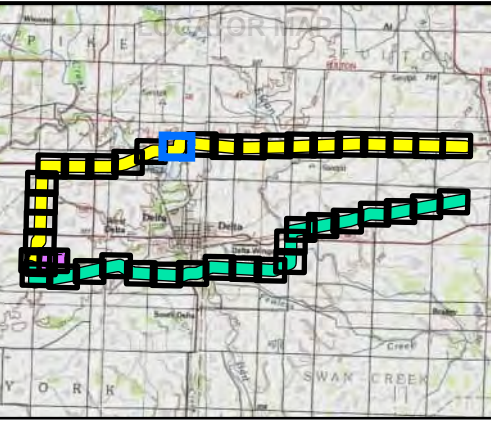
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-11  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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**LEGEND:**

- Culvert
- Wetland Data Point
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

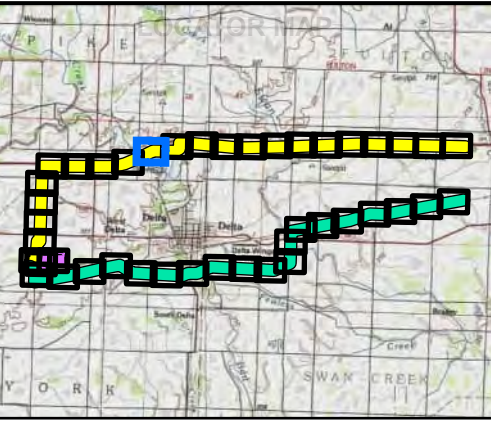
 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
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PREFERRED ROUTE  
FIGURE 3-12  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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- LEGEND:**
- ▲ Culvert
  - Upland Data Point
  - Wetland Data Point
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - ▨ Delineated PEM Wetland
  - ▨ Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - ▭ Environmental Survey Boundary



**ATSI**  
American Transmission Systems, Inc.  
A subsidiary of FirstEnergy Corp.

Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

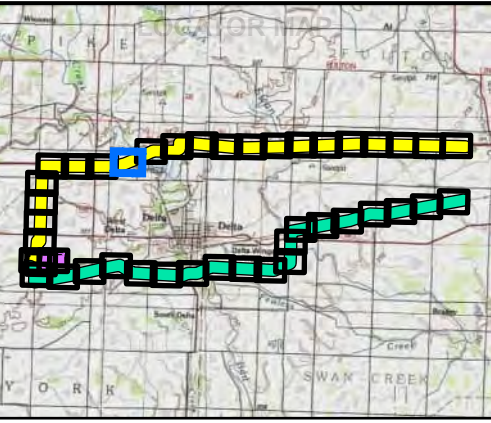
PREFERRED ROUTE  
FIGURE 3-13  
DELINEATED FEATURES MAP

DATE: 2/23/2023

**Jacobs**



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- LEGEND:**
- Culvert
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary



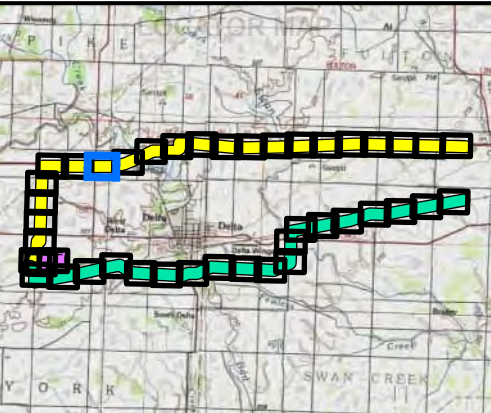
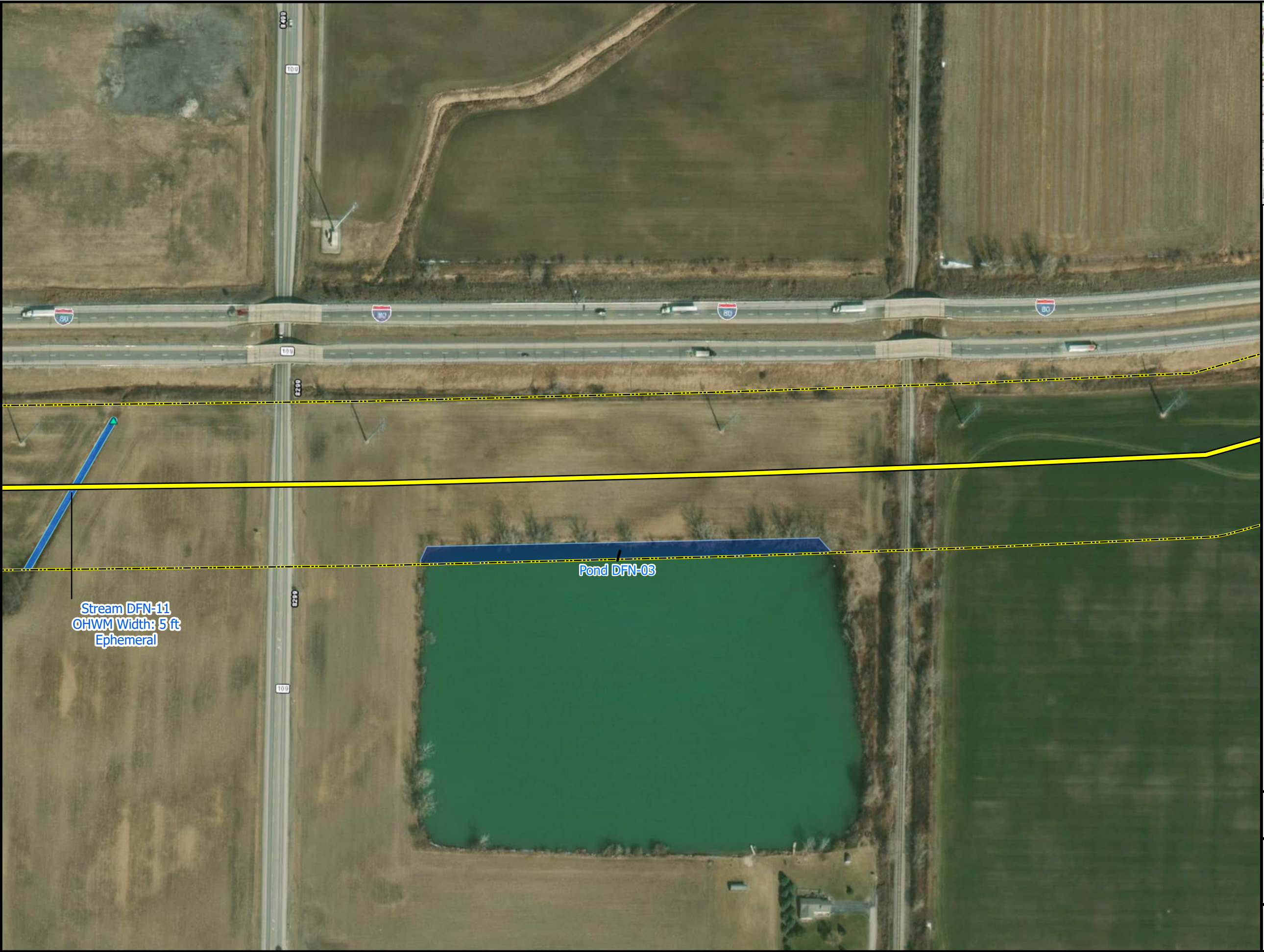
 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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PREFERRED ROUTE  
FIGURE 3-14  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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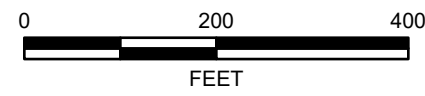


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



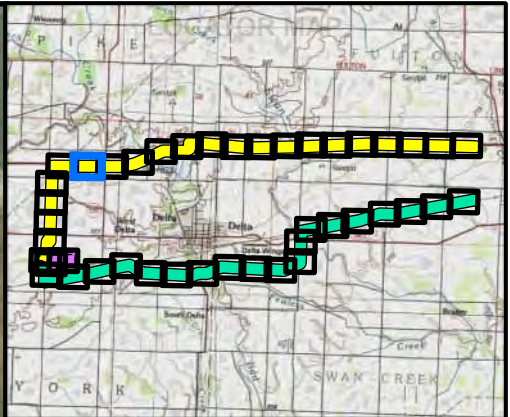
 American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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PREFERRED ROUTE  
FIGURE 3-15  
DELINEATED FEATURES MAP








DATE: 2/23/2023	<b>Jacobs</b>
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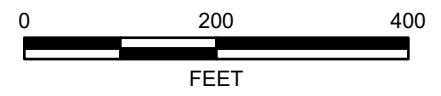


**LEGEND:**

-  Culvert
-  Preferred Route
-  Alternate Route
-  Extension Line
-  Tie Line
-  Delineated PEM Wetland
-  Delineated PFO Wetland
-  Delineated Pond
-  Delineated Stream
-  Proposed Melbourne Station
-  Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



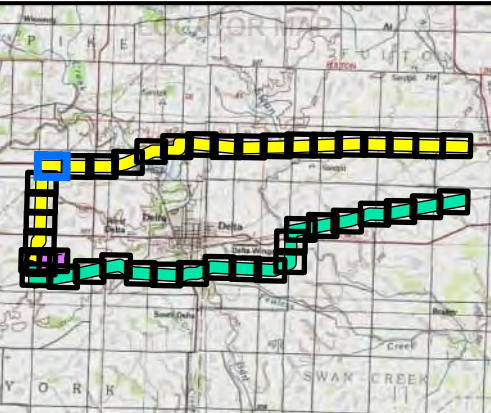
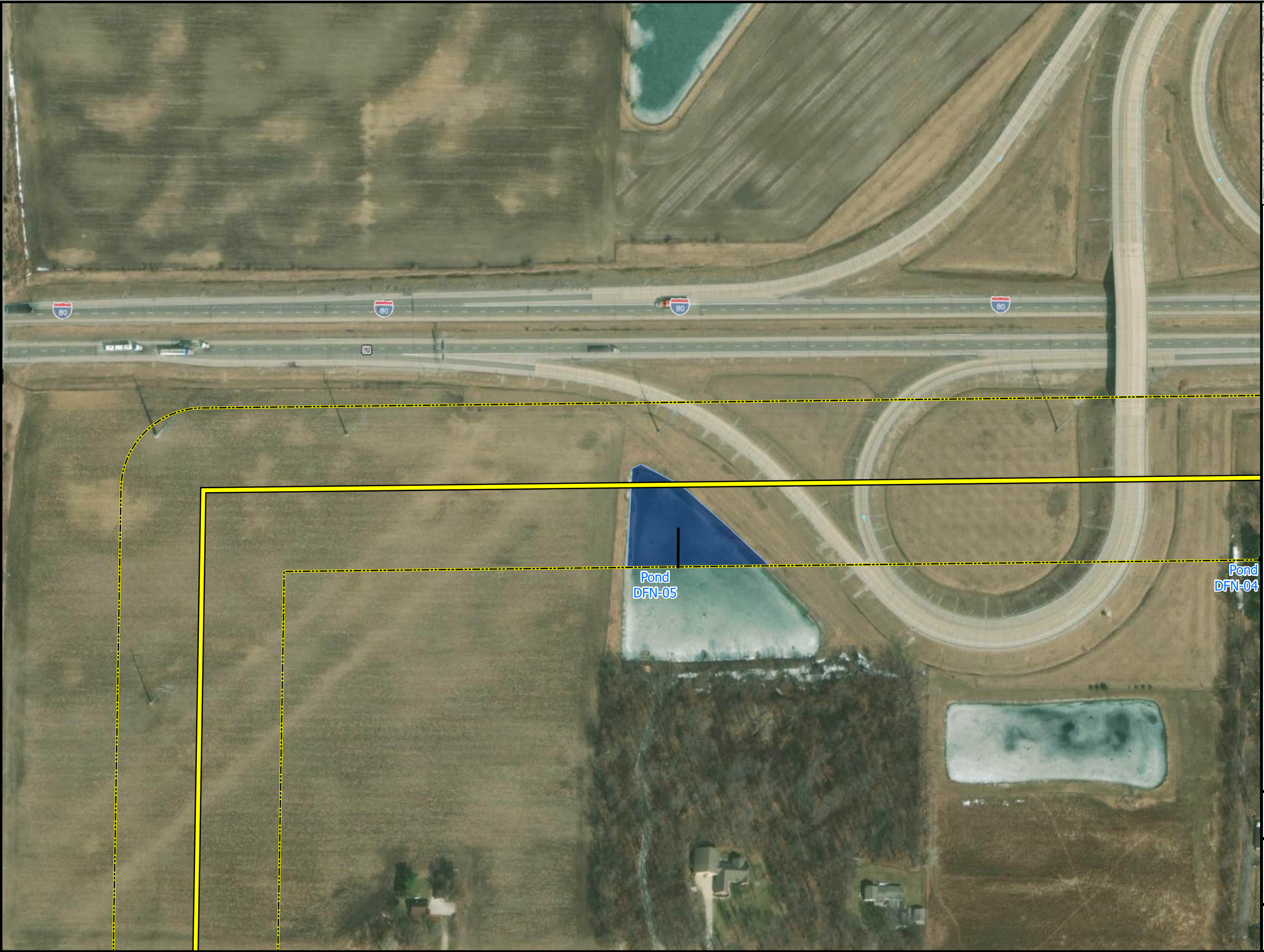
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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PREFERRED ROUTE  
FIGURE 3-16  
DELINEATED FEATURES MAP

DATE: 2/23/2023	<b>Jacobs</b>
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**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

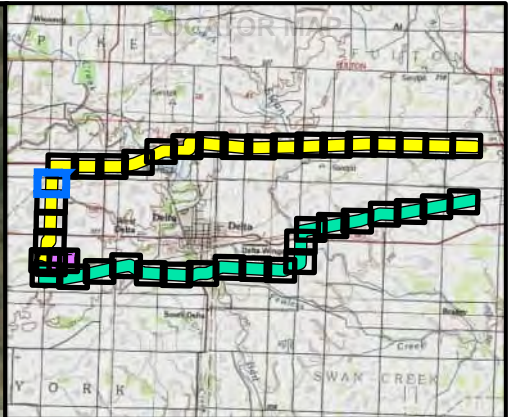
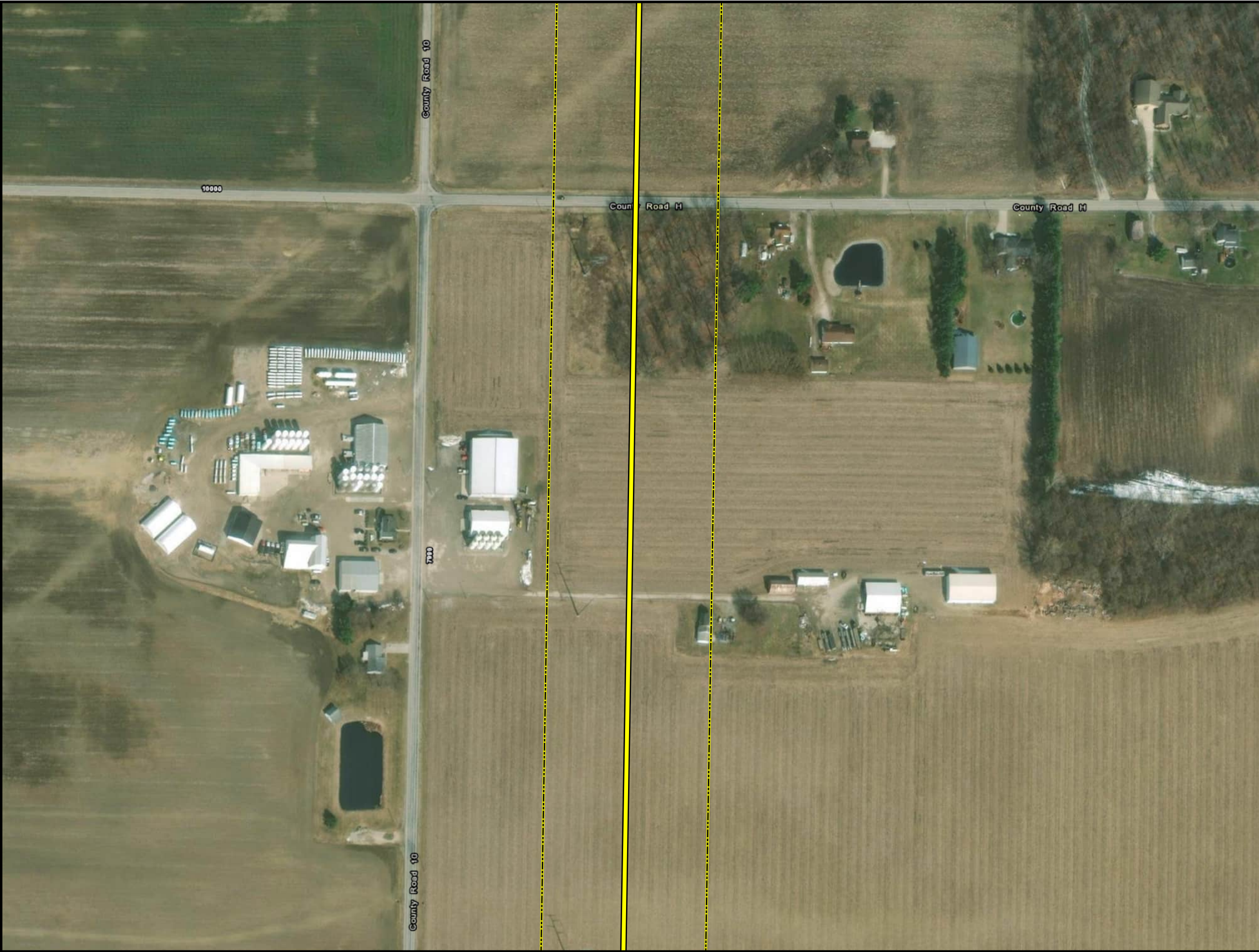
 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-17  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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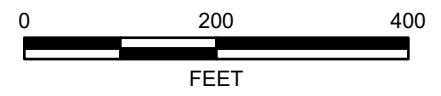


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



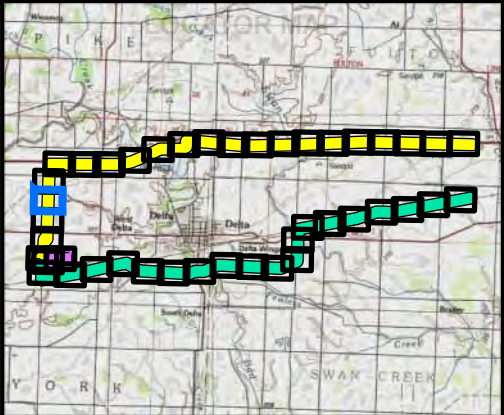
	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-18  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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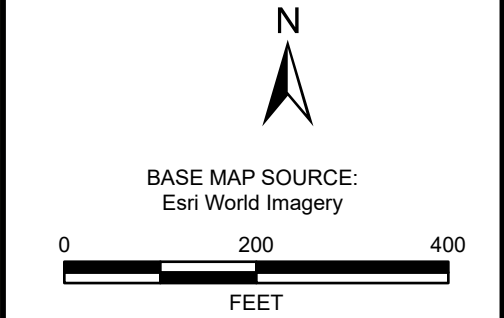


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### LEGEND:

-  Culvert
-  Preferred Route
-  Alternate Route
-  Extension Line
-  Tie Line
-  Delineated PEM Wetland
-  Delineated PFO Wetland
-  Delineated Pond
-  Delineated Stream
-  Proposed Melbourne Station
-  Environmental Survey Boundary



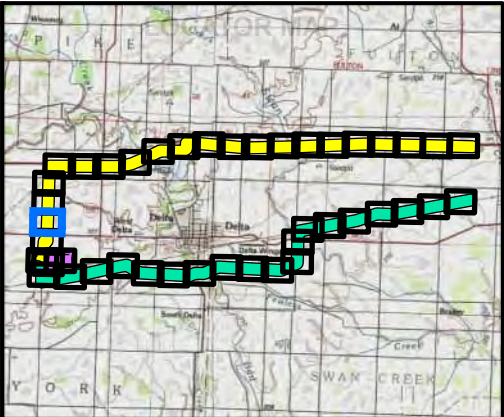
 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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PREFERRED ROUTE  
FIGURE 3-19  
DELINEATED FEATURES MAP












DATE: 2/23/2023	<b>Jacobs</b>
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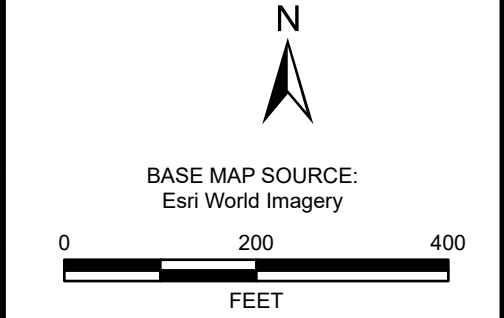


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**LEGEND:**

-  Culvert
-  Preferred Route
-  Alternate Route
-  Extension Line
-  Tie Line
-  Delineated PEM Wetland
-  Delineated PFO Wetland
-  Delineated Pond
-  Delineated Stream
-  Proposed Melbourne Station
-  Environmental Survey Boundary



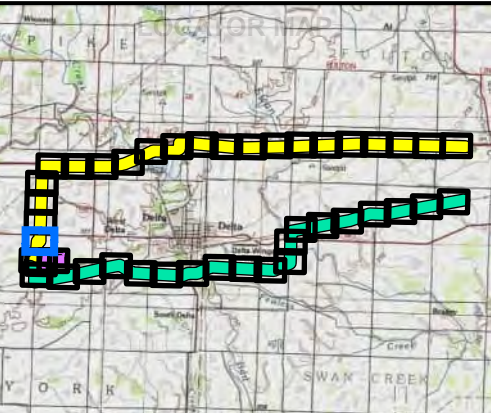
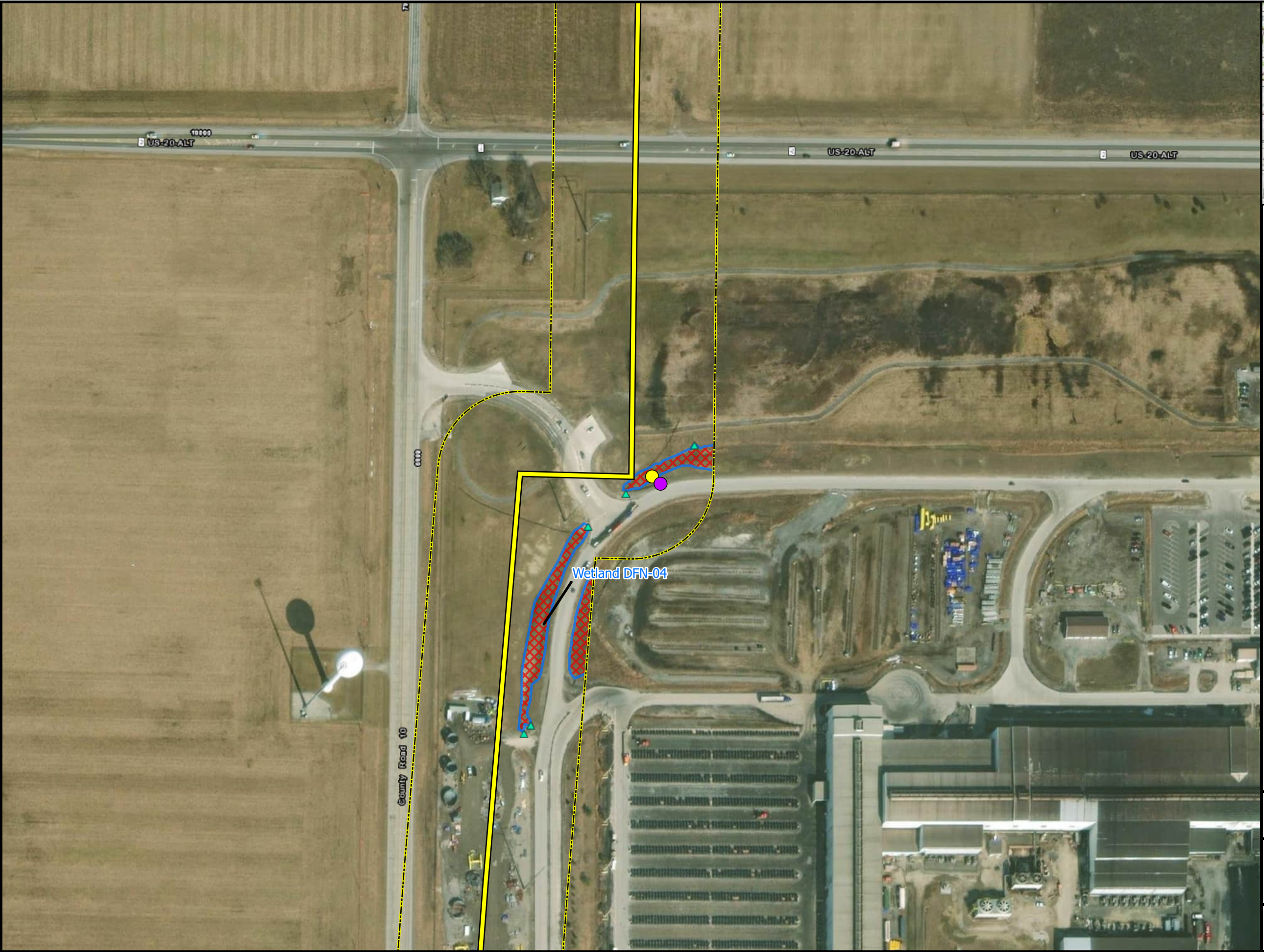
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**PREFERRED ROUTE  
FIGURE 3-20  
DELINEATED FEATURES MAP**

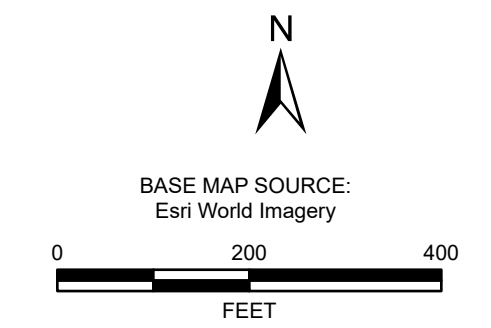
DATE: 2/23/2023	
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\\dc1vs01\GIS\Pro\1\F\FirstEnergy\North\_S\StartMaps\Report\WDR\WDRFigures\New.aprx



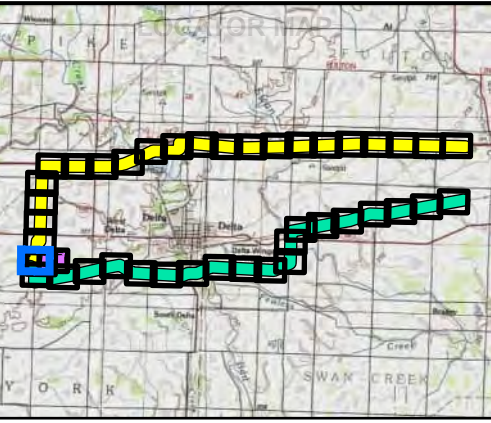
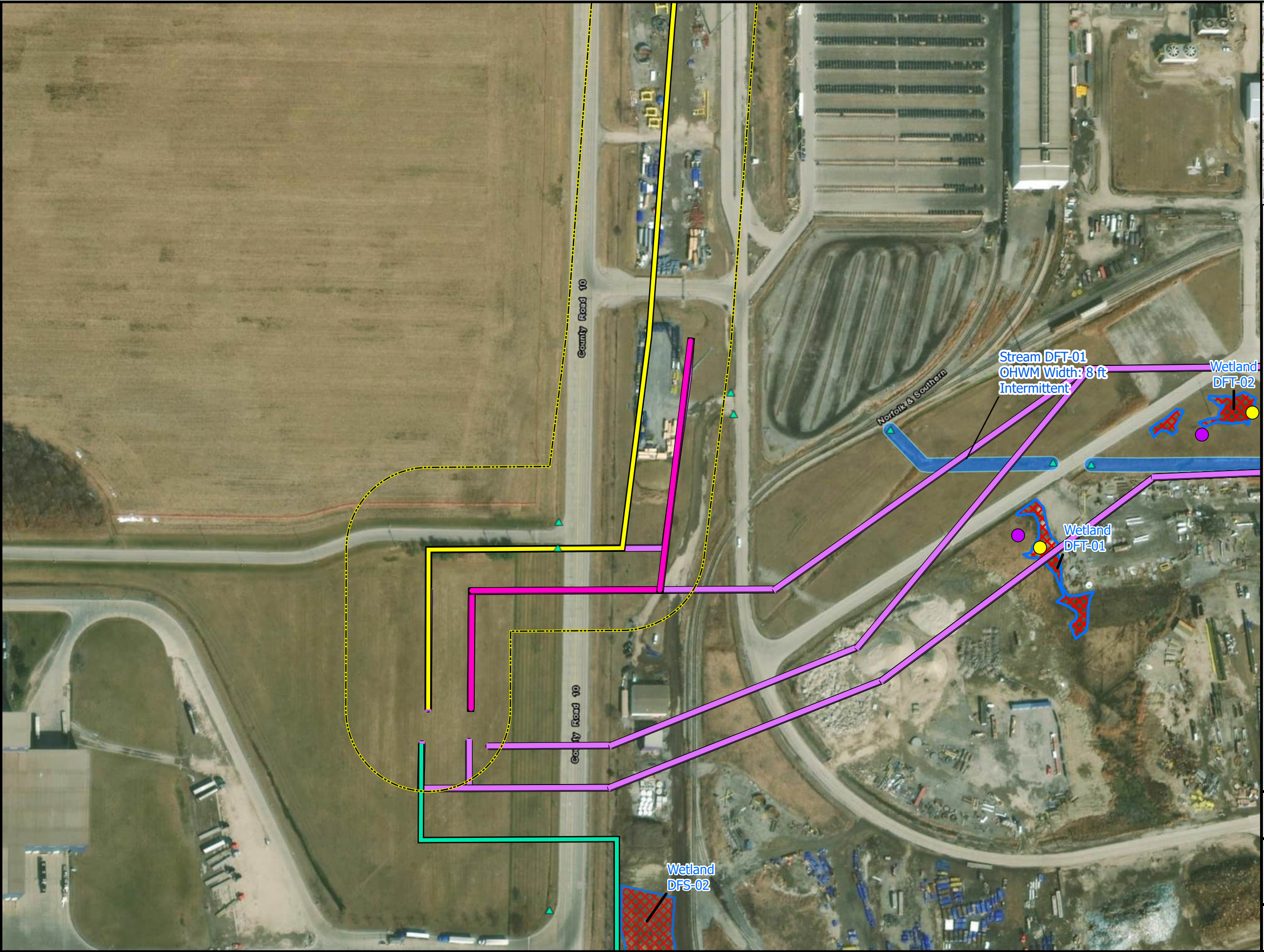
- LEGEND:**
- ▲ Culvert
  - Upland Data Point
  - Wetland Data Point
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - ▨ Delineated PEM Wetland
  - ▨ Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary



<b>ATSI</b> American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
<b>PREFERRED ROUTE FIGURE 3-21 DELINEATED FEATURES MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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- LEGEND:**
- ▲ Culvert
  - Upland Data Point
  - Wetland Data Point
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - ▨ Delineated PEM Wetland
  - ▨ Delineated PFO Wetland
  - ▨ Delineated Pond
  - ▨ Delineated Stream
  - ▭ Proposed Melbourne Station
  - - - Environmental Survey Boundary



**ATSI**  
American Transmission Systems, Inc.  
A subsidiary of FirstEnergy Corp.

*Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project*

**PREFERRED ROUTE  
FIGURE 3-22  
DELINEATED FEATURES MAP**

DATE: 2/23/2023

**Jacobs**



Appendix B  
USACE Wetland Determination Field Data Forms



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 12/20/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFN-01  
Investigator(s): MJA Section, Township, Range: S 1 T 7 N R 7 E  
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-2  
Subregion (LRR or MLRA): LRR K Lat: 41.59574 Long: -84.01331 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) 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 \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland DFN-01</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) PFO wetland downslope from reservoir, in stream floodplain	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
<u>X</u> Sediment Deposits (B2)	<u>X</u> Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	<u>X</u> Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
<u>X</u> Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Wetland DFN-01

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Populus deltoides</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>60</u> = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. <u>Fraxinus pennsylvanica</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>85</u></td> <td>x 1 = <u>85</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>60</u></td> <td>x 3 = <u>180</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>220</u> (A)</td> <td><u>415</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.89</u>	Total % Cover of:	Multiply by:	OBL species <u>85</u>	x 1 = <u>85</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>220</u> (A)	<u>415</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>85</u>	x 1 = <u>85</u>																	
FACW species <u>75</u>	x 2 = <u>150</u>																	
FAC species <u>60</u>	x 3 = <u>180</u>																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: <u>220</u> (A)	<u>415</u> (B)																	
2. <u>Cornus alba</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>45</u> = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Eragrostis hypnoides</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Typha latifolia</u>	<u>15</u>	<u>No</u>	<u>OBL</u>															
3. <u>Scirpus atrovirens</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>															
4. <u>Carex cristatella</u>	<u>15</u>	<u>No</u>	<u>FACW</u>															
5. <u>Symphyotrichum novae-angliae</u>	<u>10</u>	<u>No</u>	<u>FACW</u>															
6. <u>Lysimachia nummularia</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>115</u> = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		



## SOIL

Sampling Point: Wetland DFN-01

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 16	10YR 4/2	98	7.5YR 4/6	2	C	PL	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☒ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:





Soil



S



W



N





E



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 10/04/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFN-01,02  
Investigator(s): MJA Section, Township, Range: S 1 T 7 N R 7 E  
Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Flat Slope (%): 0  
Subregion (LRR or MLRA): LRR K Lat: 41.59541728800008 Long: -84.01673416699998 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) NWI classification: NA  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>Upland DFN-01,02</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Upland data point situated in mowed field, downslope of reservoir.	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	<u>X</u> Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Upland DFN-01,02

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0.0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0.0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0.0</u></td> </tr> <tr> <td>FACU species <u>135</u></td> <td>x 4 = <u>540.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>540.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0.0</u>	FACW species <u>0</u>	x 2 = <u>0.0</u>	FAC species <u>0</u>	x 3 = <u>0.0</u>	FACU species <u>135</u>	x 4 = <u>540.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>135</u> (A)	<u>540.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0.0</u>																	
FACW species <u>0</u>	x 2 = <u>0.0</u>																	
FAC species <u>0</u>	x 3 = <u>0.0</u>																	
FACU species <u>135</u>	x 4 = <u>540.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>135</u> (A)	<u>540.0</u> (B)																	
_____ = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Schedonorus arundinaceus</u>	<u>70</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Poa pratensis</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>															
3. <u>Plantago lanceolata</u>	<u>10</u>	<u>No</u>	<u>FACU</u>															
4. <u>Trifolium pratense</u>	<u>10</u>	<u>No</u>	<u>FACU</u>															
5. <u>Cichorium intybus</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>135</u> = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		



## SOIL

Sampling Point: Upland DFN-01,02

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 6	10YR 4/2	90	5YR 4/6	10	Concer	PL,M	Fine sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☒ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):** ☒Type: CompactedDepth (inches): 6.0Hydric Soil Present? Yes ☒ No ☐

Remarks:





Soil



E



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 10/04/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFN-02  
Investigator(s): MJA Section, Township, Range: S 1 T 7 N R 7 E  
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1  
Subregion (LRR or MLRA): LRR K Lat: 41.595491270000025 Long: -84.01673133499997 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland DFN-02</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) PEM wetland located downslope of reservoir.	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	<u>X</u> Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	<u>X</u> Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		<u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____		
Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____		
Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Wetland DFN-02

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>1.0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>100</u></td> <td>x 1 = <u>100.0</u></td> </tr> <tr> <td>FACW species <u>70</u></td> <td>x 2 = <u>140.0</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75.0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>195</u> (A)</td> <td><u>315.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.61538462</u>	Total % Cover of:	Multiply by:	OBL species <u>100</u>	x 1 = <u>100.0</u>	FACW species <u>70</u>	x 2 = <u>140.0</u>	FAC species <u>25</u>	x 3 = <u>75.0</u>	FACU species <u>0</u>	x 4 = <u>0.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>195</u> (A)	<u>315.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>100</u>	x 1 = <u>100.0</u>																	
FACW species <u>70</u>	x 2 = <u>140.0</u>																	
FAC species <u>25</u>	x 3 = <u>75.0</u>																	
FACU species <u>0</u>	x 4 = <u>0.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>195</u> (A)	<u>315.0</u> (B)																	
_____ = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. <u>Acer negundo</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Carex vulpinoidea</u>	<u>45</u>	<u>Yes</u>	<u>OBL</u>	<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.														
2. <u>Cyperus esculentus</u>	<u>30</u>	<u>No</u>	<u>FACW</u>															
3. <u>Setaria pumila</u>	<u>20</u>	<u>No</u>	<u>FAC</u>															
4. <u>Bidens frondosa</u>	<u>20</u>	<u>No</u>	<u>FACW</u>															
5. <u>Lysimachia nummularia</u>	<u>20</u>	<u>No</u>	<u>FACW</u>															
6. <u>Eragrostis hypnoides</u>	<u>55</u>	<u>Yes</u>	<u>OBL</u>															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)          																		



## SOIL

Sampling Point: Wetland DFN-02

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 8	10YR 3/2	90	5YR 4/6	10	Concer	PL,M	Fine sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input type="checkbox"/> Depleted Matrix (F3)                                     |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input checked="" type="checkbox"/> Redox Dark Surface (F6)                       |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- |   |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR K, L, MLRA 149B</b> )       |
| <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>LRR K, L, R</b> )     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) ( <b>LRR K, L, R</b> )  |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR K, L, M</b> )             |
| <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR K, L</b> )     |
| <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR K, L</b> )           |
| <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR K, L, R</b> )   |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149B</b> ) |
| <input type="checkbox"/> Mesic Spodic (TA6) ( <b>MLRA 144A, 145, 149B</b> )   |
| <input type="checkbox"/> Red Parent Material (F21)                            |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)                     |
| <input type="checkbox"/> Other (Explain in Remarks)                           |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):** ☒Type: CompactedDepth (inches): 8.0Hydric Soil Present? Yes ☒ No ☐

Remarks:





Soil



S



W



E





N



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 10/04/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFN-03  
Investigator(s): MJA Section, Township, Range: S 2 T 7 N R 7 E  
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-1  
Subregion (LRR or MLRA): LRR K Lat: 41.59488050700003 Long: -84.01826187099994 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) NWI classification: PFO1/SS1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland DFN-03</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) PFO wetland within woodlot, downslope of reservoir.	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u>      </u> Surface Soil Cracks (B6)
<u>      </u> Surface Water (A1)	<u>      </u> Water-Stained Leaves (B9)	<u>      </u> Drainage Patterns (B10)
<u>      </u> High Water Table (A2)	<u>      </u> Aquatic Fauna (B13)	<u>      </u> Moss Trim Lines (B16)
<u>      </u> Saturation (A3)	<u>      </u> Marl Deposits (B15)	<u>      </u> Dry-Season Water Table (C2)
<u>      </u> Water Marks (B1)	<u>      </u> Hydrogen Sulfide Odor (C1)	<u>      </u> Crayfish Burrows (C8)
<u>      </u> Sediment Deposits (B2)	<u>      </u> Oxidized Rhizospheres on Living Roots (C3)	<u>      </u> Saturation Visible on Aerial Imagery (C9)
<u>      </u> Drift Deposits (B3)	<u>      </u> Presence of Reduced Iron (C4)	<u>      </u> Stunted or Stressed Plants (D1)
<u>      </u> Algal Mat or Crust (B4)	<u>      </u> Recent Iron Reduction in Tilled Soils (C6)	<u>  X  </u> Geomorphic Position (D2)
<u>      </u> Iron Deposits (B5)	<u>      </u> Thin Muck Surface (C7)	<u>      </u> Shallow Aquitard (D3)
<u>      </u> Inundation Visible on Aerial Imagery (B7)	<u>      </u> Other (Explain in Remarks)	<u>      </u> Microtopographic Relief (D4)
<u>  X  </u> Sparsely Vegetated Concave Surface (B8)		<u>  X  </u> FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>  X  </u> No _____
Surface Water Present? Yes _____ No <u>  X  </u> Depth (inches): _____		
Water Table Present? Yes _____ No <u>  X  </u> Depth (inches): _____		
Saturation Present? Yes _____ No <u>  X  </u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Wetland DFN-03

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Ulmus americana</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>1.0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>60</u> = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. <u>Fraxinus pennsylvanica</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0.0</u></td> </tr> <tr> <td>FACW species <u>155</u></td> <td>x 2 = <u>310.0</u></td> </tr> <tr> <td>FAC species <u>35</u></td> <td>x 3 = <u>105.0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>190</u> (A)</td> <td><u>415.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.18421053</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0.0</u>	FACW species <u>155</u>	x 2 = <u>310.0</u>	FAC species <u>35</u>	x 3 = <u>105.0</u>	FACU species <u>0</u>	x 4 = <u>0.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>190</u> (A)	<u>415.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0.0</u>																	
FACW species <u>155</u>	x 2 = <u>310.0</u>																	
FAC species <u>35</u>	x 3 = <u>105.0</u>																	
FACU species <u>0</u>	x 4 = <u>0.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>190</u> (A)	<u>415.0</u> (B)																	
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>25</u> = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Carex grayi</u>	<u>45</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Toxicodendron radicans</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>															
3. <u>Lysimachia nummularia</u>	<u>20</u>	<u>No</u>	<u>FACW</u>															
4. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>105</u> = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		



**SOIL**

Sampling Point: Wetland DFN-03

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 16	10YR 3/1	98	10YR 5/4	2	Concer	M	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input type="checkbox"/> Depleted Matrix (F3)                                     |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input checked="" type="checkbox"/> Redox Dark Surface (F6)                       |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L, M**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:





Soil



N



E



S





W



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 10/04/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFN-03  
Investigator(s): MJA Section, Township, Range: S 2 T 7 N R 7 E  
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Flat Slope (%): 0-1  
Subregion (LRR or MLRA): LRR K Lat: 41.59498022900004 Long: -84.01820761799996 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) NWI classification: PFO1/SS1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>Upland DFN-03</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland data point taken in woodlot.	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Upland DFN-03

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Juglans nigra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.5</u> (A/B)														
2. <u>Populus deltoides</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>70</u> = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. <u>Ulmus americana</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0.0</u></td> </tr> <tr> <td>FACW species <u>50</u></td> <td>x 2 = <u>100.0</u></td> </tr> <tr> <td>FAC species <u>65</u></td> <td>x 3 = <u>195.0</u></td> </tr> <tr> <td>FACU species <u>120</u></td> <td>x 4 = <u>480.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>235</u> (A)</td> <td><u>775.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.29787234</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0.0</u>	FACW species <u>50</u>	x 2 = <u>100.0</u>	FAC species <u>65</u>	x 3 = <u>195.0</u>	FACU species <u>120</u>	x 4 = <u>480.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>235</u> (A)	<u>775.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0.0</u>																	
FACW species <u>50</u>	x 2 = <u>100.0</u>																	
FAC species <u>65</u>	x 3 = <u>195.0</u>																	
FACU species <u>120</u>	x 4 = <u>480.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>235</u> (A)	<u>775.0</u> (B)																	
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>50</u> = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Ageratina altissima</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Solidago canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>															
3. <u>Toxicodendron radicans</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>															
4. <u>Parthenocissus quinquefolia</u>	<u>50</u>	<u>Yes</u>	<u>FACU</u>															
5. <u>Persicaria virginiana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
6. <u>Juglans nigra</u>	<u>10</u>	<u>No</u>	<u>FACU</u>															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>115</u> = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		



## SOIL

Sampling Point: Upland DFN-03

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 16	10YR 3/1	100					Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No   X  

Remarks:





Soil



N



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 09/07/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFN-04  
Investigator(s): JBL Section, Township, Range: S 15 T 7N R 7E  
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1  
Subregion (LRR or MLRA): LRR K Lat: 41.57143 Long: -84.05502 Datum: NAD 83  
Soil Map Unit Name: Nappanee-Hoytville (s6028) NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland DFN-04</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Wetland W-JBL-090722-01 along access road on North Star property	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u>X</u> Surface Soil Cracks (B6)
<u>   </u> Surface Water (A1)	<u>   </u> Water-Stained Leaves (B9)	<u>   </u> Drainage Patterns (B10)
<u>X</u> High Water Table (A2)	<u>   </u> Aquatic Fauna (B13)	<u>   </u> Moss Trim Lines (B16)
<u>X</u> Saturation (A3)	<u>   </u> Marl Deposits (B15)	<u>   </u> Dry-Season Water Table (C2)
<u>   </u> Water Marks (B1)	<u>   </u> Hydrogen Sulfide Odor (C1)	<u>   </u> Crayfish Burrows (C8)
<u>   </u> Sediment Deposits (B2)	<u>X</u> Oxidized Rhizospheres on Living Roots (C3)	<u>   </u> Saturation Visible on Aerial Imagery (C9)
<u>   </u> Drift Deposits (B3)	<u>   </u> Presence of Reduced Iron (C4)	<u>   </u> Stunted or Stressed Plants (D1)
<u>   </u> Algal Mat or Crust (B4)	<u>   </u> Recent Iron Reduction in Tilled Soils (C6)	<u>X</u> Geomorphic Position (D2)
<u>   </u> Iron Deposits (B5)	<u>   </u> Thin Muck Surface (C7)	<u>   </u> Shallow Aquitard (D3)
<u>   </u> Inundation Visible on Aerial Imagery (B7)	<u>   </u> Other (Explain in Remarks)	<u>   </u> Microtopographic Relief (D4)
<u>   </u> Sparsely Vegetated Concave Surface (B8)		<u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____	Water Table Present? Yes <u>X</u> No _____ Depth (inches): 1	
Saturation Present? Yes <u>X</u> No _____ Depth (inches): 0 (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Multiple primary and secondary hydrology indicators present. Wetland extends outside survey area		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Wetland DFN-04

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0.0</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200.0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0.0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>200.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.00</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0.0</u>	FACW species <u>100</u>	x 2 = <u>200.0</u>	FAC species <u>0</u>	x 3 = <u>0.0</u>	FACU species <u>0</u>	x 4 = <u>0.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>100</u> (A)	<u>200.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0.0</u>																	
FACW species <u>100</u>	x 2 = <u>200.0</u>																	
FAC species <u>0</u>	x 3 = <u>0.0</u>																	
FACU species <u>0</u>	x 4 = <u>0.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>100</u> (A)	<u>200.0</u> (B)																	
_____ = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Phragmites australis</u>	<u>90</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Eleocharis compressa</u>	<u>10</u>	<u>No</u>	<u>FACW</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No																		
Remarks: (Include photo numbers here or on a separate sheet.) sample point meets hydrophytic vegetation criteria of dominance test greater than 50% and PI less than 3																		



# SOIL

Sampling Point: Wetland DFN-04

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 19	10YR 5/1	95	10YR 4/4	5	Concer	PL,M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input checked="" type="checkbox"/> Depleted Matrix (F3)                          |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input type="checkbox"/> Redox Dark Surface (F6)                                  |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input checked="" type="checkbox"/> Redox Depressions (F8)                        |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L, M**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

### Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

hydric soils indicators present





N



E



S



W





Soil



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 09/07/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFN-04  
Investigator(s): JBL Section, Township, Range: S 15 T 7N R 7E  
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 5  
Subregion (LRR or MLRA): LRR K Lat: 41.57138435500008 Long: -84.05495473699995 Datum: NAD 83  
Soil Map Unit Name: Nappanee-Hoytville (s6028) NWI classification: NA  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>Upland DFN-04</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland 01 between wetland and road on North Star property	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: None present		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Upland DFN-04

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0.0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0.0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0.0</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x 4 = <u>240.0</u></td> </tr> <tr> <td>UPL species <u>40</u></td> <td>x 5 = <u>160.0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>400.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0.0</u>	FACW species <u>0</u>	x 2 = <u>0.0</u>	FAC species <u>0</u>	x 3 = <u>0.0</u>	FACU species <u>60</u>	x 4 = <u>240.0</u>	UPL species <u>40</u>	x 5 = <u>160.0</u>	Column Totals: <u>100</u> (A)	<u>400.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0.0</u>																	
FACW species <u>0</u>	x 2 = <u>0.0</u>																	
FAC species <u>0</u>	x 3 = <u>0.0</u>																	
FACU species <u>60</u>	x 4 = <u>240.0</u>																	
UPL species <u>40</u>	x 5 = <u>160.0</u>																	
Column Totals: <u>100</u> (A)	<u>400.0</u> (B)																	
_____ = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Daucus carota</u>	<u>40</u>	<u>Yes</u>	<u>UPL</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Melilotus officinalis</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>															
3. <u>Poa pratensis</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ <u>100</u> = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Hydrophytic Vegetation Present?</b> <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Yes _____</span> <span>No <input checked="" type="checkbox"/></span> </div>																		
Remarks: (Include photo numbers here or on a separate sheet.) No hydrophytic vegetation indicators present																		



## SOIL

Sampling Point: Upland DFN-04

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

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R,</b>
<input type="checkbox"/> Histic Epipedon (A2)	<b>MLRA 149B)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L)</b>
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B)</b>	

### Indicators for Problematic Hydric Soils<sup>3</sup>:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type:\_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:

shovel refusal at 6 inches. No hydric soil indicators present



E



W



Soil



## Appendix C

### OEPA ORAM Data Forms

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<b>Site:</b> Wetland DFN-01	<b>Rater(s):</b> MJA	<b>Date:</b> 2022-12-20
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<b>3.0</b>	<b>3.0</b>	<b>Metric 1. Wetland Area (size).</b>
max 6 pts.	subtotal	

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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

<b>2.0</b>	<b>5.0</b>	<b>Metric 2. Upland buffers and surrounding land use.</b>
max 14 pts.	subtotal	

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)
- ☐ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>10.5</b>	<b>15.5</b>	<b>Metric 3. Hydrology.</b>
max 30 pts.	subtotal	

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> ditch</li> <li><input type="checkbox"/> tile</li> <li><input type="checkbox"/> dike</li> <li><input type="checkbox"/> weir</li> <li><input type="checkbox"/> stormwater input</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> point source (nonstormwater)</li> <li><input checked="" type="checkbox"/> filling/grading</li> <li><input checked="" type="checkbox"/> road bed/RR track</li> <li><input type="checkbox"/> dredging</li> <li><input checked="" type="checkbox"/> other <small>Wetland is dirtbike park. Soil moved around to</small></li> </ul> |
|--|---|

<b>5.5</b>	<b>21.0</b>	<b>Metric 4. Habitat Alteration and Development.</b>
max 20 pts.	subtotal	

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

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☒ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> mowing</li> <li><input type="checkbox"/> grazing</li> <li><input type="checkbox"/> clearcutting</li> <li><input checked="" type="checkbox"/> selective cutting</li> <li><input type="checkbox"/> woody debris removal</li> <li><input type="checkbox"/> toxic pollutants</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> shrub/sapling removal</li> <li><input type="checkbox"/> herbaceous/aquatic bed removal</li> <li><input checked="" type="checkbox"/> sedimentation</li> <li><input type="checkbox"/> dredging</li> <li><input type="checkbox"/> farming</li> <li><input type="checkbox"/> nutrient enrichment</li> </ul> |
|--|---|

**21.0**

subtotal this page



<b>Site:</b> Wetland DFN-01	<b>Rater(s):</b> MJA	<b>Date:</b> 2022-12-20
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21.0

subtotal first page

0.0	21.0
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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)

8.0	29.0
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max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 1 Shrub
- ☐ 1 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)
- ☐ 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)
- ☐ 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
- ☐ 1 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

29.0

**GRAND TOTAL (max 100 pts)**

<b>Site:</b> Wetland DFN-02	<b>Rater(s):</b> MJA	<b>Date:</b>
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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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

5	5
max 14 pts.	subtotal

### Metric 2. Upland buffers and surrounding land use.

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

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☒ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☐ 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)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

10	15
max 30 pts.	subtotal

### Metric 3. Hydrology.

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

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)

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other Downslope of reservoir

7	22
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)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

22
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subtotal this page



<b>Site:</b> Wetland DFN-02	<b>Rater(s):</b> MJA	<b>Date:</b>
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22

subtotal first page

0	22
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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)

2	24
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max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 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)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☒ X 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 breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

24

**GRAND TOTAL (max 100 pts)**

<b>Site:</b> Wetland DFN-03	<b>Rater(s):</b> MJA	<b>Date:</b>
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<b>0</b>	<b>0</b>
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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

<b>8</b>	<b>8</b>
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)
- ☐ 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)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>12.5</b>	<b>20.5</b>
max 30 pts.	subtotal

### Metric 3. Hydrology.

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

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)

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other Downslope of reservoir

<b>10</b>	<b>30.5</b>
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)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

- ☐ None or none apparent (9)
- ☒ Recovered (6)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

<b>30.5</b>
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subtotal this page



<b>Site:</b> Wetland DFN-03	<b>Rater(s):</b> MJA	<b>Date:</b>
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30.5

subtotal first page

0	30.5
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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)

4	34.5
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max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 0 Shrub
- ☐ 1 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)
- ☐ Nearly absent <5% cover (0)
- ☒ X Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 1 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 0 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

34.5

**GRAND TOTAL (max 100 pts)**

<b>Site:</b> Wetland DFN-04	<b>Rater(s):</b> JBL	<b>Date:</b>
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<b>2</b>	<b>2</b>
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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

<b>1</b>	<b>3</b>
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)
- ☒ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>6</b>	<b>9</b>
max 30 pts.	subtotal

### Metric 3. Hydrology.

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☐ Recovering (3)
- ☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed	
<input checked="" type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input checked="" type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input checked="" type="checkbox"/> filling/grading <input checked="" type="checkbox"/> road bed/RR track <input checked="" type="checkbox"/> dredging <input type="checkbox"/> other _____

<b>5.5</b>	<b>14.5</b>
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)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☒ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed	
<input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input checked="" type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input checked="" type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

<b>14.5</b>
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subtotal this page



<b>Site:</b> Wetland DFN-04	<b>Rater(s):</b> JBL	<b>Date:</b>
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14.5

subtotal first page

0	14.5
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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)

-2	12.5
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max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 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)
- ☐ 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)
- ☐ 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
- ☐ 1 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

12.5

**GRAND TOTAL (max 100 pts)**

## Appendix D

### QHEI Stream Data Forms

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Stream &amp; Location: Stream DFN-07 Dowling-Fulton T-Line Tap to Melbourne Substation RM: 39.7 Date: 9/8/22

S-JBL-090822-06 Scorers Full Name & Affiliation: JBL Jacobs  
River Code: 04100009 07 02 STORET #: Lat./Long.: 41.56370 / -83.94712 Office verified location ☒1] SUBSTRATE Check ONLY Two substrate TYPE BOXES;  
estimate % or note every type present

Check ONE (Or 2 &amp; average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY	
<input type="checkbox"/> BLDR /SLABS [10]				<input type="checkbox"/> HARDPAN [4]				<input type="checkbox"/> LIMESTONE [1]		<input type="checkbox"/> HEAVY [-2]	Substrate 13 Maximum 20
<input type="checkbox"/> BOULDER [9]				<input type="checkbox"/> DETRITUS [3]				<input checked="" type="checkbox"/> TILLS [1]		<input checked="" type="checkbox"/> MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]	5	10		<input type="checkbox"/> MUCK [2]				<input type="checkbox"/> WETLANDS [0]		<input checked="" type="checkbox"/> NORMAL [0]	
<input checked="" type="checkbox"/> GRAVEL [7]	10	50		<input type="checkbox"/> SILT [2]	40	10		<input type="checkbox"/> HARDPAN [0]		<input type="checkbox"/> FREE [1]	
<input checked="" type="checkbox"/> SAND [6]	45	30		<input type="checkbox"/> ARTIFICIAL [0]				<input type="checkbox"/> SANDSTONE [0]		<input type="checkbox"/> EXTENSIVE [-2]	
<input type="checkbox"/> BEDROCK [5]								<input type="checkbox"/> RIP/RAP [0]		<input checked="" type="checkbox"/> MODERATE [-1]	
(Score natural substrates; ignore sludge from point-sources)								<input type="checkbox"/> LACUSTURINE [0]		<input checked="" type="checkbox"/> NORMAL [0]	
								<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> NONE [1]	
								<input type="checkbox"/> COAL FINES [-2]			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments

## 2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

## AMOUNT

Check ONE (Or 2 &amp; average)

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
2 OVERHANGING VEGETATION [1]	0 ROOTWADS [1]	1 AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
0 SHALLOWS (IN SLOW WATER) [1]	0 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-<25% [3]
0 ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20

## 3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 &amp; average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel Maximum 20

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)  
River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]				
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]				
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]				
	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]					
	<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]					

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10

## 5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential			
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Primary Contact Secondary Contact (circle one and comment on back)			
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input checked="" type="checkbox"/> SLOW [1]			
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]		<input type="checkbox"/> INTERSTITIAL [-1]		
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]			<input type="checkbox"/> INTERMITTENT [-2]	
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> MODERATE [1]				<input type="checkbox"/> EDDIES [1]
<input checked="" type="checkbox"/> < 0.2m [0]						

Indicate for reach - pools and riffles.

Comments

Pool / Current Maximum 12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 &amp; average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8

6] GRADIENT ( 8.61 ft/mi)	<input type="checkbox"/> VERY LOW - LOW [2-4]	%POOL: 50	%GLIDE: 35	Gradient Maximum 10
DRAINAGE AREA ( 11.1 mi <sup>2</sup> )	<input checked="" type="checkbox"/> MODERATE [6-10]	%RUN: 10	%RIFFLE: 5	
	<input type="checkbox"/> HIGH - VERY HIGH [10-6]			

## A/ SAMPLED REACH

Check ALL that apply

### METHOD

- ☐ BOAT  
☒ WADE  
☐ L. LINE  
☐ OTHER

### STAGE

- 1st-sample pass- 2nd  
☐ HIGH ☐  
☐ UP ☐  
☐ NORMAL ☐  
☒ LOW ☐  
☐ DRY ☐

### DISTANCE

- ☐ 0.5 Km  
☐ 0.2 Km  
☐ 0.15 Km  
☐ 0.12 Km  
☒ OTHER

100

meters

### CANOPY

- ☐ > 85%- OPEN  
☒ 55%-<85%  
☐ 30%-<55%  
☐ 10%-<30%  
☐ <10%- CLOSED

### CLARITY

- 1st --sample pass-- 2nd  
☒ < 20 cm ☐  
☐ 20-<40 cm ☐  
☐ 40-70 cm ☐  
☐ > 70 cm/ CTB ☐  
☐ SECCHI DEPTH ☐

1st \_\_\_\_\_ cm  
pass  
2nd \_\_\_\_\_ cm

### C/ RECREATION

### B/ AESTHETICS

- ☐ NUISANCE ALGAE  
☐ INVASIVE MACROPHYTES  
☐ EXCESS TURBIDITY  
☐ DISCOLORATION  
☐ FOAM / SCUM  
☐ OIL SHEEN  
☐ TRASH / LITTER  
☐ NUISANCE ODOR  
☐ SLUDGE DEPOSITS  
☐ CSOs/SSOs/OUTFALLS

AREA DEPTH

POOL: ☐ >100ft<sup>2</sup> ☐ >3ft

### D/ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA  
ACTIVE / HISTORIC / BOTH / NA  
YOUNG - SUCCESSION - OLD  
SPRAY / SNAG / REMOVED  
MODIFIED / DIPPED OUT / NA  
LEVEED / ONE SIDED  
RELOCATED / CUTOFFS  
MOVING - BEDLOAD - STABLE  
ARMoured / SLUMPS  
ISLANDS / SCOURED  
IMPOUNDED / DESICCATED  
FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

### E/ ISSUES

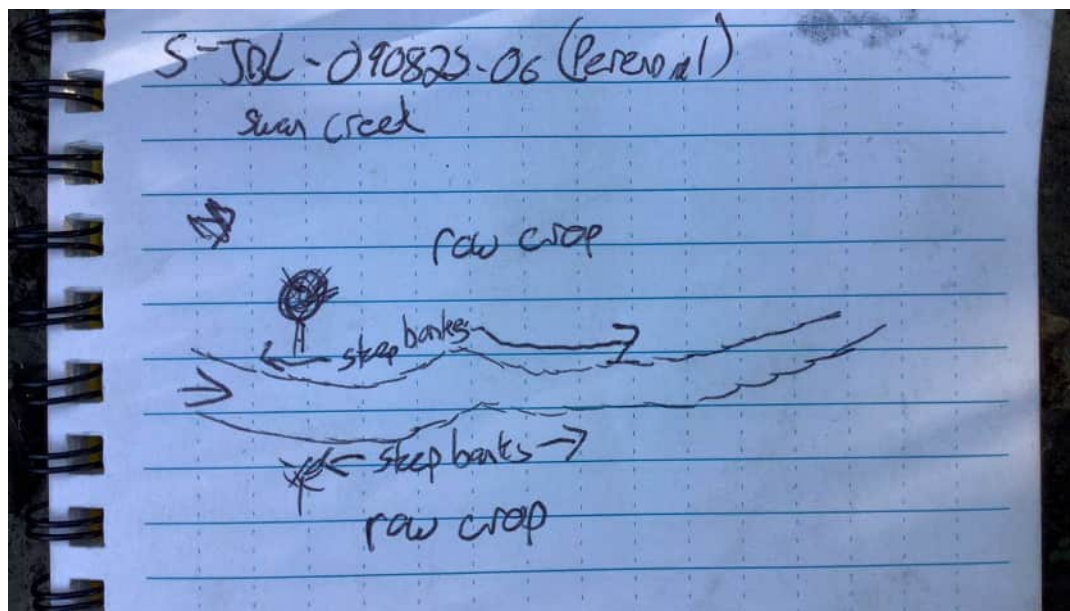
- WWTP / CSO / NPDES / INDUSTRY  
HARDENED / URBAN / DIRT&GRIME  
CONTAMINATED / LANDFILL  
BMPs - CONSTRUCTION - SEDIMENT  
LOGGING / IRRIGATION / COOLING  
BANK / EROSION / SURFACE  
FALSE BANK / MANURE / LAGOON  
WASH H2O / TILE / H2O TABLE  
ACID / MINE / QUARRY / FLOW  
NATURAL / WETLAND / STAGNANT  
PARK / GOLF / LAWN / HOME  
ATMOSPHERE / DATA PAUCITY

### F/ MEASUREMENTS

- $\bar{x}$  width 7  
 $\bar{x}$  depth 6  
max. depth  
 $\bar{x}$  bankfull width  
bankfull  $\bar{x}$  depth  
W/D ratio  
bankfull max. depth  
floodprone  $x^2$  width  
entrench. ratio

Legacy Tree:

Stream Drawing: Stream DFN-07







Upstream



Downstream



Substrate

Stream &amp; Location: Stream DFN-10

RM: 18.2

Date: 9/8/22

S-JBL-090822-04

Scorers Full Name &amp; Affiliation: JBL

Jacobs

River Code: 04100009 03 02

STORET #: \_\_\_\_\_

Lat./Long.: 41.55176

-83.98877

Office verified location ☒1] SUBSTRATE Check ONLY Two substrate TYPE BOXES;  
estimate % or note every type present

Check ONE (Or 2 &amp; average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		
<input type="checkbox"/> BLDR /SLABS [10]	_____	_____	_____	<input type="checkbox"/> HARDPAN [4]	_____	_____	_____	<input checked="" type="checkbox"/> LIMESTONE [1]	_____	<input type="checkbox"/> HEAVY [-2]	<div>Substrate</div> <div>9</div> <div>Maximum 20</div>	
<input type="checkbox"/> BOULDER [9]	_____	_____	_____	<input type="checkbox"/> DETRITUS [3]	_____	_____	_____	<input checked="" type="checkbox"/> TILLS [1]	_____	<input checked="" type="checkbox"/> MODERATE [-1]		
<input checked="" type="checkbox"/> COBBLE [8]	10	70	<input type="checkbox"/> MUCK [2]	_____	_____	_____	<input type="checkbox"/> WETLANDS [0]	_____	<input type="checkbox"/> NORMAL [0]			
<input type="checkbox"/> GRAVEL [7]	0	10	<input checked="" type="checkbox"/> SILT [2]	80	10	<input type="checkbox"/> SANDSTONE [0]	_____	<input type="checkbox"/> FREE [1]	<input type="checkbox"/> EXTENSIVE [-2]			
<input type="checkbox"/> SAND [6]	10	10	<input type="checkbox"/> ARTIFICIAL [0]	_____	_____	<input type="checkbox"/> RIP/RAP [0]	_____	<input checked="" type="checkbox"/> MODERATE [-1]	<input type="checkbox"/> NORMAL [0]			
<input type="checkbox"/> BEDROCK [5]	_____	_____	(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/> LACUSTURINE [0]	_____	<input type="checkbox"/> NONE [1]			
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]								SILT		EMBEDDEDNESS		
Comments								<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> COAL FINES [-2]		

## 2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

## AMOUNT

Check ONE (Or 2 &amp; average)

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
1 OVERHANGING VEGETATION [1]	1 ROOTWADS [1]	1 AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
1 SHALLOWS (IN SLOW WATER) [1]	0 BOULDERS [1]	0 LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-<25% [3]
0 ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments

Cover

Maximum

20

9

## 3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 &amp; average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel

Maximum

20

10.5

## 4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank &amp; average)

River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> FENCED PASTURE [1]
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]	Indicate predominant land use(s) past 100m riparian.		
<input type="checkbox"/> NONE [0]					Riparian		

Comments

Maximum

10

3

## 5] POOL / GLIDE AND RIFFLE / RUN QUALITY

## MAXIMUM DEPTH

Check ONE (ONLY!)

- ☐ > 1m [6]  
☐ 0.7-<1m [4]  
☒ 0.4-<0.7m [2]  
☐ 0.2-<0.4m [1]  
☐ < 0.2m [0]

## CHANNEL WIDTH

Check ONE (Or 2 &amp; average)

- ☒ POOL WIDTH > RIFFLE WIDTH [2]  
☐ POOL WIDTH = RIFFLE WIDTH [1]  
☐ POOL WIDTH < RIFFLE WIDTH [0]

## CURRENT VELOCITY

Check ALL that apply

- ☐ TORRENTIAL [-1] ☒ SLOW [1]  
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]  
☐ FAST [1] ☐ INTERMITTENT [-2]  
☒ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

## Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

Pool / Current

Maximum

12

6

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 &amp; average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle / Run

Maximum

8

2

6] GRADIENT ( 5.3 ft/mi) ☐ VERY LOW - LOW [2-4] ☒ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]DRAINAGE AREA ( 42.8 mi<sup>2</sup>)

%POOL: 40

%GLIDE: 40

%RUN: 10

%RIFFLE: 10

Gradient

Maximum

10

8



## A/ SAMPLED REACH

Check ALL that apply

### METHOD

- ☐ BOAT  
☒ WADE  
☐ L. LINE  
☐ OTHER

### STAGE

1st -sample pass- 2nd

- ☐ HIGH ☐  
☐ UP ☐  
☒ NORMAL ☐  
☐ LOW ☐  
☐ DRY ☐

### DISTANCE

- ☐ 0.5 Km  
☐ 0.2 Km  
☐ 0.15 Km  
☐ 0.12 Km  
☒ OTHER

meters

### CANOPY

- ☐ > 85%- OPEN  
☐ 55%-<85%  
☐ 30%-<55%  
☐ 10%-<30%  
☐ <10%- CLOSED

### CLARITY

1st --sample pass-- 2nd

- ☐ < 20 cm  
☒ 20-<40 cm  
☐ 40-70 cm  
☐ > 70 cm/ CTB  
☐ SECCHI DEPTH

1st \_\_\_\_\_ cm

pass

2nd \_\_\_\_\_ cm

### C/ RECREATION

AREA DEPTH

POOL: ☒ >100ft<sup>2</sup> ☒ >3ft

### B/ AESTHETICS

- ☐ NUISANCE ALGAE  
☐ INVASIVE MACROPHYTES  
☐ EXCESS TURBIDITY  
☐ DISCOLORATION  
☐ FOAM / SCUM  
☐ OIL SHEEN  
☐ TRASH / LITTER  
☐ NUISANCE ODOR  
☐ SLUDGE DEPOSITS  
☐ CSOs/SSOs/OUTFALLS

### D/ MAINTENANCE

- PUBLIC / 'PRIVATE / BOTH / NA  
 ACTIVE / HISTORIC / BOTH / NA  
 YOUNG - SUCCESSION - OLD  
 SPRAY / SNAG / REMOVED  
 MODIFIED / DIPPED OUT / NA  
 LEVEED / ONE SIDED  
 RELOCATED / CUTOFFS  
 MOVING - BEDLOAD - STABLE  
 ARMoured / SLUMPS  
 ISLANDS / SCoured  
 IMPOUNDED / DESICCATED  
 FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

### E/ ISSUES

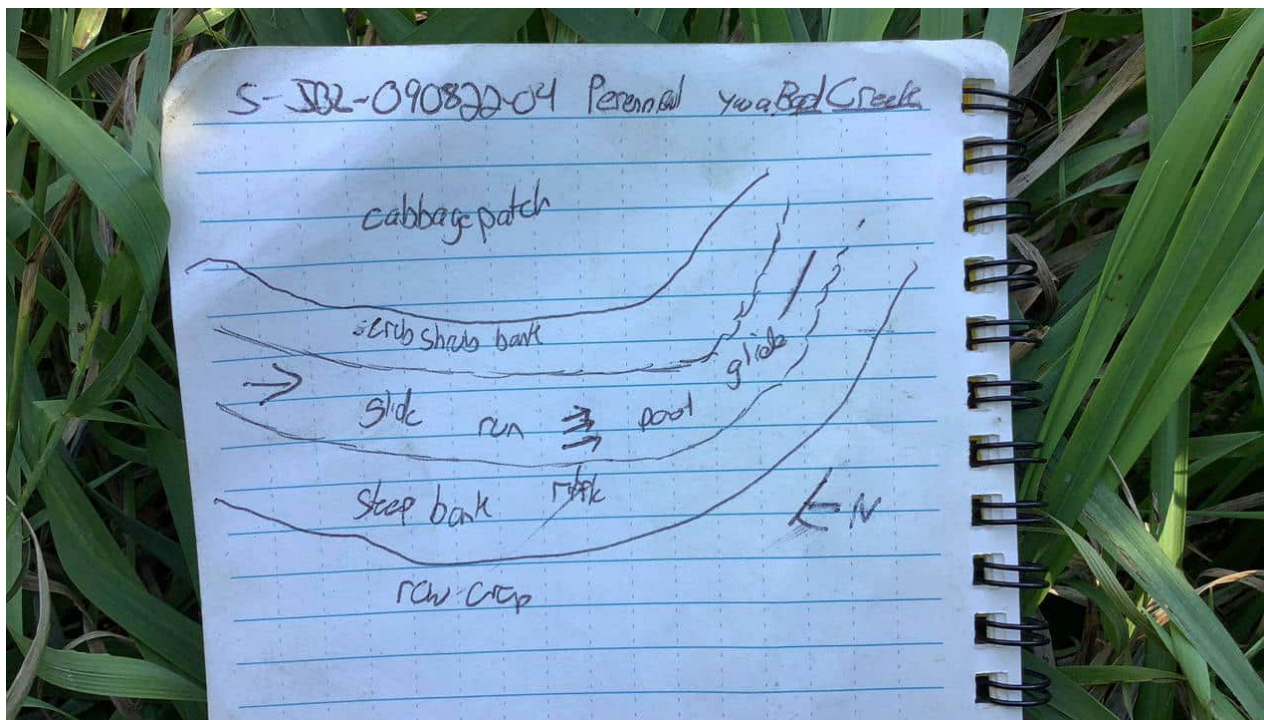
- WWTP / CSO / NPDES / INDUSTRY  
 HARDENED / URBAN / DIRT&GRIME  
 CONTAMINATED / LANDFILL  
 BMPs - CONSTRUCTION - SEDIMENT  
 LOGGING / IRRIGATION / COOLING  
 BANK / EROSION / SURFACE  
 FALSE BANK / MANURE / LAGOON  
 WASH H2O / TILE / H2O TABLE  
 ACID / MINE / QUARRY / FLOW  
 NATURAL / WETLAND / STAGNANT  
 PARK / GOLF / LAWN / HOME  
 ATMOSPHERE / DATA PAUCITY

### F/ MEASUREMENTS

- $\bar{x}$  width 25  
 $\bar{x}$  depth 8  
 max. depth 24  
 $\bar{x}$  bankfull width 40  
 bankfull  $\bar{x}$  depth  
 W/D ratio  
 bankfull max. depth  
 floodprone  $x^2$  width  
 entrench. ratio

Legacy Tree:

Stream Drawing: Stream DFN-10





Upstream



Downstream



Substrate



## Appendix E

### HHEI Stream Data Forms

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## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

10

SITE NAME/LOCATION Stream DFN-01 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-MJA-100422-01 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.06

LENGTH OF STREAM REACH (ft) LAT 41.59948 LONG -83.92022 RIVER MILE

DATE 10/04/2022 SCORER MJA COMMENTS Vegetated roadside ditch with NHD designation.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type present).** Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 3

(B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
PointsSubstrate  
Max = 40

5

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]

Pool Depth  
Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (inches):

0

3. **BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

Bankfull  
Width  
Max=30

5

COMMENTS

AVERAGE BANKFULL WIDTH (feet):

2

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS Highway along left bank

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ai Creek Distance from Evaluated Stream 0.44 mile  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 9/26/22 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

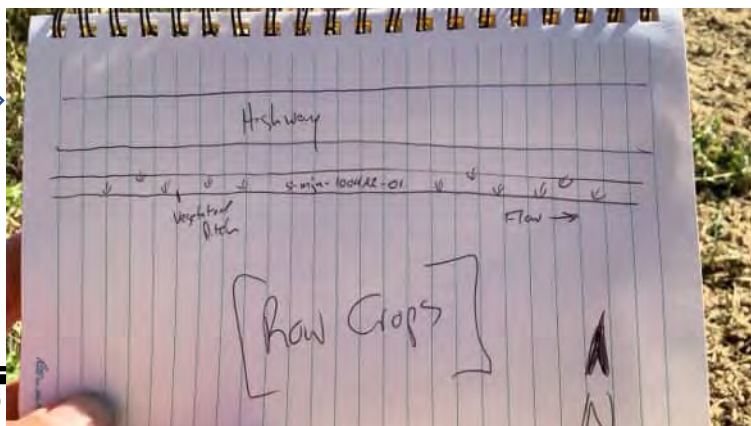
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Upstream



Downstream



Substrate





## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

29

SITE NAME/LOCATION Stream DFN-02 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-091522-05 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.53

LENGTH OF STREAM REACH (ft) LAT 41.59919244333334 LONG -83.92657710916669 RIVER MILE

DATE 09/15/2022 SCORER JBL COMMENTS Int stream 5 on ODNR parcel. Channelized.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type present).** Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	65
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	25
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 6

(B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
PointsSubstrate  
Max = 40

9

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]

Pool Depth  
Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (inches):

1

3. **BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

Bankfull  
Width  
Max=30

15

COMMENTS

AVERAGE BANKFULL WIDTH (feet):

4

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft)
 ☐ Flat to Moderate
 ☐ Moderate (2 ft/100 ft)
 ☐ Moderate to Severe
 ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ai Creek Distance from Evaluated Stream >2 miles  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/11/2022 Quantity: 0.25

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 20Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







Upstream



Downstream



Substrate



## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

33

SITE NAME/LOCATION Stream DFN-03 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-091522-04 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.001

LENGTH OF STREAM REACH (ft) LAT 41.59914769656704 LONG -83.93771172280776 RIVER MILE

DATE 09/15/2022 SCORER JBL COMMENTS Channelized stream 4, intermittent

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B				<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">8</div>  A + B																											
<table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pts]</td> <td>70</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td>30</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>_____</td> </tr> </table>	TYPE	PERCENT	TYPE		PERCENT	<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pts]	70	<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	30	<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____	<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____	Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0	
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SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <div style="border: 1px solid black; padding: 2px 10px;">6</div>		TOTAL NUMBER OF SUBSTRATE TYPES: (B) <div style="border: 1px solid black; padding: 2px 10px;">2</div>																													
<b>2. Maximum Pool Depth (Measure the <u>maximum</u> pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box):</b>				<b>Pool Depth Max = 30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">5</div>																											
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 22.5 - 30 cm [30 pts]</td> <td><input checked="" type="checkbox"/> &lt; 5 cm [5pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </table>					<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																					
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<b>3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check <i>ONLY</i> one box):</b>				<b>Bankfull Width Max=30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">20</div>																											
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<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																															
COMMENTS _____		AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px 10px;">7</div>																													

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/> <input type="checkbox"/>	Wide >10m	<input type="checkbox"/> <input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/> <input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/> <input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/> <input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/> <input type="checkbox"/>	None	<input type="checkbox"/> <input type="checkbox"/>	Fenced Pasture
<input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/>	Conservation Tillage
		<input type="checkbox"/> <input type="checkbox"/>	Urban or Industrial
		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Open Pasture, Row Crop
		<input type="checkbox"/> <input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Ai Creek Distance from Evaluated Stream >2 miles  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.**

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

**MISCELLANEOUS**Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/11/2022 Quantity: 0.25

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Upstream



Downstream



Substrate





# Headwater Habitat Evaluation Index Field Form

**HHEI Score (sum of metrics 1+2+3)**
**10**

 SITE NAME/LOCATION Stream DFN-04 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

 SITE NUMBER S-MJA-100422-02 RIVER BASIN 04100009 RIVER CODE \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) 0.41

 LENGTH OF STREAM REACH (ft) \_\_\_\_\_ LAT 41.59942186216667 LONG -83.94043312999999 RIVER MILE \_\_\_\_\_

 DATE 10/04/2022 SCORER MJA COMMENTS Vegetated roadside ditch with NHD designation.
**NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions**
**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B			<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">5</div> A + B																											
<table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pts]</td> <td>50</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>50</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>_____</td> </tr> </table>	TYPE	PERCENT		TYPE	PERCENT	<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pts]	50	<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	50	<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____	
TYPE	PERCENT	TYPE		PERCENT																										
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Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u>																														
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <div style="border: 1px solid black; padding: 2px 10px;">3</div>		TOTAL NUMBER OF SUBSTRATE TYPES: (B) <div style="border: 1px solid black; padding: 2px 10px;">2</div>																												
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COMMENTS _____			AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px 10px;">2</div>																											

 This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/> <input type="checkbox"/> Wide >10m		<input type="checkbox"/> <input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> <input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> <input type="checkbox"/> Moderate 5-10m		<input type="checkbox"/> <input type="checkbox"/> Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/> <input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> <input type="checkbox"/> Narrow <5m		<input type="checkbox"/> <input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> <input checked="" type="checkbox"/> Open Pasture, Row Crop
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> None		<input type="checkbox"/> <input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> <input type="checkbox"/> Mining or Construction

 COMMENTS Highway on left bank
**FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):**

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ai Creek Distance from Evaluated Stream >2 miles  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/26/2022 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): \_\_\_\_\_Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

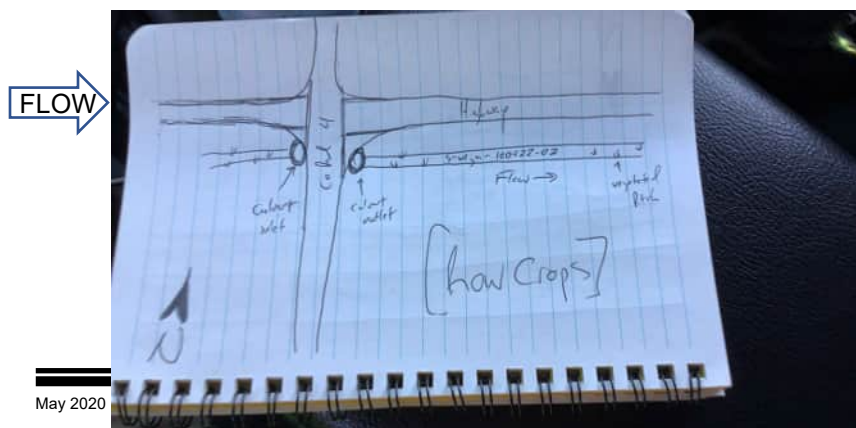
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







Upstream



Downstream



Substrate



## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

54

SITE NAME/LOCATION Stream DFN-05 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-091522-03 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.42

LENGTH OF STREAM REACH (ft) LAT 41.59667542983334 LONG -83.95979918099998 RIVER MILE

DATE 09/15/2022 SCORER JBL COMMENTS Channelized. Comes off of turnpike property and flows south

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type present).** Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	40
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 6

(B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
PointsSubstrate  
Max = 40

9

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]

Pool Depth  
Max = 30

25

COMMENTS

MAXIMUM POOL DEPTH (inches):

4

3. **BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

Bankfull  
Width  
Max=30

20

COMMENTS TOB approx 25 feet

AVERAGE BANKFULL WIDTH (feet):

6

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft)
 ☐ Flat to Moderate
 ☐ Moderate (2 ft/100 ft)
 ☐ Moderate to Severe
 ☐ Severe (10 ft/100 ft)



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Swan Creek Distance from Evaluated Stream 0.86 mile  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.**

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

**MISCELLANEOUS**Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/11/2022 Quantity: 0.25

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Upstream



Downstream



Substrate





# Headwater Habitat Evaluation Index Field Form

**HHEI Score (sum of metrics 1+2+3)**
**10**

 SITE NAME/LOCATION Stream DFN-06 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

 SITE NUMBER S-MJA-100422-03 RIVER BASIN 04100009 RIVER CODE \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) 0.13

 LENGTH OF STREAM REACH (ft) \_\_\_\_\_ LAT 41.597663616666665 LONG -83.96962606183334 RIVER MILE \_\_\_\_\_

 DATE 10/04/2022 SCORER MJA COMMENTS Vegetated roadside ditch with NHD designation.
**NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions**
**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B				<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">5</div> A + B																											
<table border="0"> <thead> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pts]</td> <td>50</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>50</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>_____</td> </tr> </tbody> </table>	TYPE	PERCENT	TYPE		PERCENT	<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pts]	50	<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	50	<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____	Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u>	
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COMMENTS _____				AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px 10px;">2</div>																											

 This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/> <input type="checkbox"/>	Wide >10m	<input type="checkbox"/> <input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/> <input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/> <input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/> <input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/> <input type="checkbox"/>	None	<input type="checkbox"/> <input type="checkbox"/>	Fenced Pasture
		<input type="checkbox"/> <input type="checkbox"/>	Conservation Tillage
		<input type="checkbox"/> <input checked="" type="checkbox"/>	Urban or Industrial
		<input checked="" type="checkbox"/> <input type="checkbox"/>	Open Pasture, Row Crop
		<input type="checkbox"/> <input type="checkbox"/>	Mining or Construction

 COMMENTS Highway along right bank
**FLOW REGIME (At Time of Evaluation)** (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY (Number of bends per 61 m (200 ft) of channel)** (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Swan Creek Distance from Evaluated Stream 0.07 mile  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/26/2022 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): \_\_\_\_\_Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

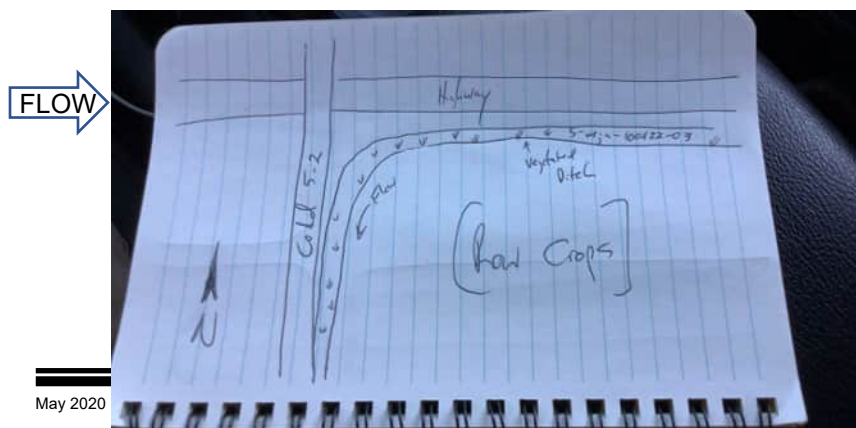
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







Upstream



Downstream



Substrate



## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

12

SITE NAME/LOCATION Stream DFN-08 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JFW-100422-02 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.18

LENGTH OF STREAM REACH (ft) LAT 41.59590136166667 LONG -83.98945078916668 RIVER MILE

DATE 10/04/2022 SCORER JFW COMMENTS Do not have access to ODOT parcel, done remotely. Constructed roadside ditch with NHD

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B				<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">7</div> A + B																										
<table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> BLDR SLABS [16 pts]</td> <td></td> <td><input checked="" type="checkbox"/> SILT [3 pts]</td> <td>70</td> </tr> <tr> <td><input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td></td> <td><input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td></td> </tr> <tr> <td><input type="checkbox"/> BEDROCK [16 pts]</td> <td></td> <td><input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td></td> </tr> <tr> <td><input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td></td> <td><input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>15</td> </tr> <tr> <td><input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td>5</td> <td><input type="checkbox"/> MUCK [0 pts]</td> <td></td> </tr> <tr> <td><input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td>10</td> <td><input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td></td> </tr> </table>	TYPE	PERCENT	TYPE		PERCENT	<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	70	<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]		<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]		<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	15	<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5	<input type="checkbox"/> MUCK [0 pts]		<input type="checkbox"/> SAND (<2 mm) [6 pts]	10	<input type="checkbox"/> ARTIFICIAL [3 pts]		
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Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0																														
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <div style="border: 1px solid black; padding: 2px 10px;">3</div>		TOTAL NUMBER OF SUBSTRATE TYPES: (B) <div style="border: 1px solid black; padding: 2px 10px;">4</div>																												
<b>2. Maximum Pool Depth (Measure the <u>maximum</u> pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box):</b>				<b>Pool Depth Max = 30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">0</div>																										
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> &lt; 5 cm [5pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 10 - 22.5 cm [25 pts]</td> <td><input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </table>					<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																				
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COMMENTS		MAXIMUM POOL DEPTH (inches): <div style="border: 1px solid black; padding: 2px 10px;">0</div>																												
<b>3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check <i>ONLY</i> one box):</b>				<b>Bankfull Width Max=30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">5</div>																										
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 4.0 meters (&gt; 13') [30 pts]</td> <td><input type="checkbox"/> &gt; 1.0 m - 1.5 m (&gt; 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 3.0 m - 4.0 m (&gt; 9' 7" - 13') [25 pts]</td> <td><input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 1.5 m - 3.0 m (&gt; 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </table>					<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																					
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COMMENTS		AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px 10px;">2</div>																												

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Swan Creek Distance from Evaluated Stream Direct tributary  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Fulton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/25/2022 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

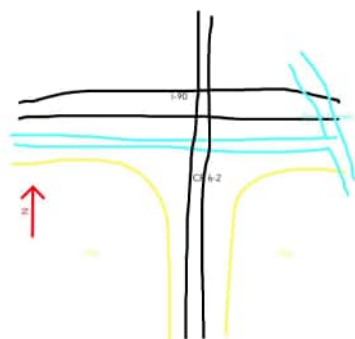
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Upstream



Downstream



Substrate





## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

46

SITE NAME/LOCATION Stream DFN-09 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JFW-100422-01 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.21

LENGTH OF STREAM REACH (ft) LAT 41.5973333895 LONG -84.00817855816668 RIVER MILE

DATE 10/04/2022 SCORER JFW COMMENTS Culverted upstream and downstream

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type present).** Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pts]	20
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	30
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 3

(B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
PointsSubstrate  
Max = 40

6

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):**

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]

COMMENTS

MAXIMUM POOL DEPTH (inches):

12

Pool Depth  
Max = 30

20

3. **BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (feet):

6

Bankfull  
Width  
Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS No flow observed but standing water throughout

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft)
☐ Flat to Moderate
☐ Moderate (2 ft/100 ft)
☐ Moderate to Severe
☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Bad Creek Distance from Evaluated Stream 0.67 mile  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Delta, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Pike Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/25/2022 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 30Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

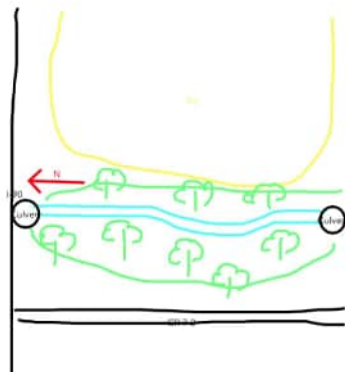
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

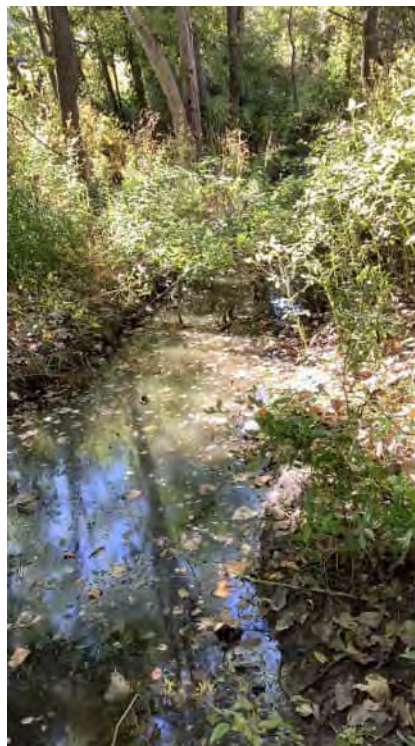
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







Upstream



Downstream



Substrate



## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

25

SITE NAME/LOCATION Stream DFN-11 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-MJA-100322-01 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.65

LENGTH OF STREAM REACH (ft) LAT 41.59078777683334 LONG -84.03934342633332 RIVER MILE

DATE 10/03/2022 SCORER MJA COMMENTS Vegetated channelized stream with NHD designation.

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B				<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">5</div>  A + B																											
<table border="1"> <thead> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]</td> <td></td> <td><input type="checkbox"/> <input checked="" type="checkbox"/> SILT [3 pt]</td> <td>60</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td></td> <td><input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td></td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]</td> <td></td> <td><input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td></td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td></td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>40</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td></td> <td><input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]</td> <td></td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td></td> <td><input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td></td> </tr> </tbody> </table>	TYPE	PERCENT	TYPE		PERCENT	<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> <input checked="" type="checkbox"/> SILT [3 pt]	60	<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]		<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]		<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	40	<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]		<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]		<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]		Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0	
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SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <div style="border: 1px solid black; padding: 2px 10px;">3</div>		TOTAL NUMBER OF SUBSTRATE TYPES: (B) <div style="border: 1px solid black; padding: 2px 10px;">2</div>																													
<b>2. Maximum Pool Depth (Measure the <u>maximum</u> pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box):</b>				<b>Pool Depth Max = 30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">0</div>																											
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> &gt; 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> &lt; 5 cm [5pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 10 - 22.5 cm [25 pts]</td> <td><input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </tbody> </table>					<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]	<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																					
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COMMENTS _____ MAXIMUM POOL DEPTH (inches): <div style="border: 1px solid black; padding: 2px 10px;">0</div>																															
<b>3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check <i>ONLY</i> one box):</b>				<b>Bankfull Width Max=30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">20</div>																											
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> &gt; 4.0 meters (&gt; 13') [30 pts]</td> <td><input type="checkbox"/> &gt; 1.0 m - 1.5 m (&gt; 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 3.0 m - 4.0 m (&gt; 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input checked="" type="checkbox"/> &gt; 1.5 m - 3.0 m (&gt; 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </tbody> </table>					<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																						
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COMMENTS _____ AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px 10px;">5</div>																															

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS \_\_\_\_\_

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Bad Creek Distance from Evaluated Stream 0.84 mile  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Delta, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Pike Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/26/2022 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

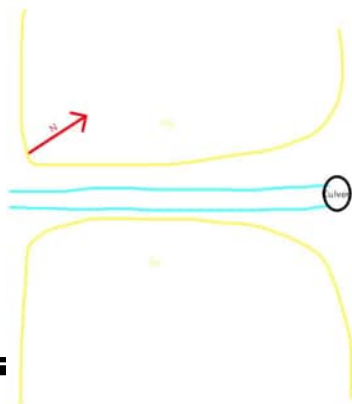
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

Vegetated channelized  
NHD between ag fields.



Upstream



Downstream



Substrate



Appendix F  
Jacobs Open Water/Pond Data Forms

---

## POND DATA SHEET

FEATURE ID Pond DFN-01		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 12/20/2022		CLIENT/PROJECT NAME: Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation	
INVESTIGATORS: MJA		ROUTE:	
STATE/COUNTY:		IS THIS A MAPPED NWI FEATURE?: yes PUBGx	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:	Freshwater pond		
AVG. DEPTH:	5		
AVG. WIDTH (WATER SURFACE):	250		
APPROXIMATE SIZE:	5 ha		
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:	Slightly turbid		
PRIMARY SUBSTRATE (IF OBSERVED):	Organic material - leaves and muck		
POTENTIAL HABITAT FOR:	Waterfowl, fish, amphibians, reptiles		
SURROUNDING LAND USE:	Forested wetland on east side. ~5 feet of trees and scrub bordered by grass on west		
WETLAND FRINGE (IF PRESENT):			
COMMENTS			

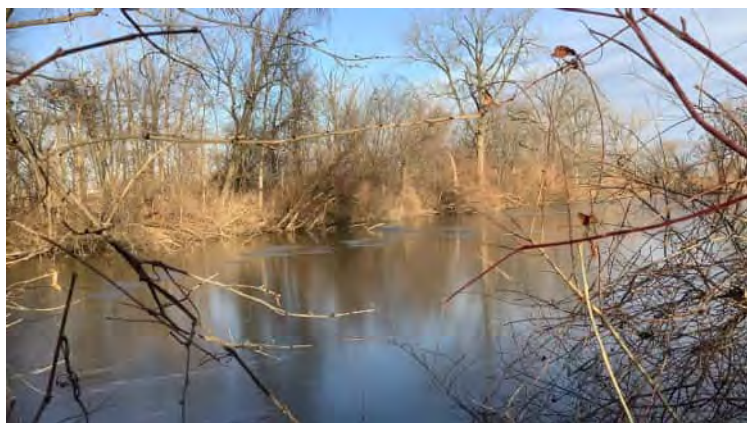




S



Substrate



E



N

## POND DATA SHEET

FEATURE ID Pond DFN-02		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 12/20/2022		CLIENT/PROJECT NAME: Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation	
INVESTIGATORS: MJA		ROUTE:	
STATE/COUNTY:		IS THIS A MAPPED NWI FEATURE?: yes L1UBHx	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:		Reservoir	
AVG. DEPTH:		>3 ft	
AVG. WIDTH (WATER SURFACE):		1,200 ft at crossing	
APPROXIMATE SIZE:		50 acres	
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:		Clear	
PRIMARY SUBSTRATE (IF OBSERVED):		Silt and riprap	
POTENTIAL HABITAT FOR:		Waterfowl, fish, amphibians	
SURROUNDING LAND USE:		Agriculture, secondary forest	
WETLAND FRINGE (IF PRESENT):		N/A	
COMMENTS			





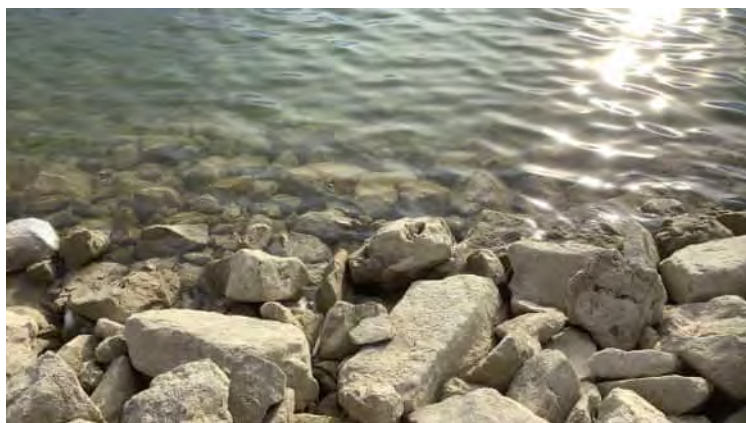
S



SE



SW



Substrate

## POND DATA SHEET

FEATURE ID Pond DFN-03		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 10/03/2022	CLIENT/PROJECT NAME: FirstEnergy		Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation
INVESTIGATORS: MJA		ROUTE:	
STATE/COUNTY: OH Fulton		IS THIS A MAPPED NWI FEATURE?: yes PUBGx	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:	Artificial freshwater pond		
AVG. DEPTH:	>3 ft		
AVG. WIDTH (WATER SURFACE):	650		
APPROXIMATE SIZE:	14 acres		
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:	Murky, greenish brown		
PRIMARY SUBSTRATE (IF OBSERVED):	Artificial, silt		
POTENTIAL HABITAT FOR:	Frogs waterfowl		
SURROUNDING LAND USE:	Row crops		
WETLAND FRINGE (IF PRESENT):	N/A		
COMMENTS			





SE



SW



Substrate

## POND DATA SHEET

FEATURE ID Pond DFN-04		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 10/03/2022		CLIENT/PROJECT NAME: Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation	
INVESTIGATORS: MJA		ROUTE:	
STATE/COUNTY:		IS THIS A MAPPED NWI FEATURE?: yes PUBGx	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:		Artificial freshwater pond	
AVG. DEPTH:		>3 ft	
AVG. WIDTH (WATER SURFACE):		175 ft	
APPROXIMATE SIZE:		8 acres	
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:		Slightly murky; teal color	
PRIMARY SUBSTRATE (IF OBSERVED):		Silt, with riprap along banks	
POTENTIAL HABITAT FOR:		Waterfowl, fish, amphibians	
SURROUNDING LAND USE:		Row crops. Trailer park on west end	
WETLAND FRINGE (IF PRESENT):		N/A	
COMMENTS			





W



S



S



Substrate

## POND DATA SHEET

FEATURE ID Pond DFN-05		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 10/03/2022	CLIENT/PROJECT NAME: FirstEnergy		Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation
INVESTIGATORS: MJA		ROUTE:	
STATE/COUNTY: OH Fulton		IS THIS A MAPPED NWI FEATURE?: yes PUBGx	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:	Artificial freshwater pond		
AVG. DEPTH:	>3 ft		
AVG. WIDTH (WATER SURFACE):	100 ft		
APPROXIMATE SIZE:	2.5 acres		
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:	Clear blue green		
PRIMARY SUBSTRATE (IF OBSERVED):	Artificial and organic		
POTENTIAL HABITAT FOR:	Frogs, waterfowl		
SURROUNDING LAND USE:	Mowed lawn		
WETLAND FRINGE (IF PRESENT):	N/A		
COMMENTS			





S



W



Substrate

**Appendix 8-3B**  
**Wetland and Waterbody Delineation Report**  
**for the Alternate Route**

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# Wetland and Waterbody Delineation Report

Dowling-Fulton 345 kV Transmission Line Tap to  
Melbourne Substation Project – Alternate Route  
Fulton County, Ohio

Prepared for



February 2023

## Jacobs

Jacobs Engineering Group Inc.  
2 Crowne Point Court, Suite 100  
Cincinnati, OH 45241

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B	USACE Wetland Determination Field Data Forms
C	OEPA ORAM Data Forms
D	QHEI Stream Data Forms
E	HHEI Stream Data Forms
F	Jacobs Open Water/Pond Data Forms

# Acronyms and Abbreviations

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ATSI	American Transmission Systems, Incorporated
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESB	environmental survey boundary
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GNSS	global navigation satellite system
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
Jacobs	Jacobs Engineering Group Inc.
kV	kilovolt
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	obligate wetland
OEPA	Ohio Environmental Protection Agency
OHWM	ordinary high water mark
ORAM	Ohio Rapid Assessment Method
PEM	palustrine emergent
PFO	palustrine forested
Project	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
QHEI	Qualitative Habitat Evaluation Index
ROW	right-of-way
TNW	traditionally navigable water
UPL	upland
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey



# 1 Introduction

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This wetland and waterbody delineation report (Report) summarizes the results of the wetland and waterbody delineation surveys conducted on the Dowling-Fulton 345 kilovolt (kV) Transmission Line Tap to Melbourne Substation Project (Project) in Fulton County, Ohio by Jacobs Engineering Group Inc. (Jacobs), for American Transmission Systems, Incorporated (ATSI), a wholly-owned subsidiary of FirstEnergy Corporation. ATSI has proposed a Preferred and Alternate route as part of the Project submitted to the Ohio Power Siting Board. This Report includes the results of the surveys conducted along the Alternate route, which consists of approximately 8.6 miles of new 345 kV transmission line right-of-way (ROW). The Alternate Route alignment crosses the Village of Delta and the townships of York and Swan Creek, Ohio (Figure 1). The 350-foot-wide environmental survey boundary (ESB) included the proposed 150-foot right-of-way (ROW) plus a 100-foot buffer on each side. This Report contains the following components:

- Figure 1 in Appendix A provides an overview map of the ESB overlain on ArcGIS Online USA topographic maps.
- Figures 2-1 to 2-19 in Appendix A show U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil map units, the location of National Wetland Inventory (NWI) polygons, national hydrography dataset (NHD) streams, and Federal Emergency Management Agency (FEMA) 100-year floodplain and floodway information. Table 2-1 summarizes recent precipitation data and Table 2-2 lists the 12-digit hydrologic unit codes crossed by the Project. Table 3-1 lists the soils types identified within the ESB and Table 3-2 lists the NWI wetland types identified within the ESB.
- Figures 3-1 to 3-19 in Appendix A provide the location of all features mapped during the delineation by Jacobs biologists. This includes all wetlands, data points, and waterbodies. Tables 4-1 (wetlands) and 4-2 (streams) follow the text, providing detailed information for all delineated features within the ESB. Tables 4-3 (wetlands), 4-4 (QHEI streams), and 4-5 (HHEI streams) are within the text, providing a summary of information for all delineated features within the ESB.
- U.S. Army Corps of Engineers (USACE) wetland determination field data forms are in Appendix B.
- Ohio Rapid Assessment Method for Wetlands (ORAM) two-page forms are in Appendix C.
- Qualitative Habitat Evaluation Index (QHEI) Stream Forms are in Appendix D.
- Headwater Habitat Evaluation Index (HHEI) Stream Forms are in Appendix E.
- Jacobs Open Water/Pond Data Forms are in Appendix F.

## 2 Background Information

The Project area consists of the Alternate route (Figure 1) which begins at a tie-in with the existing Dowling-Fulton transmission line and ends at the proposed Melbourne Substation. The Alternate Route alignment crosses the Village of Delta and the townships of York and Swan Creek, Ohio (Figure 1).

Review of the USGS 7.5-minute topographic maps indicates that the ESB is within two USGS 7.5-minute topographic quadrangles: Delta and Swanton. Additional review of the USGS 7.5-minute topographic maps of the area indicates that ditches and streams drain the ESB, including Swan Creek, Fewless Creek, Bad Creek, and unnamed tributaries of these waterways. Topographic relief is generally flat, with a few sloped areas associated with waterbodies. The project area ranges from 681 to 769 feet above sea level (Figure 1).

Land use and natural communities observed within the ESB include agricultural, industrial, maintained lawn, old field, park, residential, road, railroad, scrub/shrub, and upland forested.

### 2.1 Annual Precipitation

Precipitation history for Wauseon, Ohio was reviewed prior to completing environmental surveys to determine if climatic conditions were normal at the time of the surveys. Rainfall recorded in Wauseon ranged from above average to below average prior to and during the surveys conducted in fall 2022 (Table 2-1; USDA, 2022), suggesting that climatic conditions were approximately normal for the region and time of year. This was taken into consideration during the delineation.

TABLE 2-1: Recent Precipitation Data

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project*

Precipitation Data	Jul	Aug	Sep	Oct	Nov	Dec	Total
2022 Monthly Sum <sup>1,3</sup>	3.22	5.82	1.51	1.10	2.21	1.95	15.81
Normal Precipitation <sup>2,3</sup>	2.25-3.92	2.28-4.48	1.90-3.76	1.76-3.10	1.86-3.51	1.57-2.91	11.62-21.68
Monthly climatic condition	Average	Above average	Below average	Below average	Average	Average	Average

<sup>1</sup>Monthly weather summary from weather station WAUSEON WATER PLANT, OH

<sup>2</sup>USDA WETS Station Climate Data 1971-2000 (USDA 2022)

<sup>3</sup>Displayed in inches

### 2.2 Drainage Basins

The Project is within the Lower Maumee watershed, corresponding to 8-digit Hydrologic Unit Code (HUC) 04100009. More specifically it is within the five 12-digit HUCs outlined in Table 2-2 (USGS, 2020).

TABLE 2-2: 12-Digit Hydrologic Unit Codes Crossed by the Project

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project*

HUC 12-Digit Code	HUC 12-Digit Name
04100009 04 02	North Turkeyfoot Creek
04100009 03 02	Lower Bad Creek
04100009 04 03	Dry Creek-Maumee River
04100009 07 02	Fewless Creek-Swan Creek



## 2.3 Traditional Navigable Waters

The U.S. Environmental Protection Agency (EPA) and USACE assert jurisdiction over “all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce including all waters which are subject to the ebb and flow of the tide” (USACE and EPA, 2008). These waters are considered traditionally navigable waters (TNW). No TNW directly cross the ESB.

## 3 Wetland and Waterbody Delineation

### 3.1 Desktop Review

Prior to conducting the field investigations, Jacobs reviewed the following resources to identify the potential for wetlands within the ESB:

- Aerial photo-based maps (ArcGIS Online, World Imagery Map, 2018)
- Topographic maps (ArcGIS Online, USA Topo Maps, 2019)
- NRCS Web Soil Survey (USDA-NRCS, 2021)
- NWI shapefile (USFWS, 2020)
- National Hydrography Dataset (NHD) (USGS, 2020)

According to the NRCS soil survey of Fulton County (USDA-NRCS, 2021), the ESB consists of 22 soil map units (Figures 2-1 to 2-19). Of these, three units are listed as nonhydryc, 12 are predominantly nonhydryc, and seven are predominantly hydryc (Table 3-1). Hydryc or predominantly hydryc soils comprise 54 percent of the ESB.

Generally, hydryc soils are those soils that indicate through their color and structure that they have experienced dominantly reducing (i.e. oxygen poor) conditions. Oxygen-poor conditions result from inundation and/or saturation by water. Partially hydryc soils have both hydryc and non-hydryc soil components identified in the soil map unit.

TABLE 3-1: Soil Map Units

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Soil type	Soil type description	Hydryc status	Acres (ac) within ESB
ByA	Brady sandy loam, 0 to 3 percent slopes	Predominantly Nonydryc	6.7
Cn	Colwood loam	Predominantly Hydryc	2.1
DmA	Digby loam, 0 to 3 percent slopes	Predominantly Nonydryc	15.1
DtA	Dixboro fine sandy loam, 0 to 3 percent slopes	Predominantly Nonydryc	2.2
Gf	Gilford fine sandy loam	Predominantly Hydryc	3.4
GoC3	Glynwood clay loam, 6 to 12 percent slopes, severely eroded	Nonhydryc	2.5
HkA	Haskins loam, 0 to 3 percent slopes	Predominantly Nonydryc	51.7
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydryc	121.3
Mf	Mermill loam	Predominantly Hydryc	44.9
Mo	Millgrove loam	Predominantly Hydryc	17.5
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Nonydryc	74.7
NnB	Nappanee loam, 2 to 6 percent slopes	Nonhydryc	2.6
OtB	Ottokee fine sand, 0 to 6 percent slopes	Predominantly Nonydryc	0.7
PeB	Perrin sandy loam, 2 to 6 percent slopes	Predominantly Nonydryc	0.0
RbB	Rawson sandy loam, 2 to 6 percent slopes	Predominantly Nonydryc	2.2



RnA	Rimer loamy fine sand, 0 to 3 percent slopes	Predominantly Nonydric	5.4
SdB	Seward loamy fine sand, 2 to 6 percent slopes	Predominantly Nonydric	1.4
Sh	Shoals silt loam, frequently flooded	Predominantly Nonydric	1.7
So	Sloan silty clay loam, frequently flooded	Predominantly Hydric	7.6
TdA	Tedrow loamy fine sand, 0 to 3 percent slopes	Predominantly Nonydric	2.3
Uo	Udorthents, loamy	Nonhydric	0.3
Wf	Wauseon fine sandy loam	Predominantly Hydric	3.0

NWI data were obtained from the USFWS for review of potential wetlands that may occur within the ESB. The NWI data (USFWS, 2020) identify the type of wetland or open water present at a location using the USFWS classification system (Cowardin et al., 1979). The NWI data indicated that there are nine NWI features within the ESB (Figure 2-1 to 2-19; USFWS, 2020). This included pond and riverine NWI wetland types (Table 3-2, follows text). The presence of an NWI feature is not a definitive indicator that a wetland or waterbody is present. The information on NWI maps is obtained largely from aerial interpretation, may be outdated, and is only sporadically field-checked.

TABLE 3-2: Mapped National Wetland Inventory Features

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Wetland Type	Description	Count of Mapped Features	Acres (ac) within ESB
PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	1	0.09
R2UBH	Riverine lower perennial unconsolidated bottom, permanently flooded	1	0.23
R4SBC	Riverine intermittent streambed, seasonally flooded	5	3.18
R5UBH	Riverine unknown perennial unconsolidated bottom, permanently flooded	2	0.44

As shown on the FEMA floodplain panels (Figures 2-1 to 2-19), floodplains associated with Bad Creek, Fewless Creek, Swan Creek, and an unnamed tributary to Ai Creek cross the ESB (FEMA, 2019).

## 3.2 Field Survey Methodology

In September, October, and December of 2022, Jacobs biologists surveyed the ESB by walking the area and evaluating for wetlands and other waters of the U.S. The boundaries of each wetland and waterbody within the ESB were delineated and recorded using handheld global navigation satellite system (GNSS) receivers. For waterbodies identified within the Project area, the ordinary high-water mark (OHWM) was used as the jurisdictional boundary.

Wetland data were recorded on USACE Northcentral and Northeast Regional Supplement wetland determination data forms, stream data were recorded on Qualitative Habitat Evaluation Index (QHEI) forms and Headwater Habitat Evaluation Index (HHEI) forms, and pond data were recorded on Jacobs pond/open water forms. All other land use, habitat, and other supplemental data were collected in a digital geodatabase during the environmental survey.

### 3.2.1 Wetland Delineation

Wetland boundaries were field-delineated according to using the routine onsite methodology described in the Technical Report Y-87-1 *Corps of Engineers Wetlands Delineation Manual* and subsequent guidance documents (Environmental Laboratory, 1987) and according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0) (USACE, 2012). Wetland delineation data were recorded on the USACE Regional Supplement wetland determination data forms. Representative wetland and upland data points were recorded during the wetland delineation to determine the presence/absence of wetlands and/or to document upland conditions within the Project area. Upland data points were determined not to be within wetlands because they did not have positive indicators of one or more of the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

#### 3.2.1.1 Soils

Jacobs biologists examined soils using a shovel to extract soil cores, which were examined for hydric soil characteristics. A *Munsell Soil Color Chart* (Munsell Color, 2012) was used to identify the hue, value, and chroma of the matrix and concentrations/depletions of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (Environmental Laboratory, 1987). In sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are hydric soils.

#### 3.2.1.2 Hydrology

The *1987 Manual* requires that an area be inundated or saturated to the surface for an absolute minimum of five percent of the growing season. Areas saturated between five percent and 12.5 percent of the growing season may or may not be wetlands, while areas saturated over 12.5 percent of the growing season fulfill the hydrology requirements for wetlands. The *Regional Supplement* states that the growing season dates are determined through onsite observations of the following indicators of biological activity in a given year; (1) above-ground growth and development of vascular plants, and/or (2) soil temperature (12-in. depth is 41 degrees Fahrenheit or higher) as an indicator of soil microbial activity. Therefore, the beginning of the growing season in a given year is indicated by whichever condition occurs earlier, and the end of the growing season by whichever persists later.

The soils and ground surface were examined by Jacobs biologists for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the *1987 Manual* and the *Regional Supplement*. Evidence indicating wetland hydrology typically includes primary indicators such as surface water, saturation, water marks, drift deposits, water-stained leaves, sediment deposits, and oxidized rhizospheres on living roots; and secondary indicators such as drainage patterns, geomorphic position, microtopographic relief, and a positive Facultative (FAC)-neutral test (USACE, 2012).

#### 3.2.1.3 Vegetation

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb, and woody vine) and an indicator status (obligate wetland [OBL], facultative wetland [FACW], facultative [FAC], facultative upland [FACU], upland [UPL]) was assigned to each plant species based on the 2020 National Wetland Plant List. Under normal circumstances, an area is determined to have hydrophytic vegetation when any of the following are true: all dominant species are OBL or FACW; more than 50 percent of the dominant species are OBL, FACW or FAC; or the average total cover of plants, when weighted based on indicator status, calculates to a prevalence index of less than or equal to three.



Wetland quality was evaluated using the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001). Categorization was conducted in accordance with the latest quantitative score calibration (OEPA, 2000). Wetlands are scored based on hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between Categories 1 and 2 from 30 to 34.9 and between Categories 2 and 3 from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower category (Mack, 2001).

### 3.2.2 Stream Assessment

Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. Per USACE guidance, the OHWM is defined as the "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" (USACE, 2005). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

During the field survey, functional stream assessments were conducted using the methods described in *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index* (OEPA, 2006) and *Field Methods for Evaluating Primary Headwater Streams in Ohio* (OEPA, 2020). The QHEI is used to characterize larger streams (drainage areas greater than one square mile), while the HHEI is appropriate for first-order and second-order headwater streams (drainage areas less than one square mile).

## 4 Field Survey Results

Jacobs biologists surveyed the Project area by walking the ESB and evaluating for wetlands and other waters of the U.S. The Alternate route crossed two wetlands, seven streams, and two ponds; these features are displayed and identified on the Wetlands and Waterbodies Delineation Map (Figures 3-1 to 3-19). Jacobs defaults to the USACE and OEPA for the final determination of hydrologic connectivity and jurisdiction

### 4.1 Wetlands

Two wetlands totaling 3.49 acres were delineated within the ESB. One of the wetlands was identified as a palustrine emergent (PEM) wetland and one was identified as a palustrine forested (PFO) wetland. These wetlands are depicted in Figures 3-1 to 3-19. The reported wetland acreage only corresponds to areas delineated within the ESB, as some wetlands extended beyond the survey boundary.

Completed USACE wetland and upland determination forms are provided in Appendix B; representative photographs were taken of each wetland during the field survey and are appended to each USACE wetland and upland form. Detailed information for each delineated wetland within the ESB is provided in Table 4-1.

TABLE 4-1: Delineated Wetland Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Wetland ID	Location		Wetland Type <sup>1</sup>	Area (ac) within ESB	ORAM Score, Category
	Latitude	Longitude			
Wetland DFS-01	41.56484	-84.03522	PFO	2.67	27.5, Category 1
Wetland DFS-02	41.56349	-84.05551	PEM	0.82	15.5, Category 1
Total Wetland Area (ac)				3.49	

<sup>1</sup>Cowardin et al. 1979.

#### 4.1.1 Wetland ORAM Results

The two wetlands identified within the ESB were Category 1 wetlands. No Category 2 or 3 wetlands were identified within the ESB. Both of the wetlands were classified as Category 1 wetlands based on ORAM scores of 15.5 and 27.5. Generally, these wetlands scored low due to factors such as narrow buffers, high intensity surrounding land use, weak hydrology, poor habitat development, low horizontal interspersion, and presence of invasive species. Table 4-4 provides summary information regarding wetlands identified within the ESB, and completed ORAM forms are included in Appendix C.

TABLE 4-4: Wetland Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Wetland Type	ORAM Category			Number of Wetlands	Acreage within ESB
	Category 1	Category 2	Category 3		
PEM	1	0	0	1	0.82
PFO	1	0	0	1	2.67
Totals	2	0	0	2	3.49



## 4.2 Streams

Seven streams were identified, totaling 7,317 linear feet within the ESB. Of the seven streams, one was identified as an ephemeral stream, three were intermittent streams, and three were perennial streams. Three streams were assessed using the QHEI methodology (drainage area greater than one square mile) and four streams were assessed using the HHEI methodology (drainage area less than one square mile).

Completed QHEI and HHEI forms are provided in Appendix D and E, respectively. Representative photographs were taken of each stream during the field survey and are appended to each QHEI and HHEI stream form. Detailed information for each delineated stream within the ESB is provided in Table 4-2.

TABLE 4-2: Delineated Stream Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Stream ID	Location		Flow Regime <sup>1</sup>	Length (ft) within ESB	Average OHWM Width (ft)	Average TOB Width (ft)	HHEI/QHEI Score	Category/ Designation
	Latitude	Longitude						
Stream DFS-01	41.58378	-83.92121	Intermittent	4,854	5	20	HHEI 45	Modified Class II
Stream DFS-02	41.56819	-83.94551	Intermittent	600	7	20	HHEI 33	Modified Class II
Stream DFS-03	41.56370	-83.94712	Perennial	350	7	25	QHEI 55.5	Good Warmwater
Stream DFS-04	41.56763	-83.97011	Intermittent	722	7	15	HHEI 55	Modified Class II
Stream DFS-05	41.55694	-83.95311	Perennial	367	20	20	QHEI 46.5	Fair Warmwater
Stream DFS-06	41.56532	-83.99924	Perennial	377	40	40	QHEI 47.5	Fair Warmwater
Stream DFS-07	41.55988	-84.05294	Ephemeral	47	4	30	HHEI 49	Modified Class II
Total Stream Length (ft)				7,317				

<sup>1</sup>Flow regime estimated based on analysis of drainage area, gradient, and observations at the time of survey

### 4.2.1 QHEI Results

Three streams, totaling 1,094 linear feet within the ESB, were evaluated using QHEI methodology. Two were classified as Fair Warmwater streams and one was classified as a Good Warmwater stream. The completed QHEI forms are included in Appendix D and Table 4-4 provides a summary of streams identified within the ESB that were assessed using the QHEI.

TABLE 4-4: QHEI Stream Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Flow Regime	QHEI Narrative Category					Number of Streams	Length (feet) within ESB
	Very Poor Warmwater	Poor Warmwater	Fair Warmwater	Good Warmwater	Excellent Warmwater		
Perennial	0	0	2	1	0	3	1,094
Total	0	0	2	1	0	3	1,094

### 4.2.2 HHEI Results

Four headwater streams, totaling 6,223 linear feet within the ESB, were evaluated using the HHEI methodology. All four streams were categorized as Modified Class II stream. Of the four streams, one was an ephemeral stream and three were intermittent streams. Completed HHEI forms are provided in Appendix E and Table 4-6 provides a summary of streams identified within the ESB that were assessed using the HHEI.

TABLE 4-6: HHEI Stream Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Flow Regime <sup>1</sup>	HHEI Class						Number of Streams	Length (feet) within ESB
	Modified Class I	Class I	Modified Class II	Class II	Modified Class III	Class III		
Ephemeral	0	0	1	0	0	0	1	47
Intermittent	0	0	3	0	0	0	3	6,176
Perennial	0	0	0	0	0	0	0	0
Total	0	0	4	0	0	0	4	6,223

<sup>1</sup>Flow regime estimated based on analysis of drainage area, gradient, and observations at the time of survey

### 4.3 Ponds/Open Water

Three ponds totaling 0.46 acres were identified within the ESB and can be found on Figures 3-1 to 3-19. Detailed information for each delineated pond within the ESB is provided in Table 4-3. Representative photographs and more detailed information on pond conditions can be found in Appendix F.

TABLE 4-3: Delineated Pond Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-Alternate Route*

Pond ID	Location		Area (ac) within ESB
	Latitude	Longitude	
Pond DFS-01	41.58094	-83.94170	0.10
Pond DFS-02	41.56358	-84.03825	0.19
Pond DFS-03	41.56388	-84.03927	0.17
Total Pond Area (ac)			0.46



## 5 Conclusion

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Jacobs conducted an environmental survey of the Alternate Route of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project in September, October, and December 2022. Two wetlands, seven streams, and two ponds were delineated within the environmental survey boundary. The two wetlands totaled 3.49 acres within the ESB and were identified as a PEM wetland and a PFO wetland. Both of the wetlands were Category 1 wetlands. No Category 2 or 3 wetlands were identified within the ESB.

The seven streams totaled 7,317 linear feet within the ESB and included one ephemeral stream, three intermittent streams, and three perennial streams. Three streams were assessed using the QHEI methodology (drainage area greater than 1 mi<sup>2</sup>) and four streams were assessed using the HHEI methodology (drainage area less than 1 mi<sup>2</sup>). Additionally, three ponds were identified totaling 0.46 acres within the ESB.

The jurisdiction of all assessed features will be determined by the USACE and state-established water quality standards based on hydrologic connectivity. Further coordination with the USACE and state regulating agency is recommended prior to the submittal of any permit or construction activities.

The results of the wetland and waterbody field survey described in this Report conducted by Jacobs are limited to the what was identified within the ESB. The information contained in this Report is for a study area that may be much larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed in this Report may likely not constitute the actual impacts of the Project at the time of construction. If permits are determined to be necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

The wetland and waterbodies field survey results presented within this Report apply to the site conditions at the time of our assessment. Changes within the environmental survey boundary that may occur with time due to natural processes or human impacts at the project site or on adjacent properties, could invalidate the findings of this Report, especially if Jacobs is unaware and has not had the opportunity to revisit the Project. Additionally, changes in applicable standards and regulations may also occur as a result of legislation or the expansion of information over time. Therefore, the findings of this Report may be invalidated, wholly or in part, by changes that are beyond the control of Jacobs.

## 6 References

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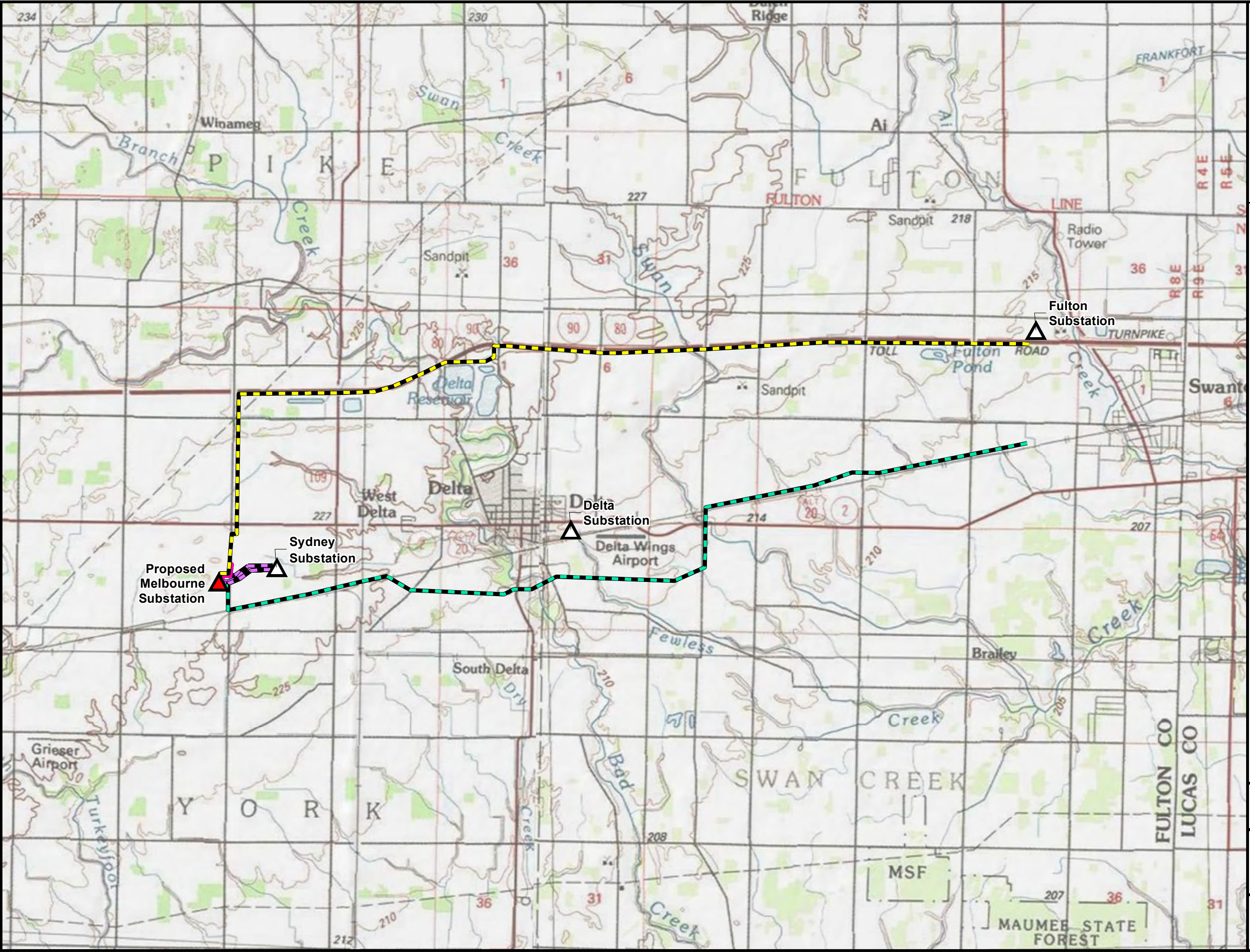


## Appendix A Figures

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**LOCATOR MAP**

**LEGEND:**

- Existing Substation
- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line (Preferred and Alternate Routes)

BASE MAP SOURCE:  
Esri USA Topo Map  
USGS 7.5 Minute  
Topographic Quadrangles:  
Delta and Swanton

Coordinate System: State Plane  
Ohio North FIPS 3401 Feet  
Datum: NAD 1983  
Scale: 1:24,000

2/6/2023

**ATSI**  
American Transmission Systems, Inc.  
a subsidiary of FirstEnergy Corp.

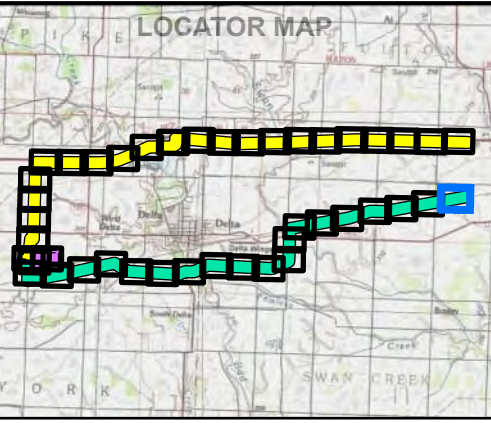
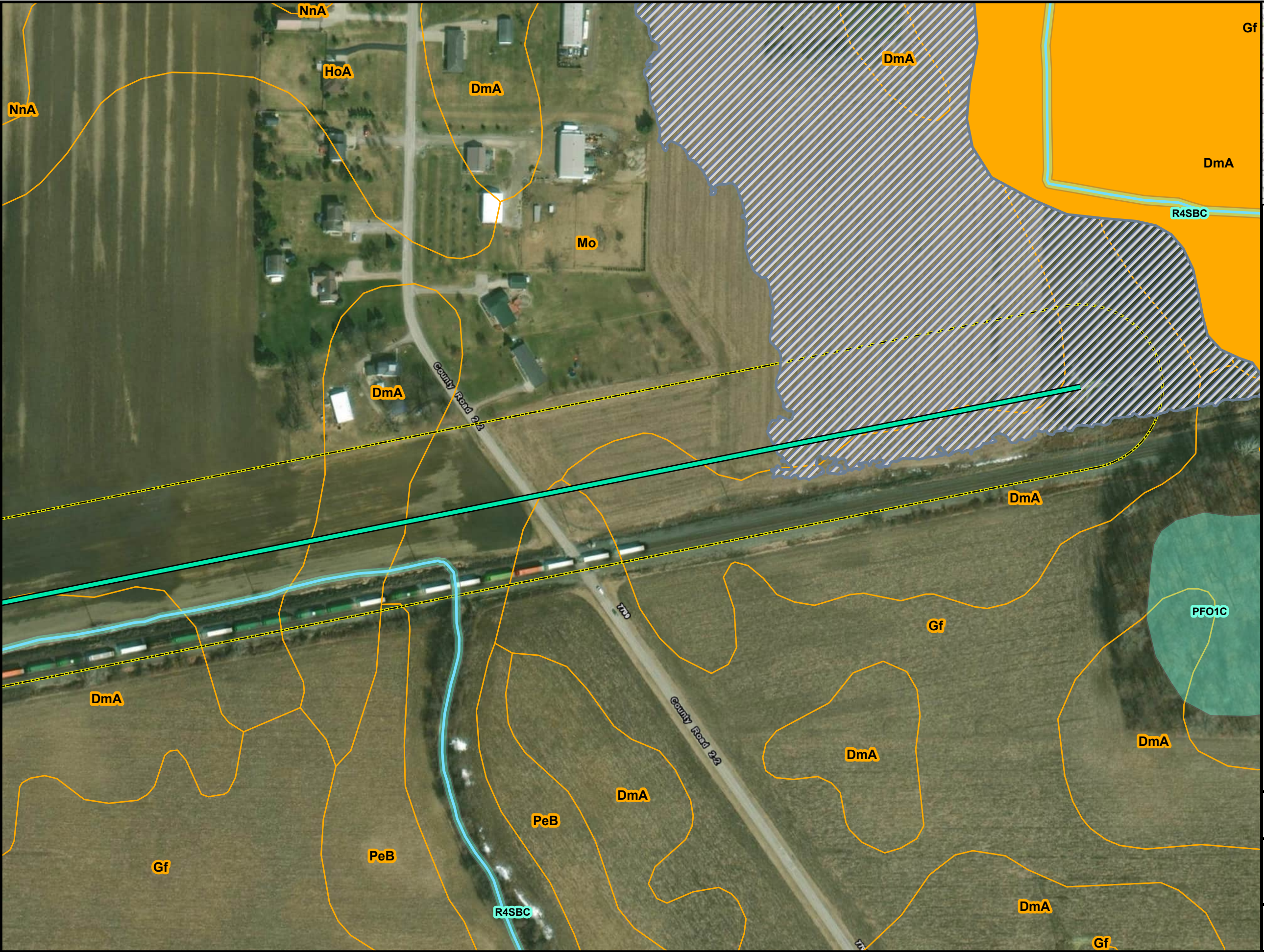
Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

**FIGURE 1  
OVERVIEW MAP**

0 4,500 9,000  
FEET



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit






**ATSI**  
American Transmission Systems, Inc.  
A subsidiary of FirstEnergy Corp.

Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

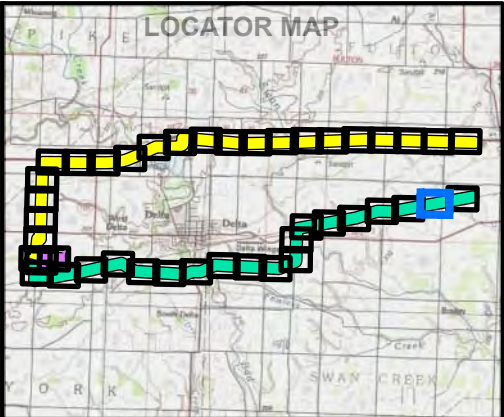
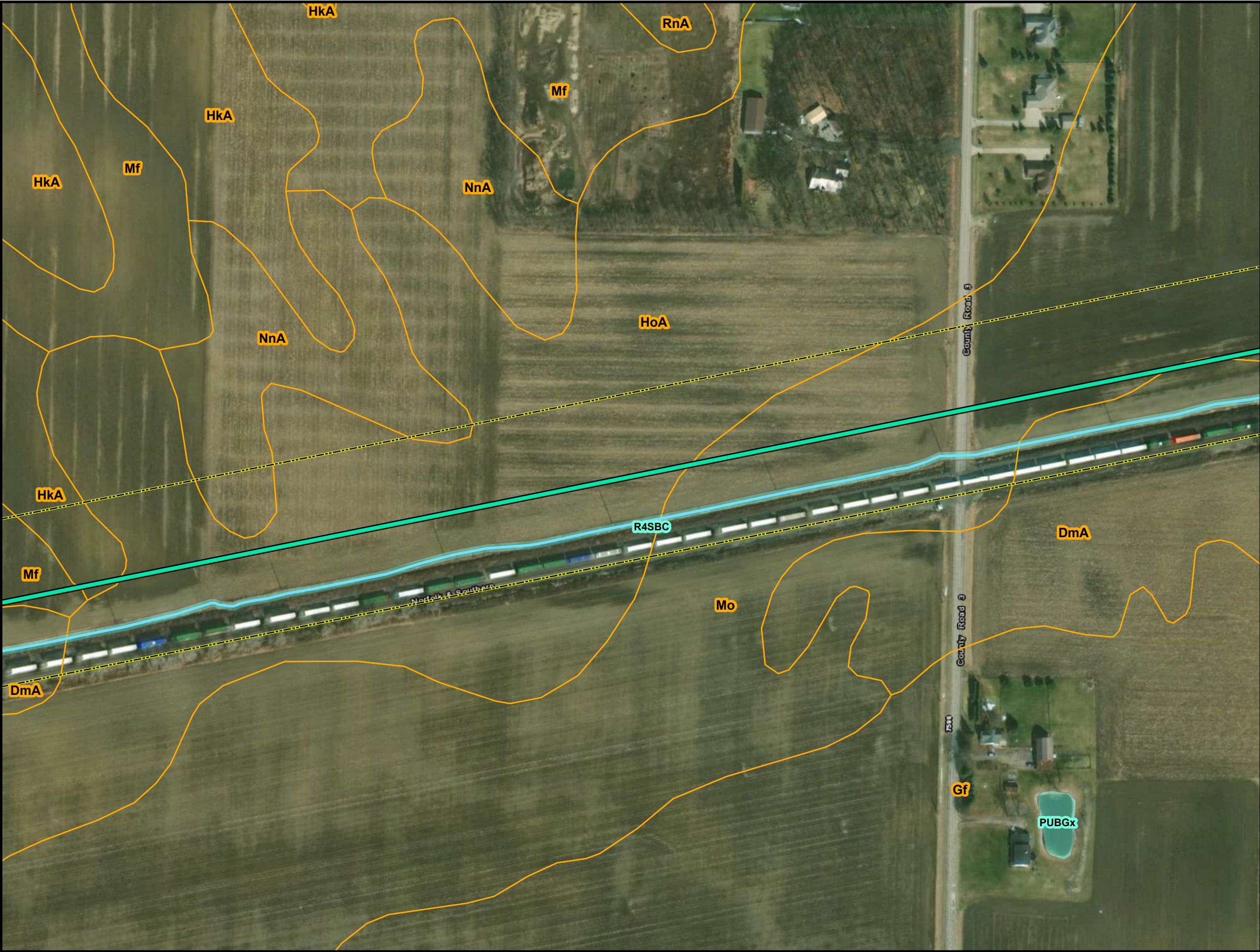
ALTERNATE ROUTE  
FIGURE 2-1  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023





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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



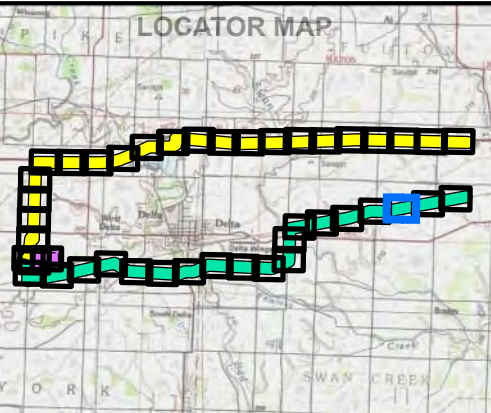
<b>ATSI</b> American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**ALTERNATE ROUTE  
FIGURE 2-2  
SOILS, NHD, NWI, FEMA MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



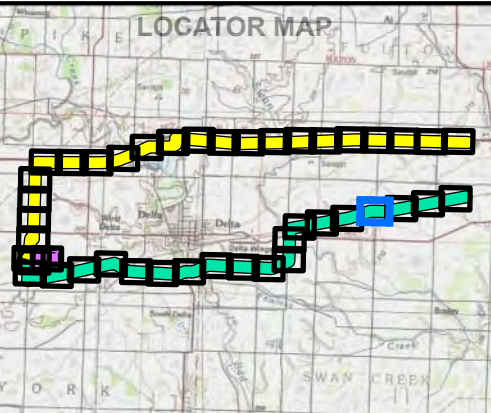
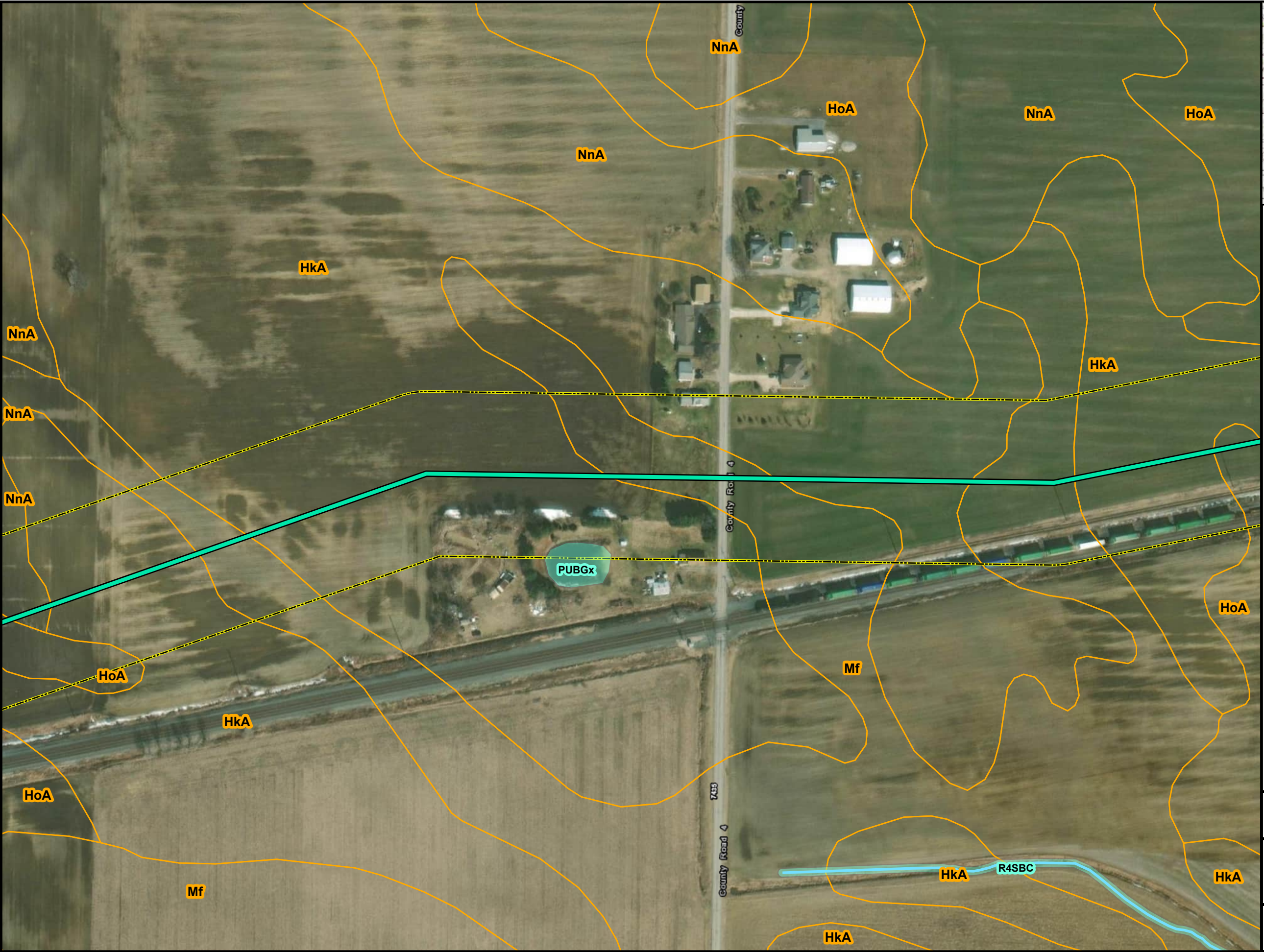
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 2-3  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023	
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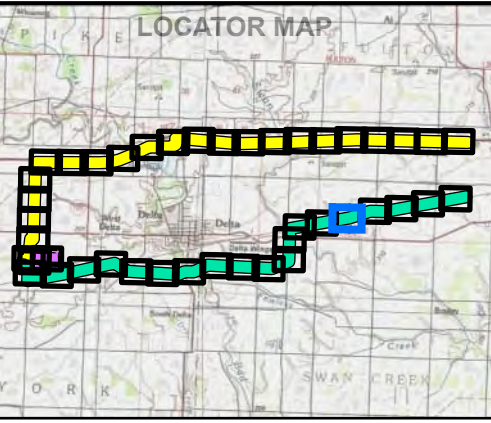
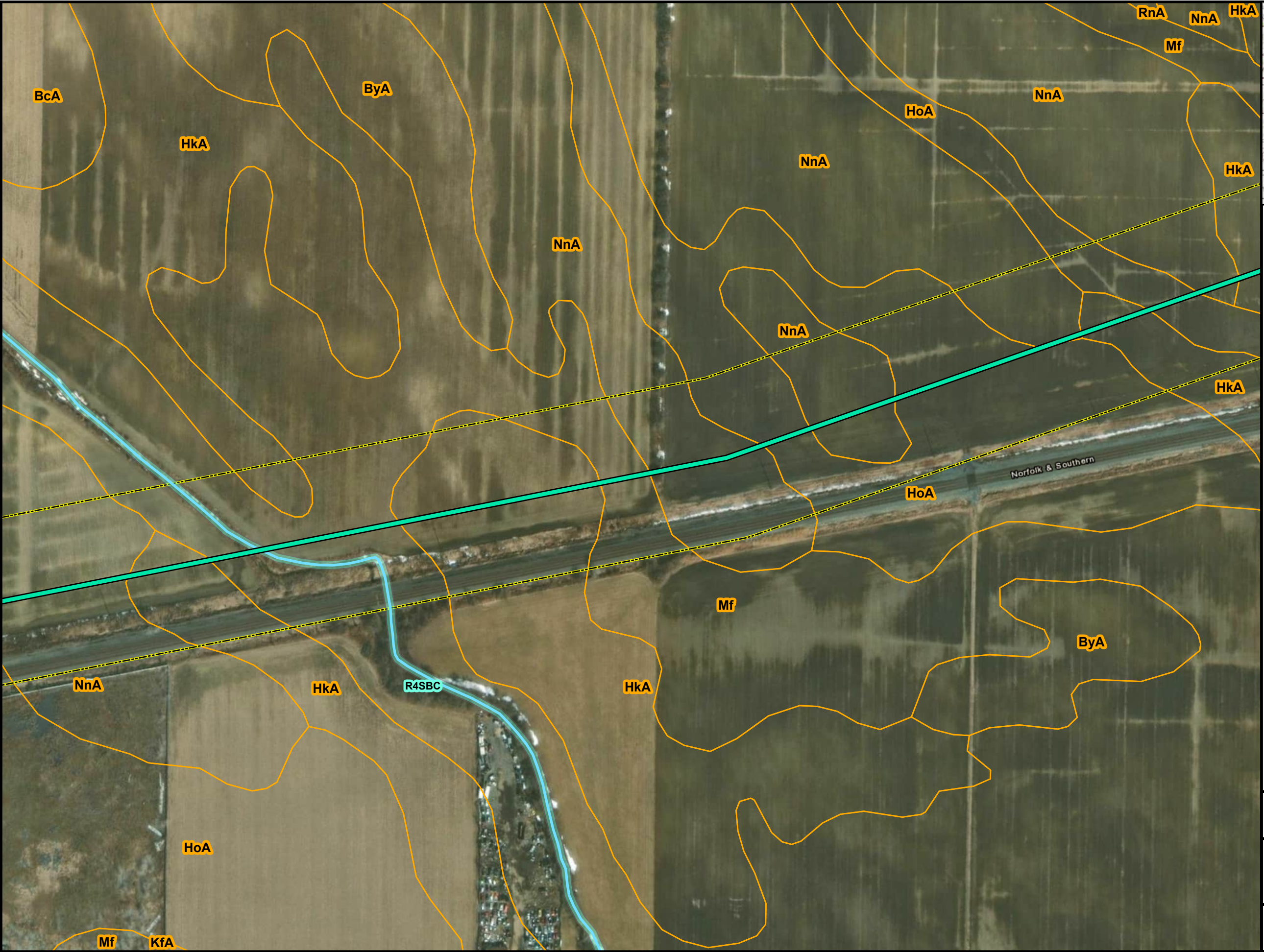
- Preferred Route
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- Soil Map Unit



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ALTERNATE ROUTE FIGURE 2-4 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



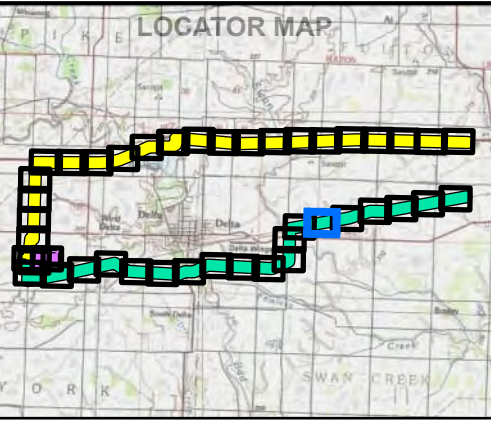
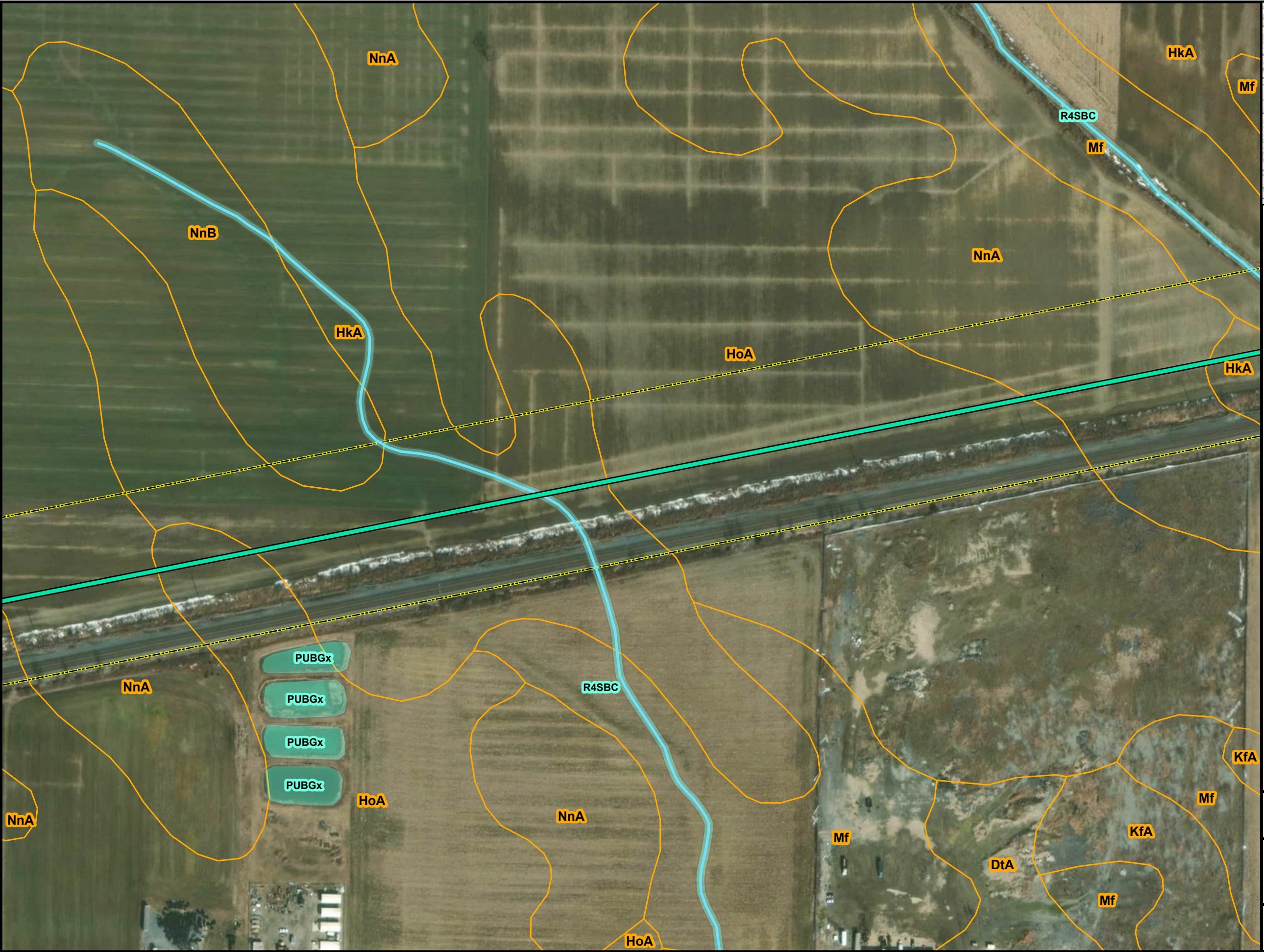
 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<i>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</i>
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ALTERNATE ROUTE  
FIGURE 2-5  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023	
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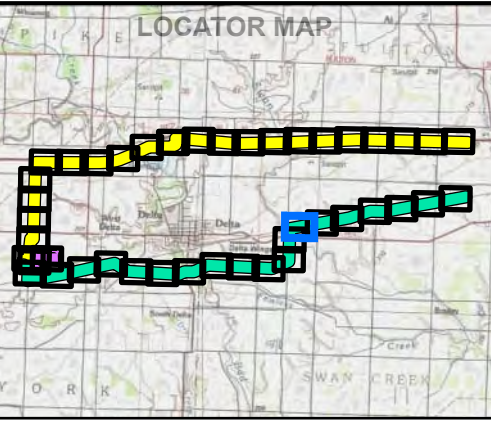
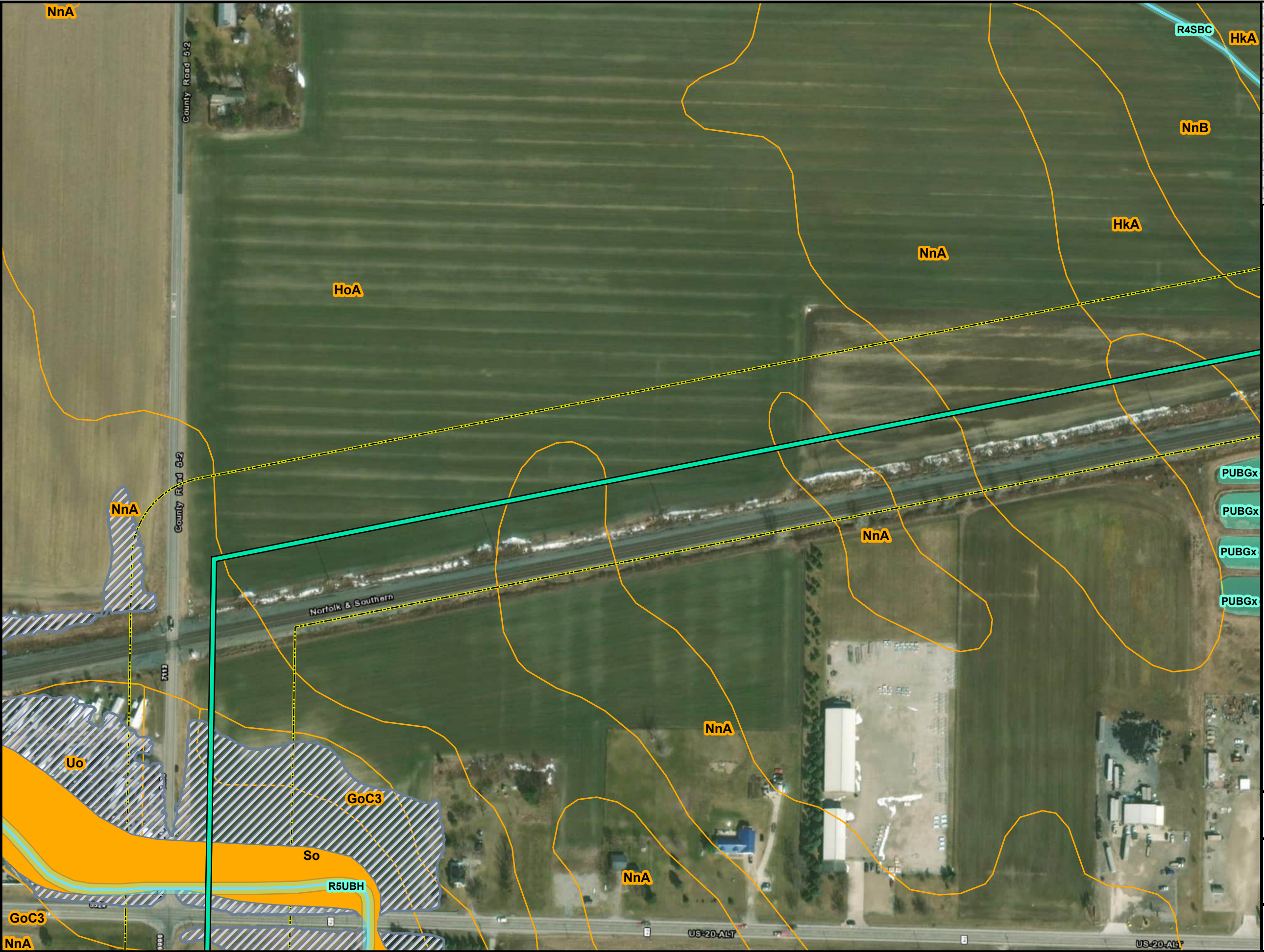
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<i>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</i>
<b>ALTERNATE ROUTE FIGURE 2-6 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>

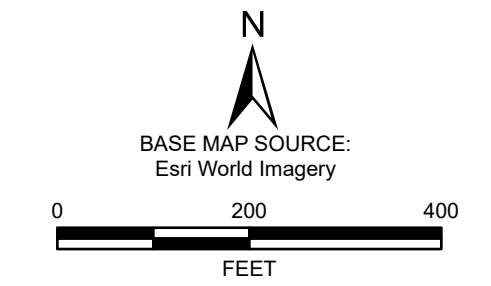


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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



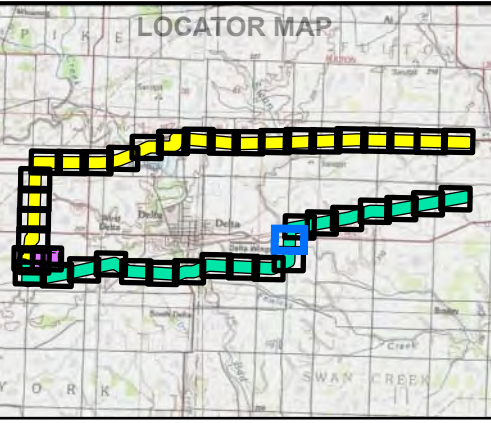
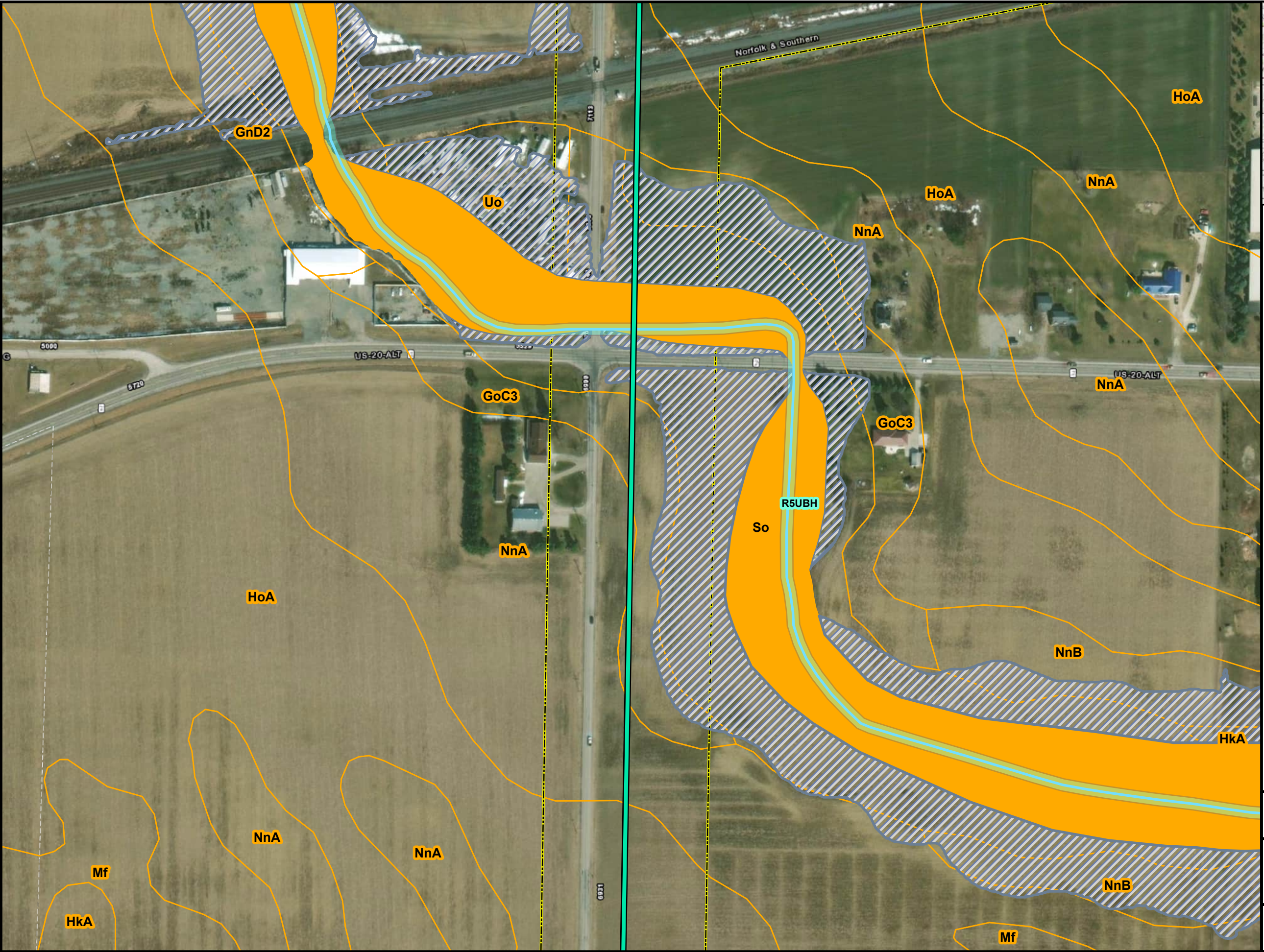
<b>ATSI</b> <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**ALTERNATE ROUTE  
FIGURE 2-7  
SOILS, NHD, NWI, FEMA MAP**

DATE: 2/23/2023	<b>Jacobs</b>
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**LEGEND:**

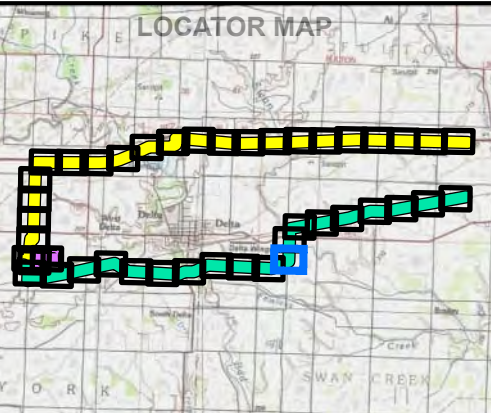
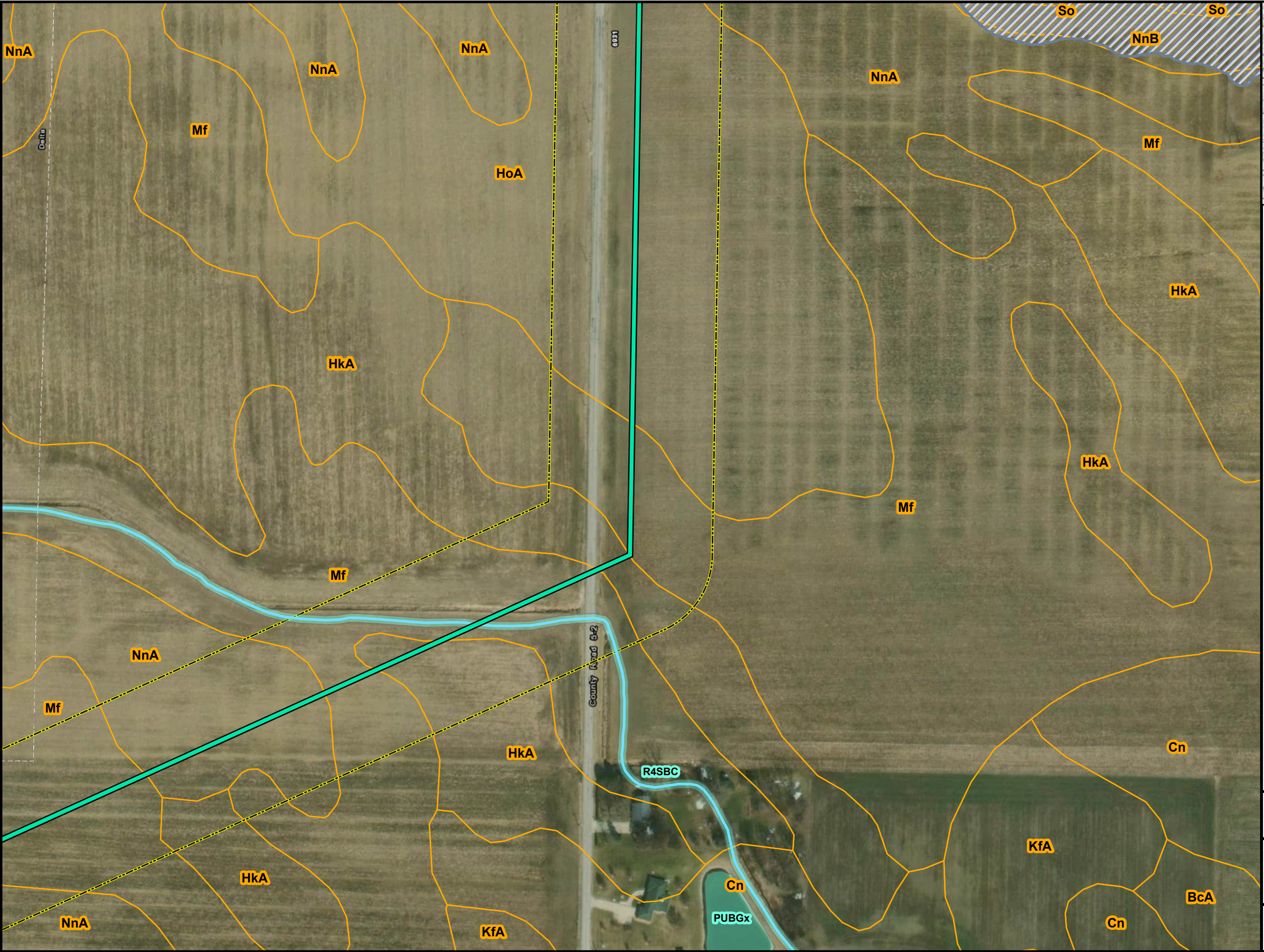
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



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<b>ALTERNATE ROUTE FIGURE 2-8 SOILS, NHD, NWI, FEMA MAP</b>	
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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit

N

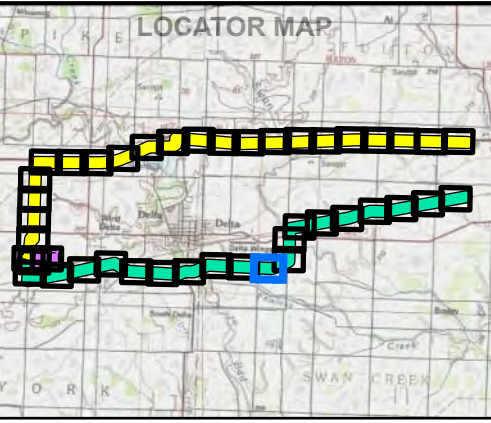
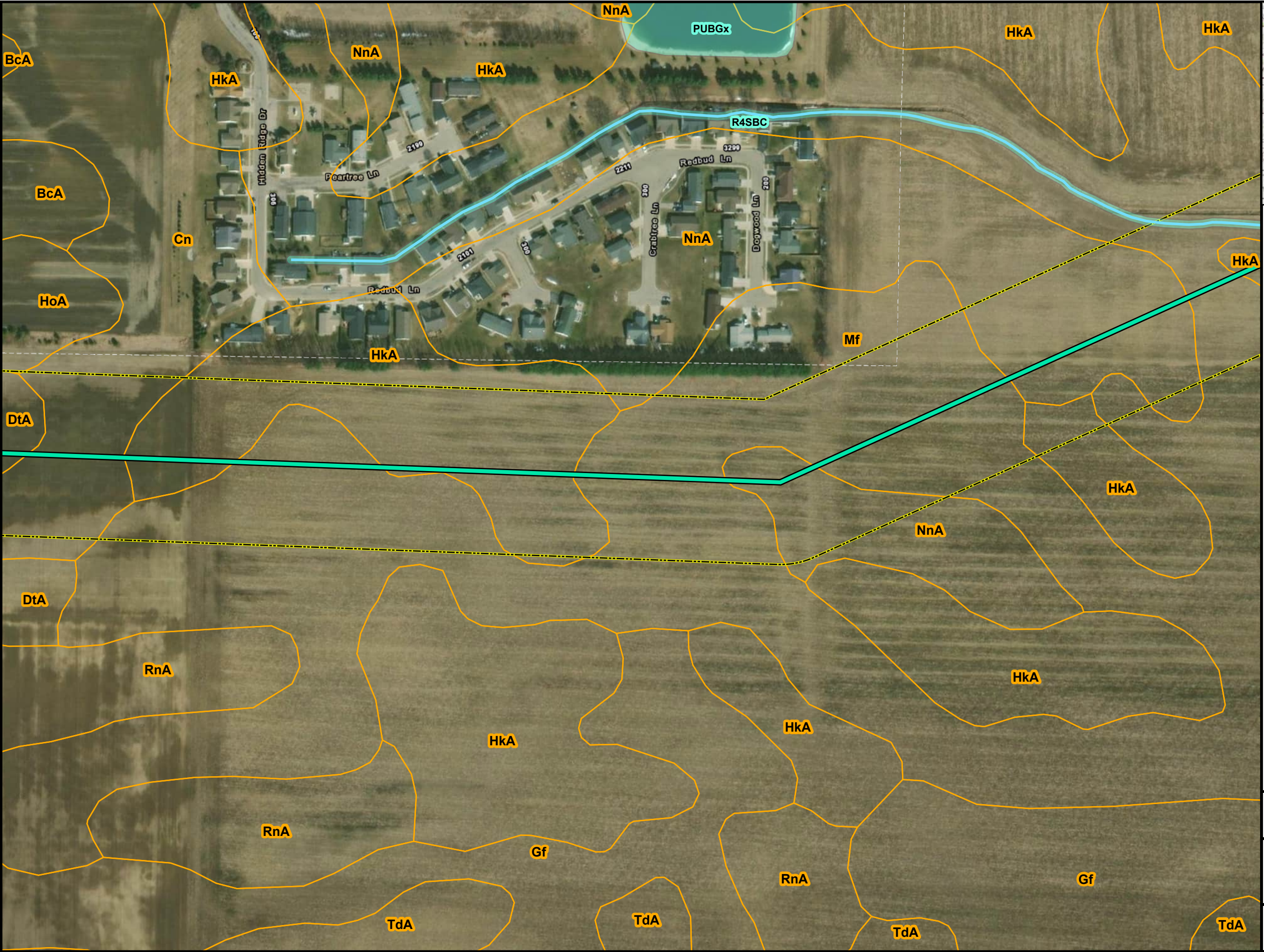
BASE MAP SOURCE:  
Esri World Imagery

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 <b>ATSI</b> <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<i>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</i>
<b>ALTERNATE ROUTE FIGURE 2-9 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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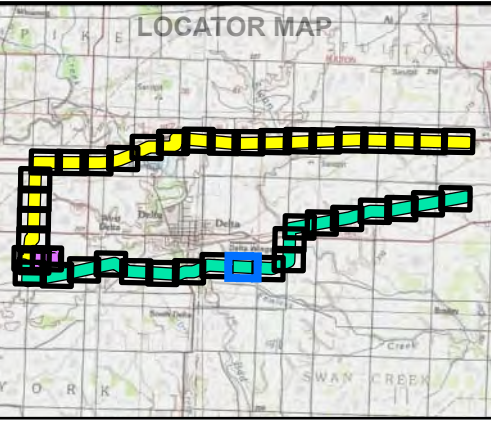
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
ALTERNATE ROUTE FIGURE 2-10 SOILS, NHD, NWI, FEMA MAP	
DATE: 2/23/2023	



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit





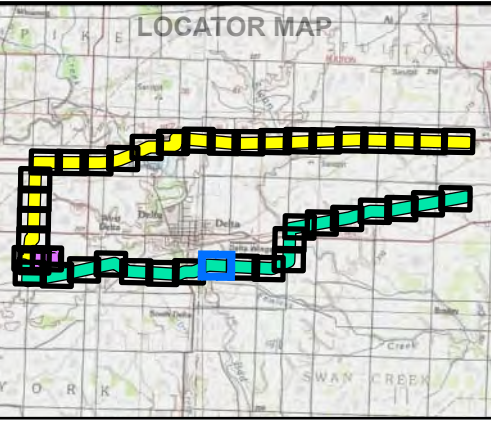
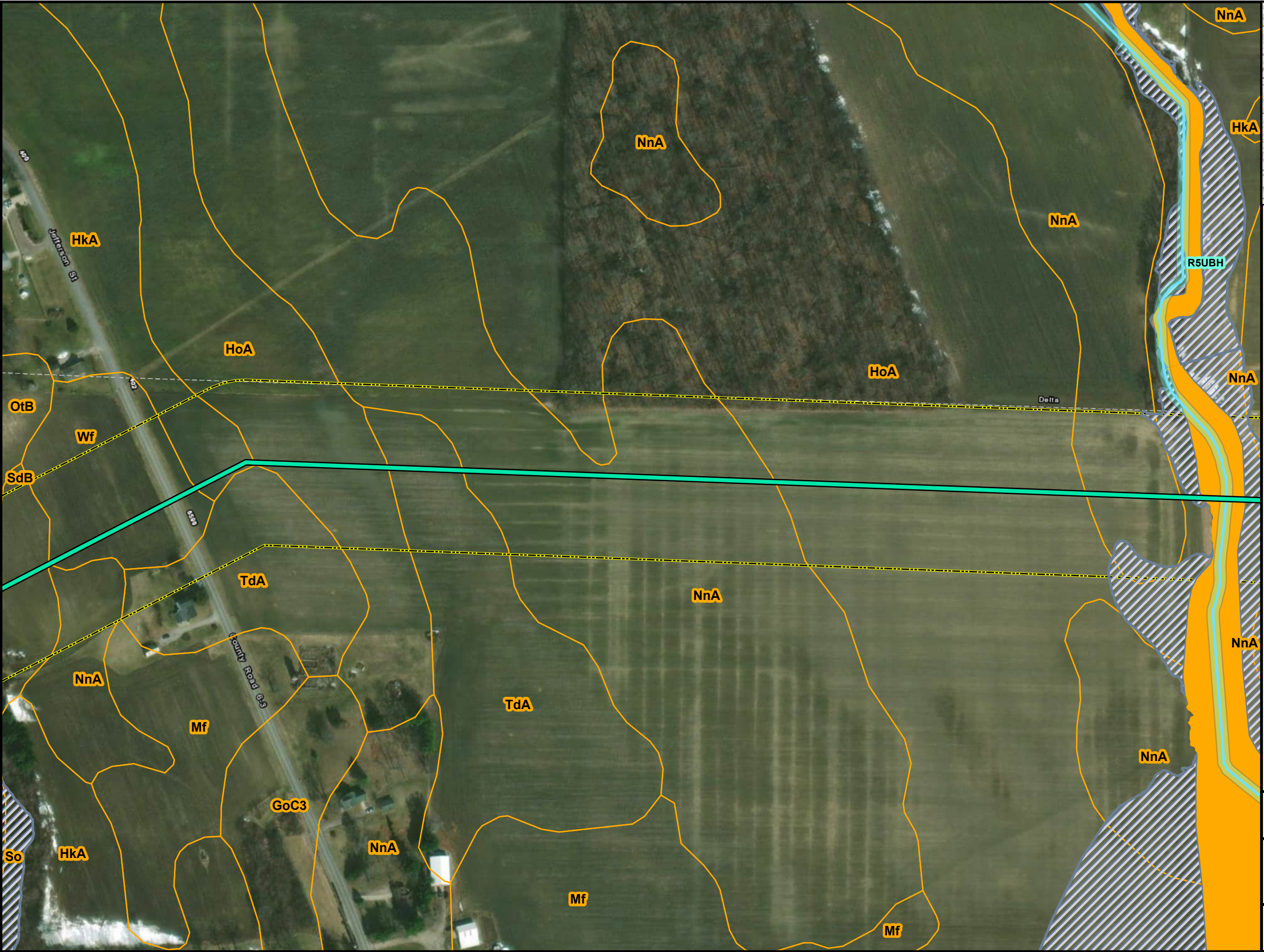
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*Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project*

ALTERNATE ROUTE  
FIGURE 2-11  
SOILS, NHD, NWI, FEMA MAP




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**LEGEND:**

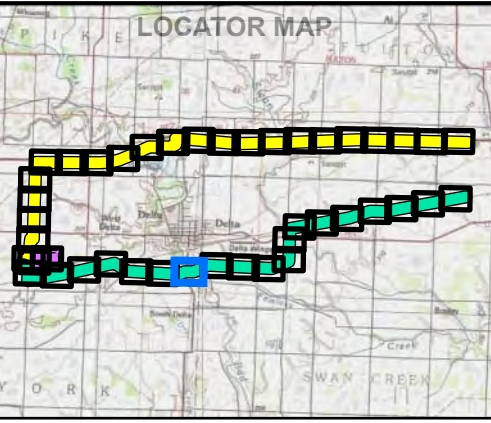
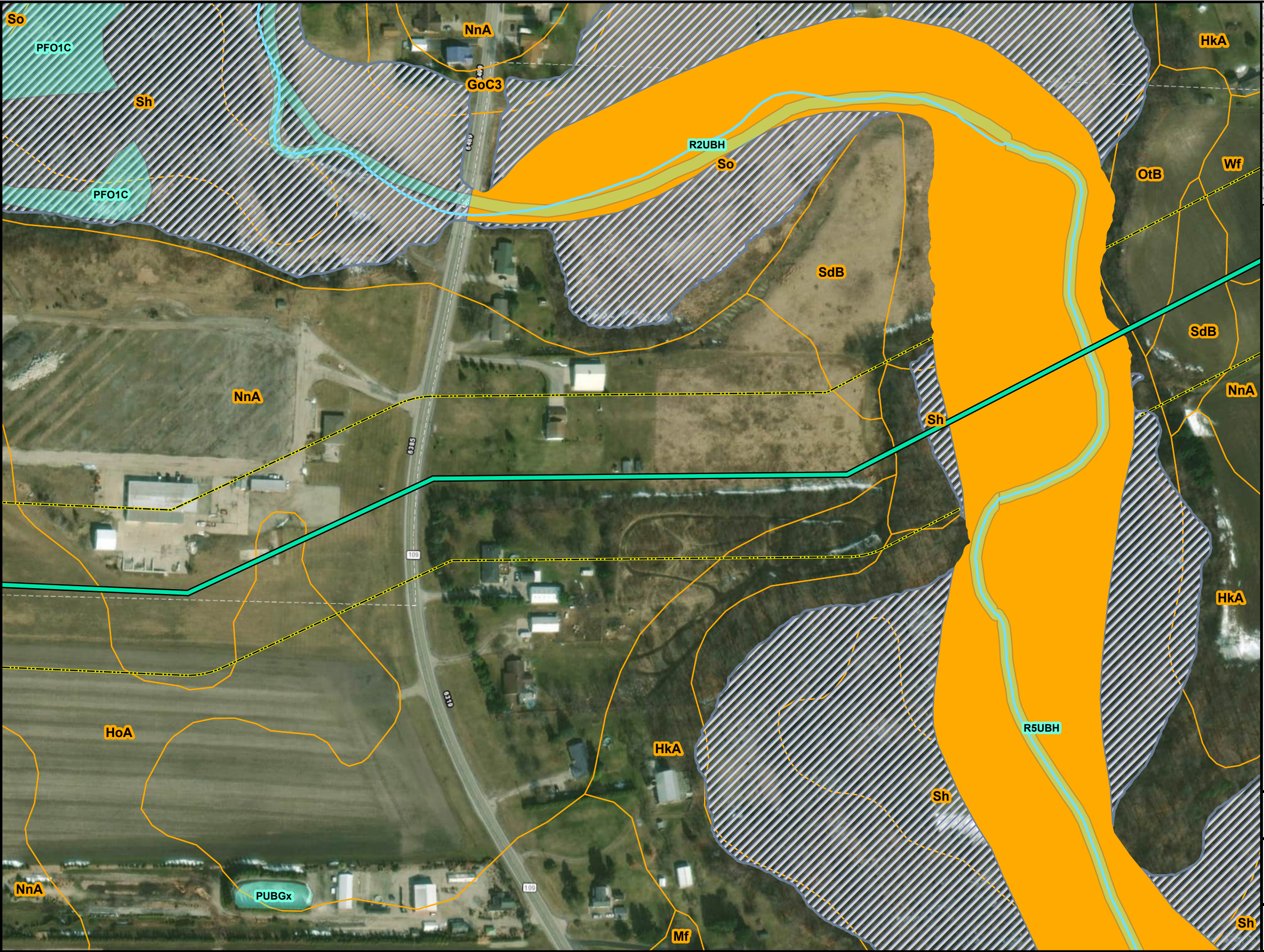
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



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<b>ALTERNATE ROUTE FIGURE 2-12 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



BASE MAP SOURCE:  
Esri World Imagery

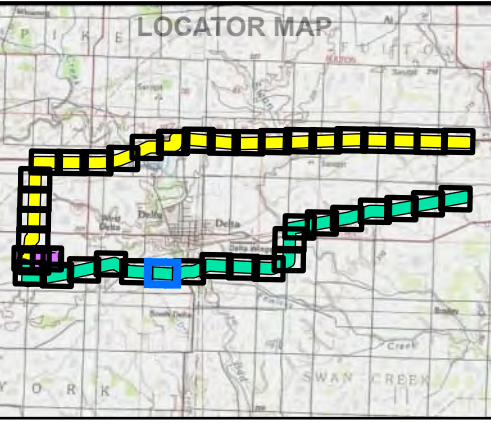


Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

ALTERNATE ROUTE  
FIGURE 2-13  
SOILS, NHD, NWI, FEMA MAP



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit





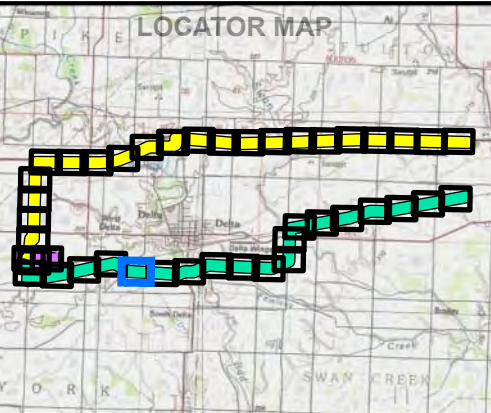
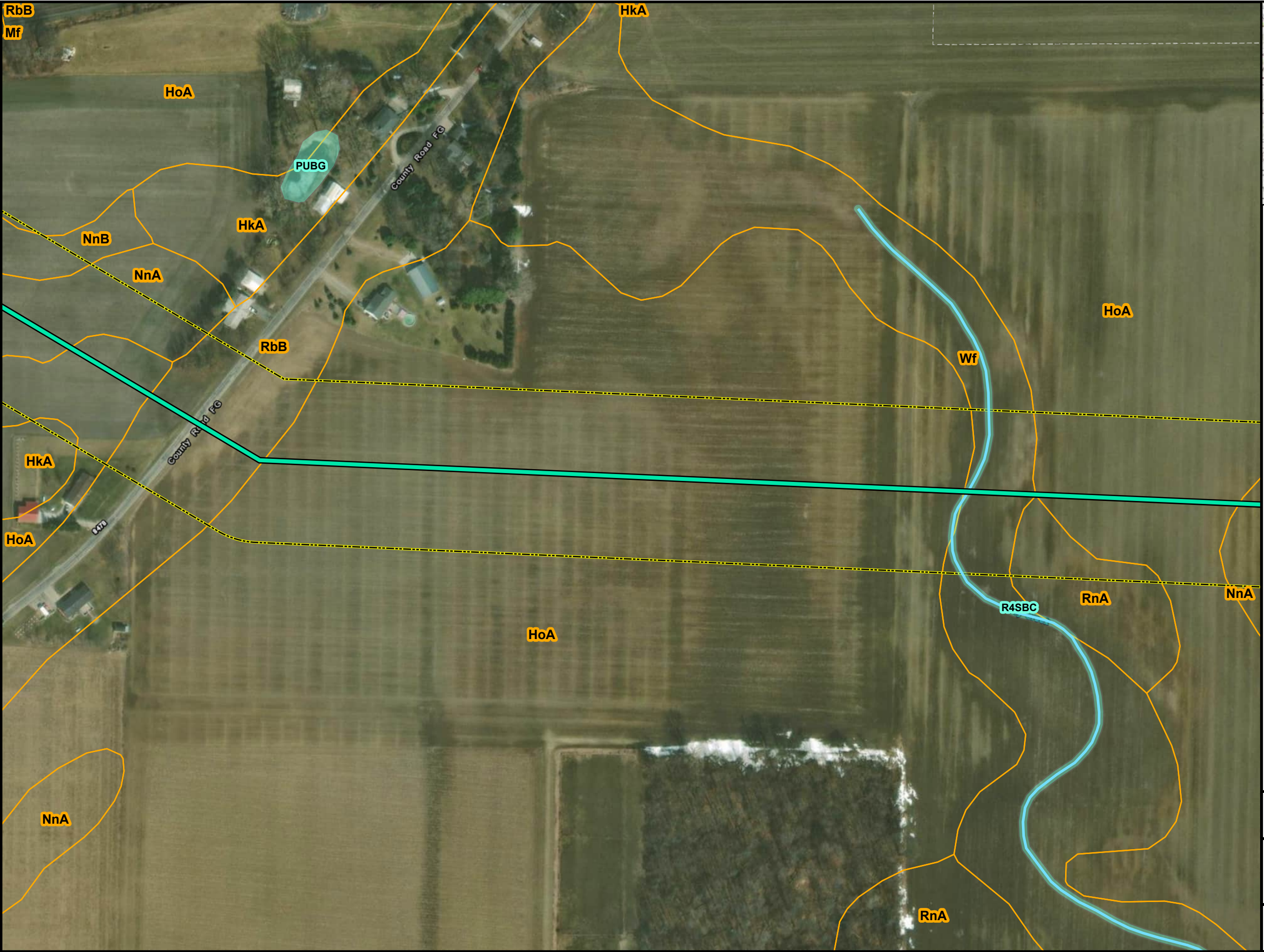
American Transmission Systems, Inc.  
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Transmission Line Tap to  
Melbourne Substation Project*

ALTERNATE ROUTE  
FIGURE 2-14  
SOILS, NHD, NWI, FEMA MAP



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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

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*Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project*

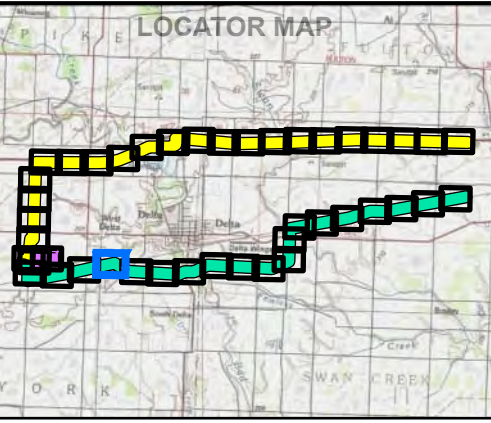
ALTERNATE ROUTE  
FIGURE 2-15  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023





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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



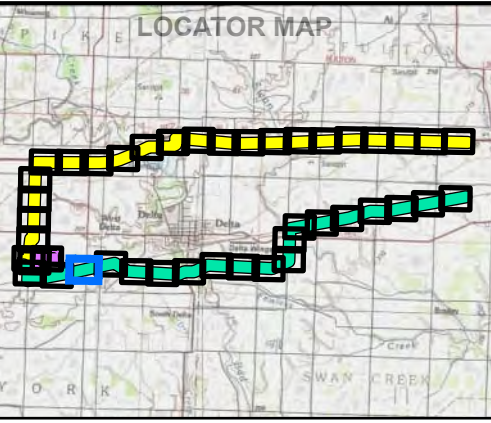
<b>ATSI</b> American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 2-16  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023	<b>Jacobs</b>
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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit






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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

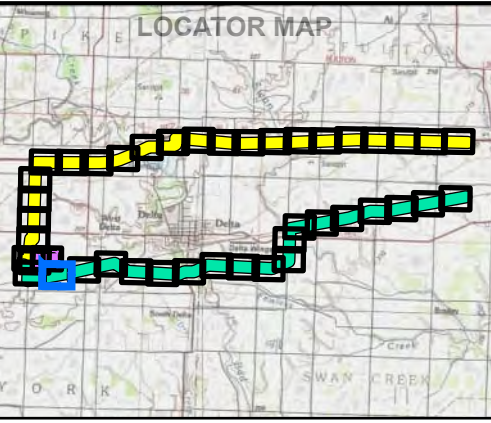
ALTERNATE ROUTE  
FIGURE 2-17  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023





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**LEGEND:**

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Soil Map Unit



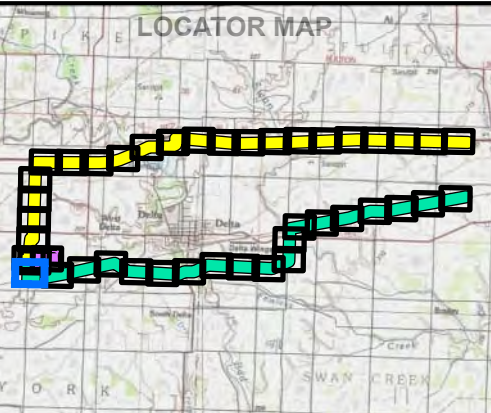
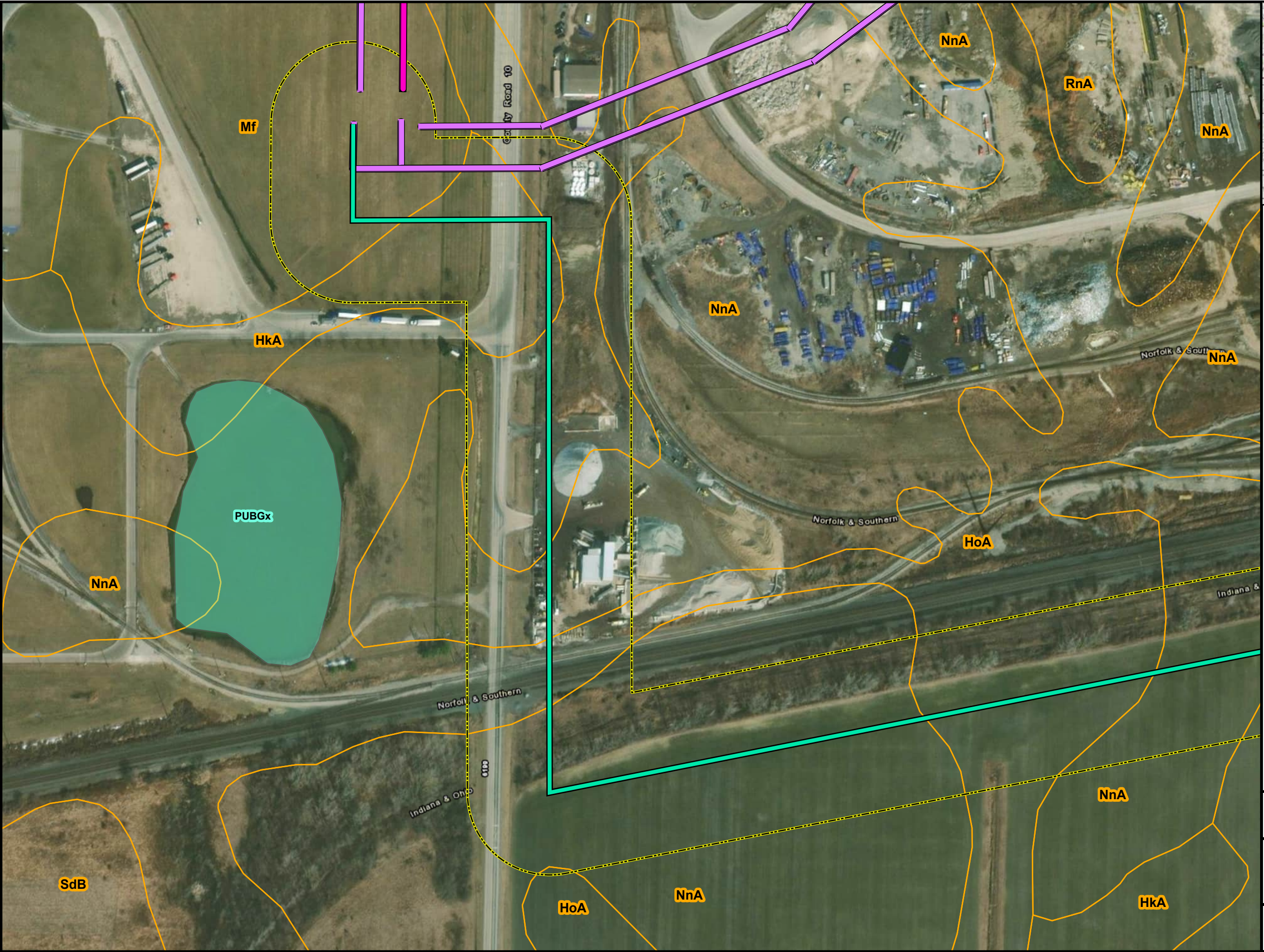
 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 2-18  
SOILS, NHD, NWI, FEMA MAP

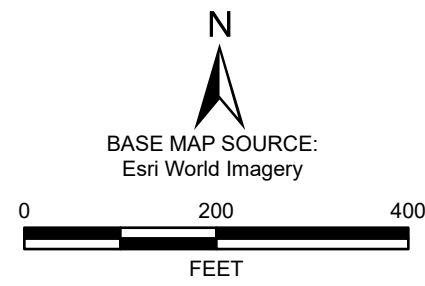
DATE: 2/23/2023	
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- LEGEND:**
- Extension Line
  - Tie Line
  - Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Soil Map Unit



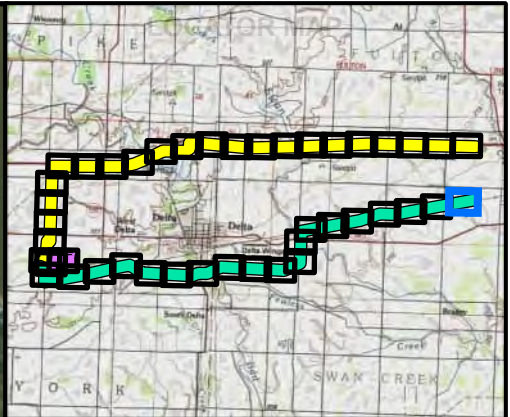
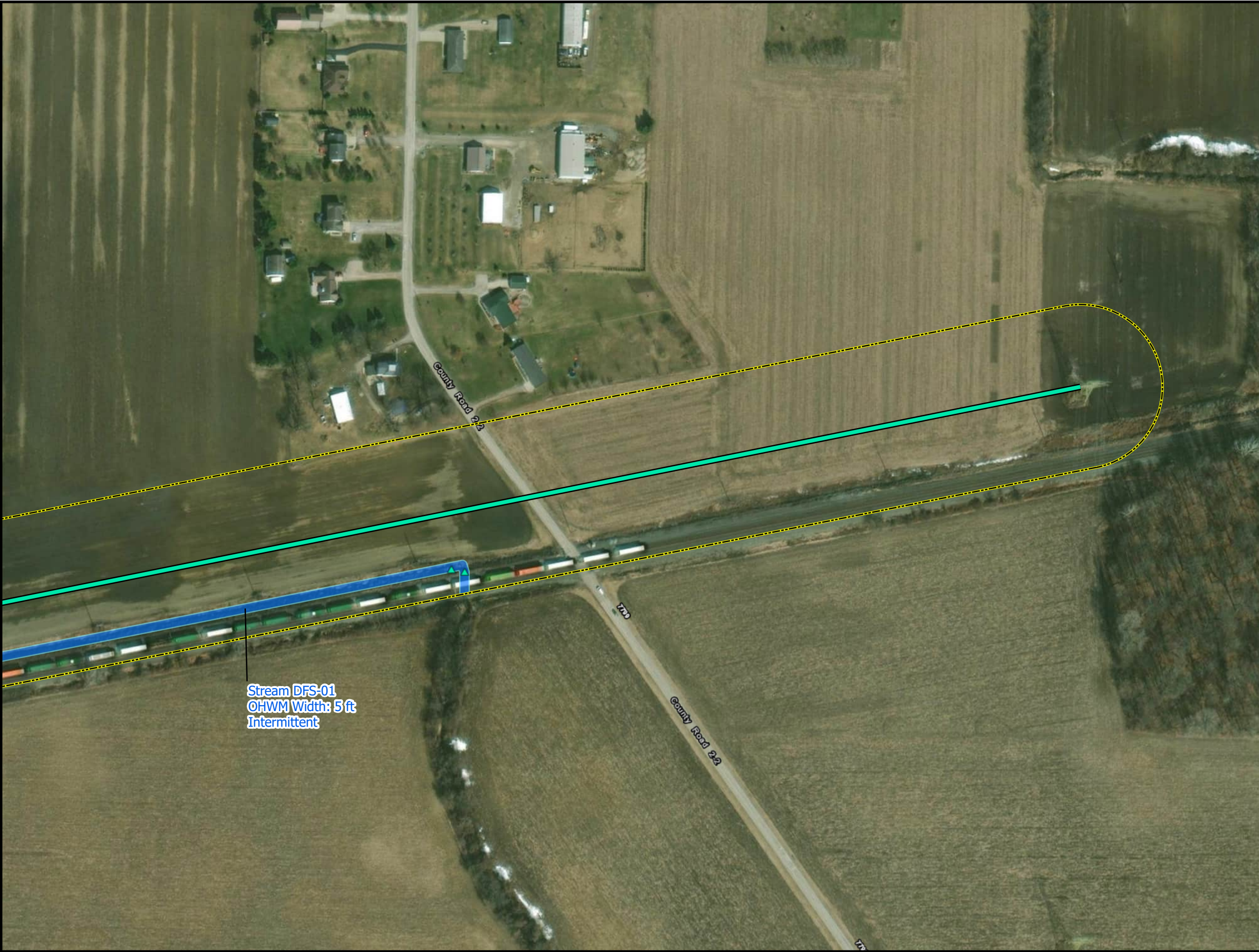
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<small>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</small>
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ALTERNATE ROUTE  
FIGURE 2-19  
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023	<b>Jacobs</b>
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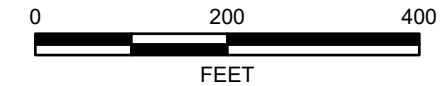


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



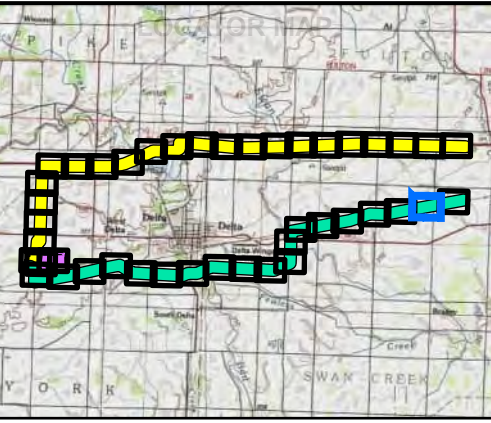
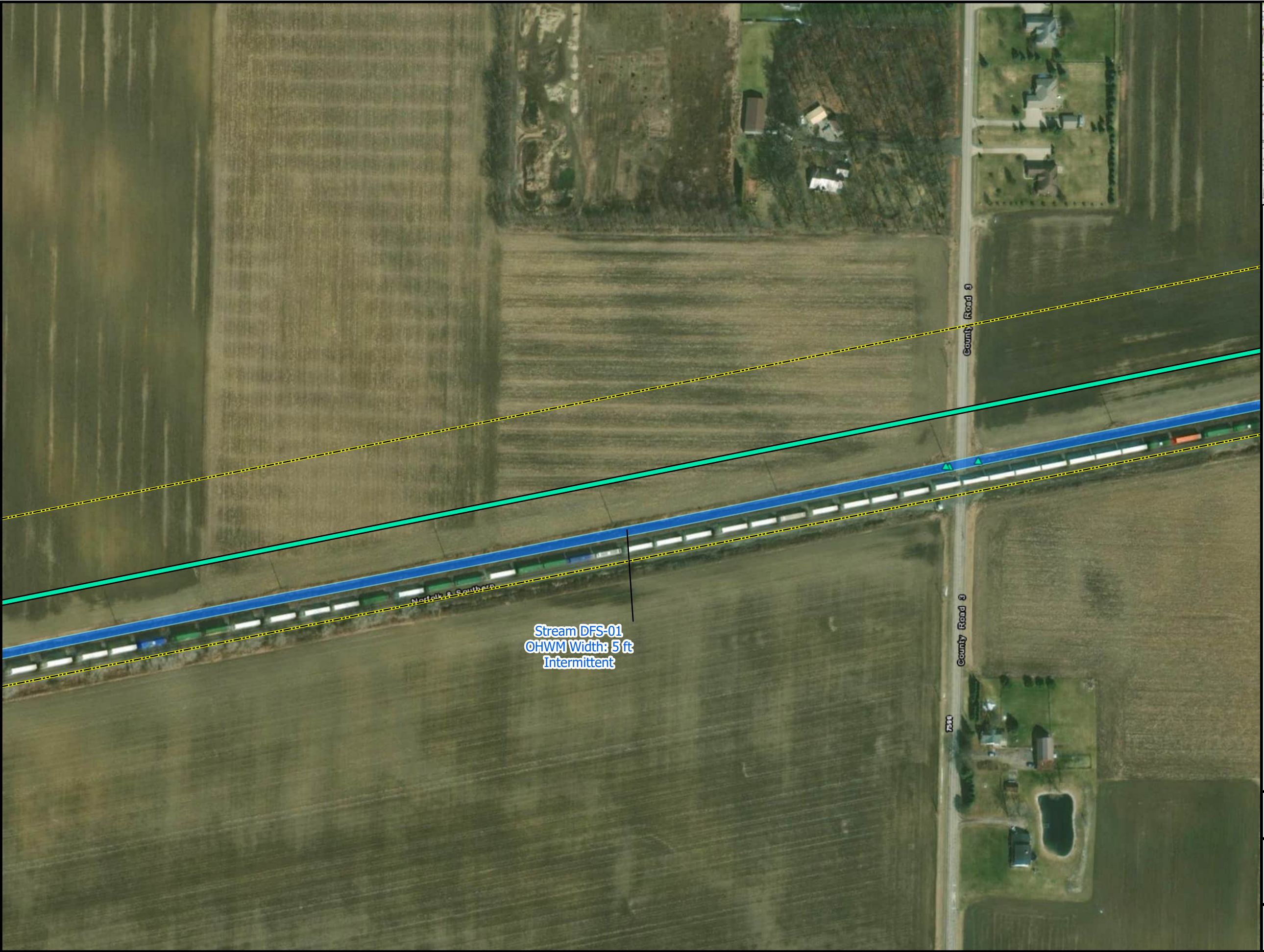
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
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ALTERNATE ROUTE  
FIGURE 3-1  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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- LEGEND:**
- Culvert
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary

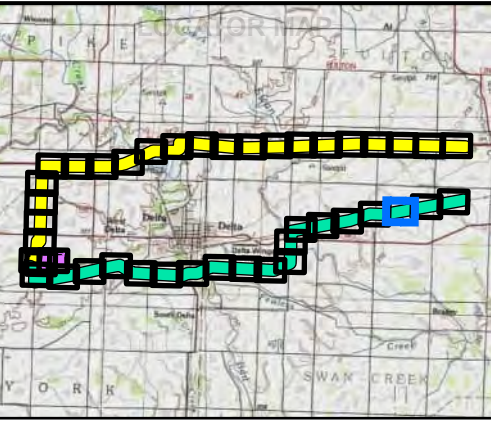


<b>ATSI</b> American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**ALTERNATE ROUTE  
FIGURE 3-2  
DELINEATED FEATURES MAP**



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- LEGEND:**
- Culvert
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary

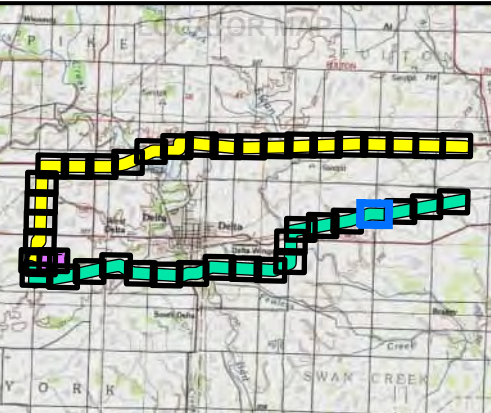


 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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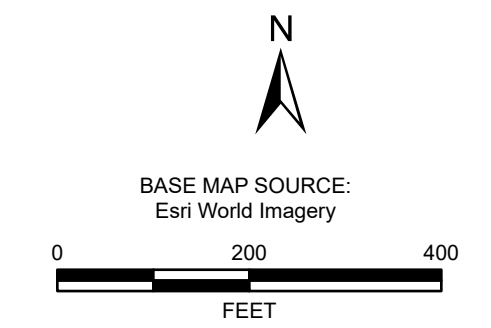
ALTERNATE ROUTE  
FIGURE 3-3  
DELINEATED FEATURES MAP



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- LEGEND:**
- Culvert
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary

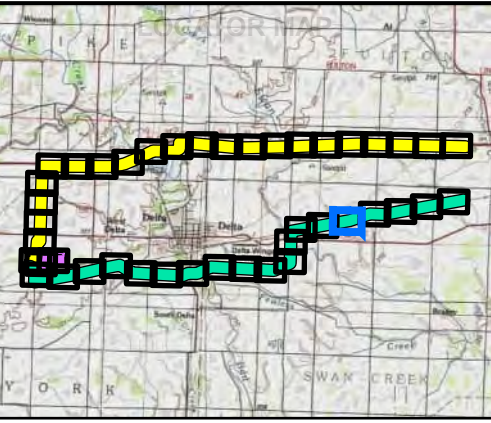
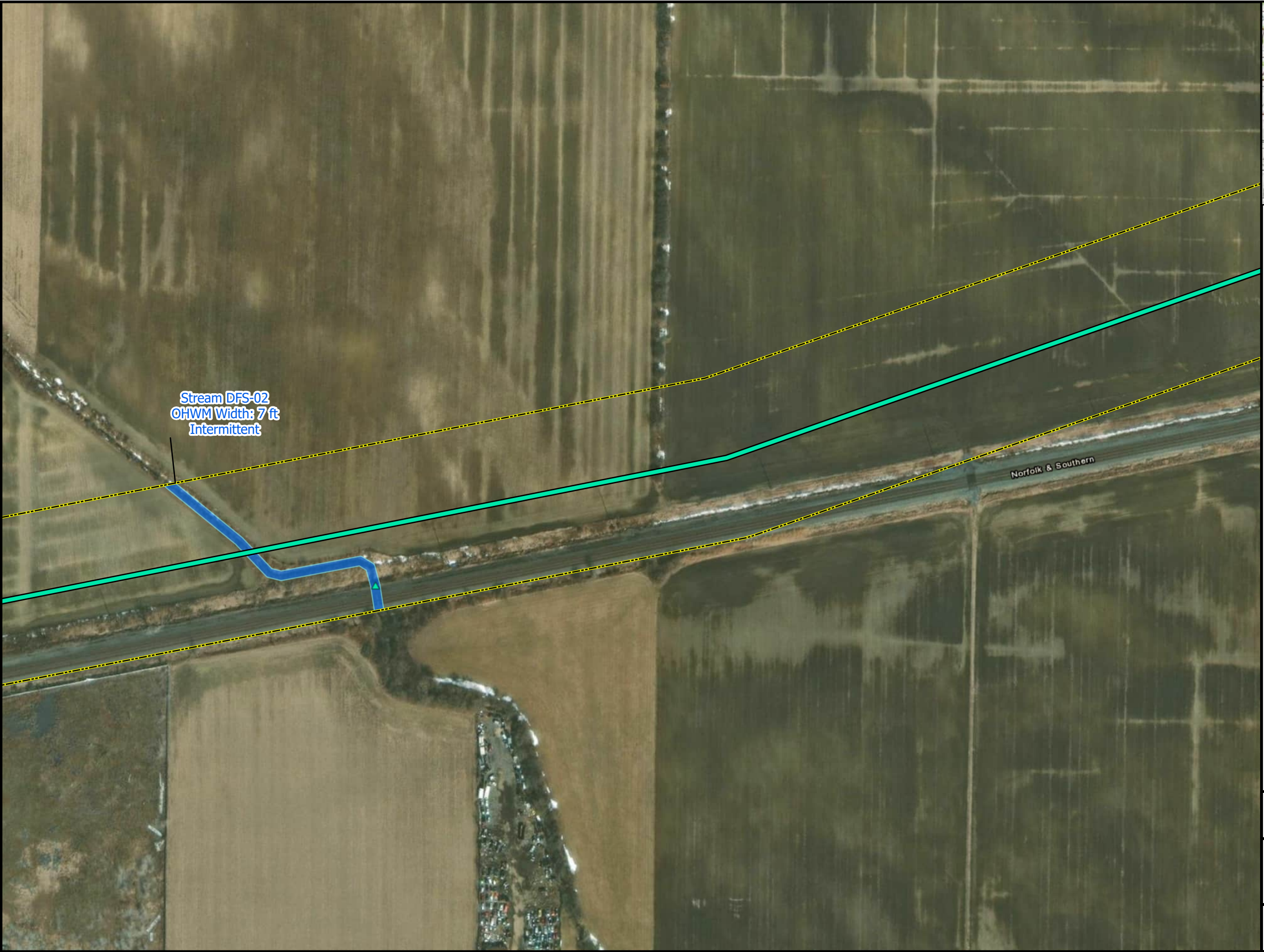


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**ALTERNATE ROUTE  
FIGURE 3-4  
DELINEATED FEATURES MAP**



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- LEGEND:**
- Culvert
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary

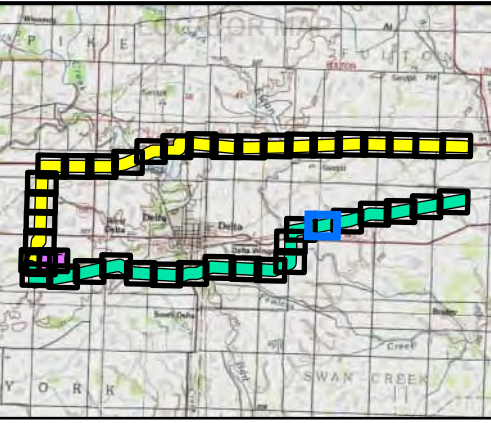
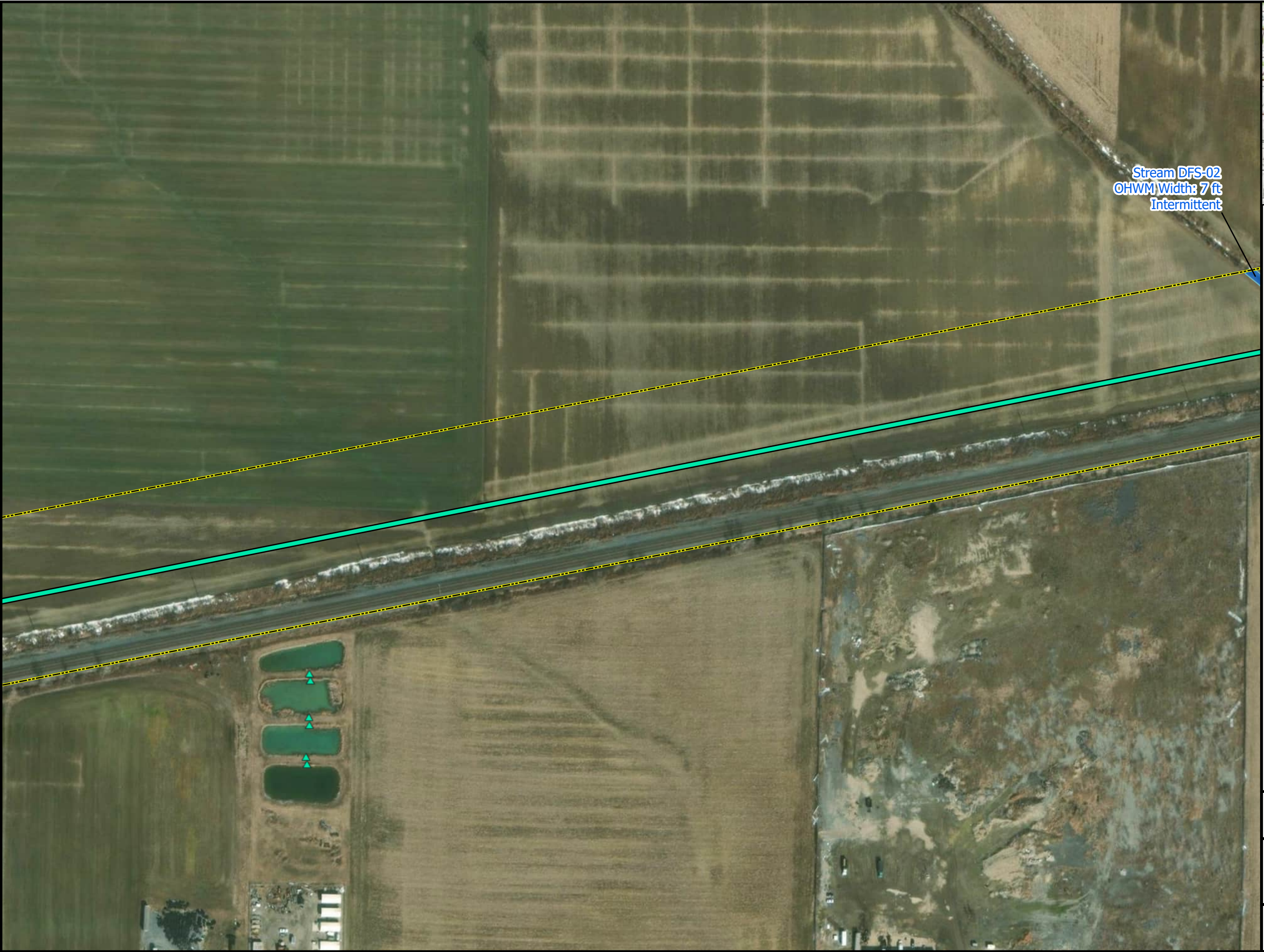


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ALTERNATE ROUTE  
FIGURE 3-5  
DELINEATED FEATURES MAP



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- LEGEND:**
- Culvert
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary





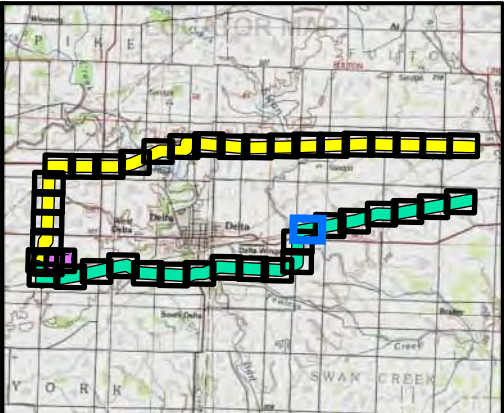
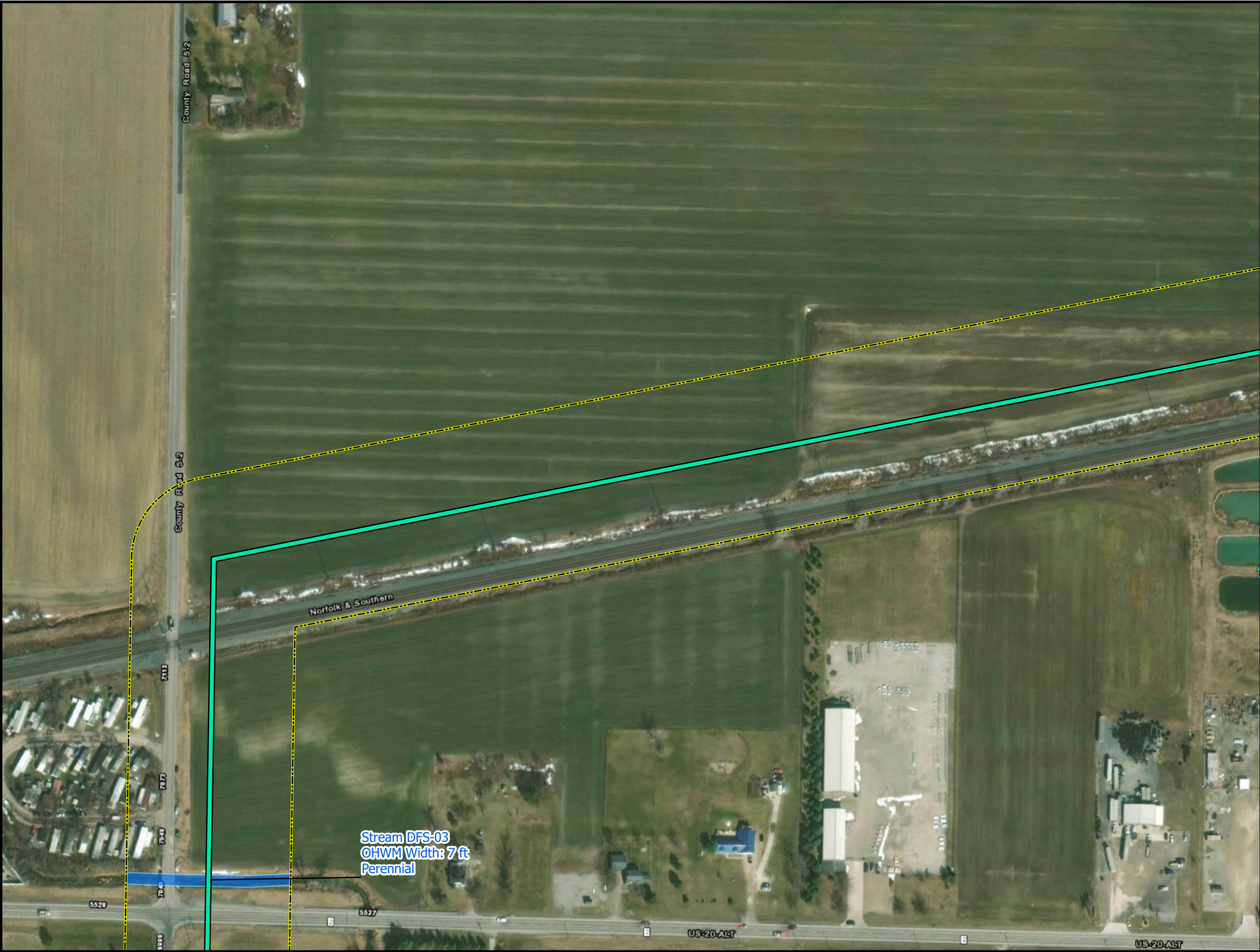
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Transmission Line Tap to  
Melbourne Substation Project*

ALTERNATE ROUTE  
FIGURE 3-6  
DELINEATED FEATURES MAP



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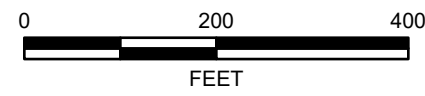


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



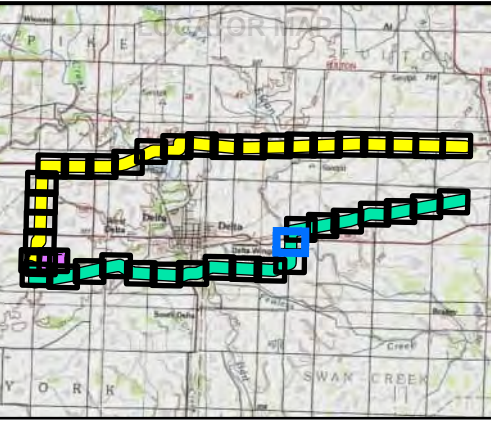
 American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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**ALTERNATE ROUTE  
FIGURE 3-7  
DELINEATED FEATURES MAP**

DATE: 2/23/2023	
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**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary

BASE MAP SOURCE:  
Esri World Imagery

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FEET

American Transmission Systems, Inc.  
A subsidiary of FirstEnergy Corp.

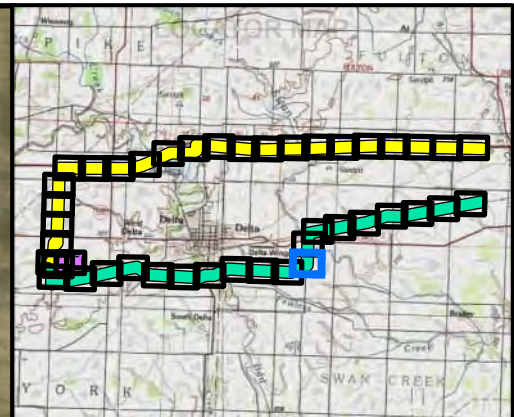
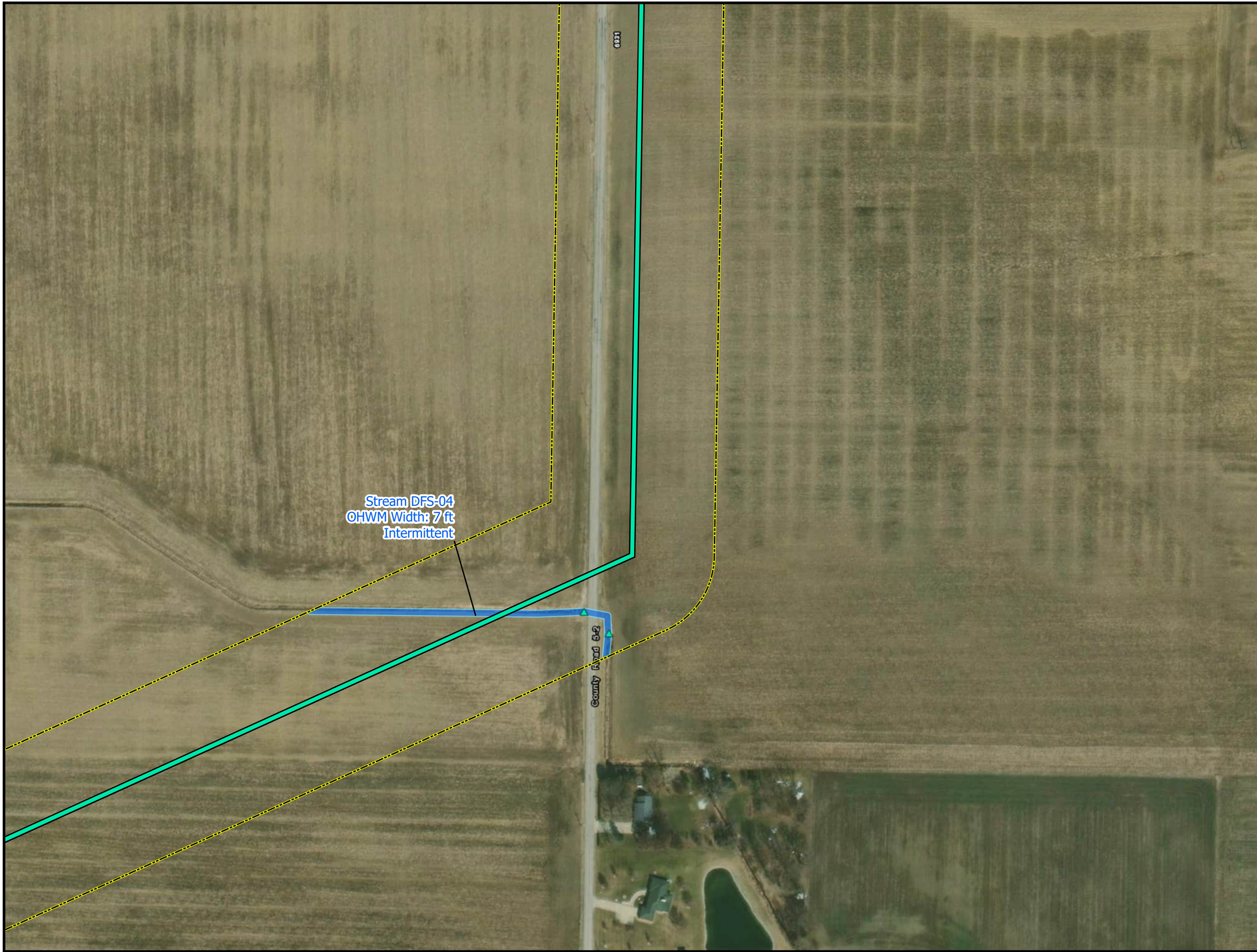
Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

ALTERNATE ROUTE  
FIGURE 3-8  
DELINEATED FEATURES MAP

DATE: 2/23/2023



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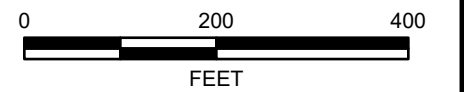


### LEGEND:

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

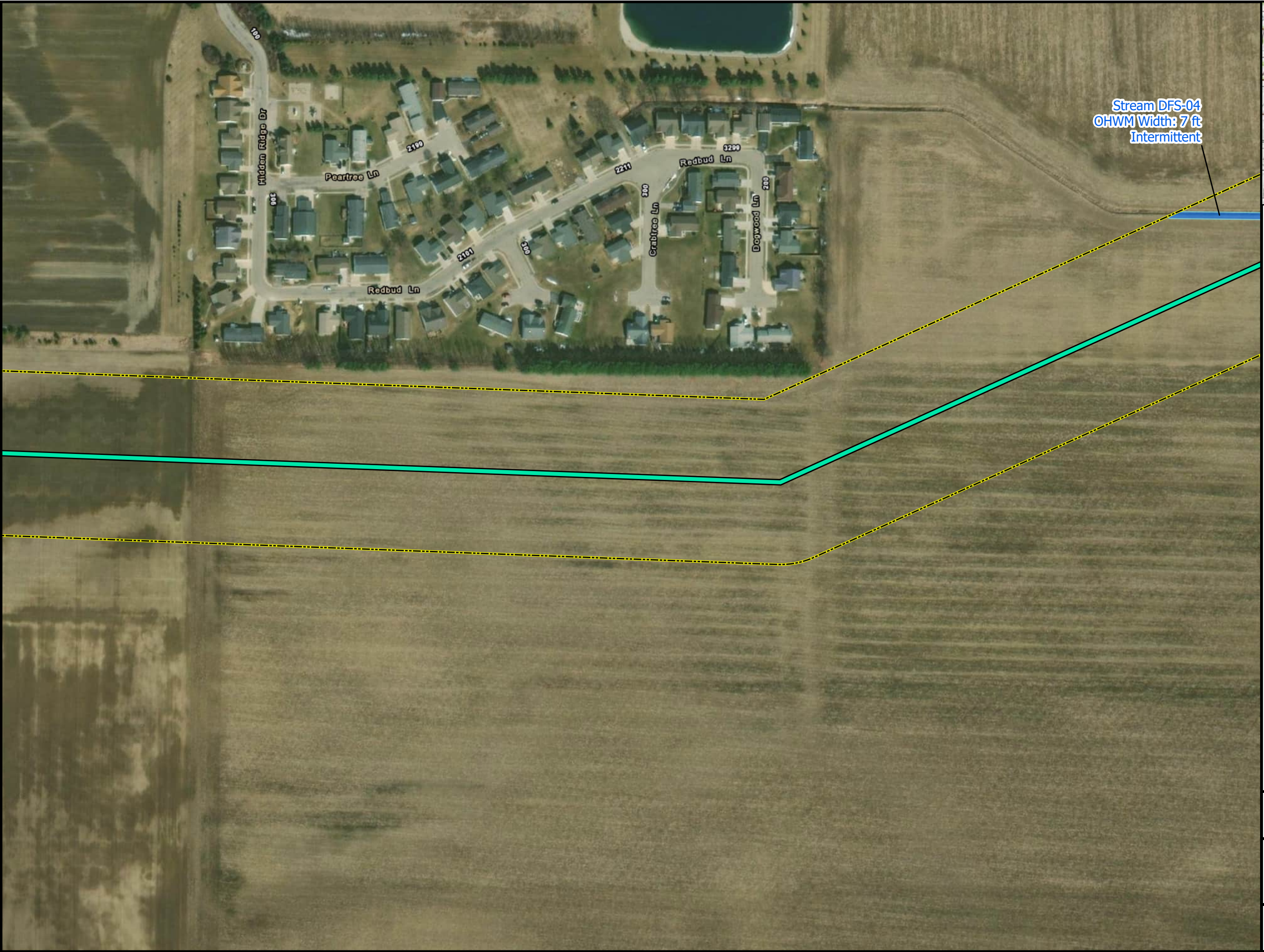
ALTERNATE ROUTE  
FIGURE 3-9  
DELINEATED FEATURES MAP

DATE: 2/23/2023

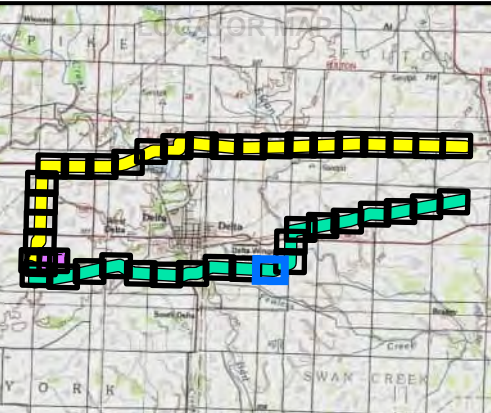
**Jacobs**



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Stream DFS-04  
OHWM Width: 7 ft  
Intermittent



**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary

N

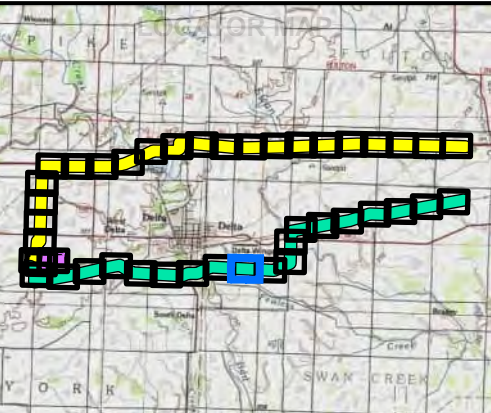
BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
ALTERNATE ROUTE FIGURE 3-10 DELINEATED FEATURES MAP	
DATE: 2/23/2023	



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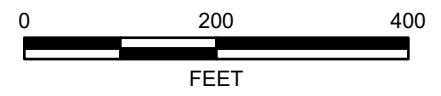


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



 <small>American Transmission Systems, Inc. a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-11  
DELINEATED FEATURES MAP

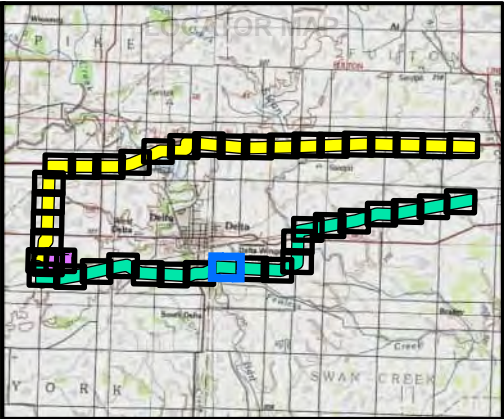
DATE: 2/23/2023	<b>Jacobs</b>
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Stream DFS-05  
OHWM Width: 9 ft  
Perennial

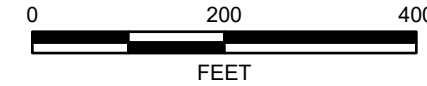


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary




BASE MAP SOURCE:  
Esri World Imagery



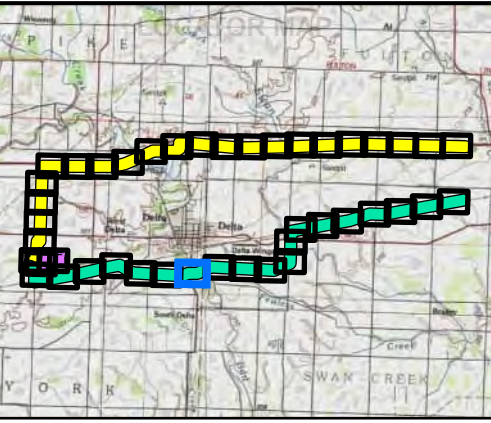
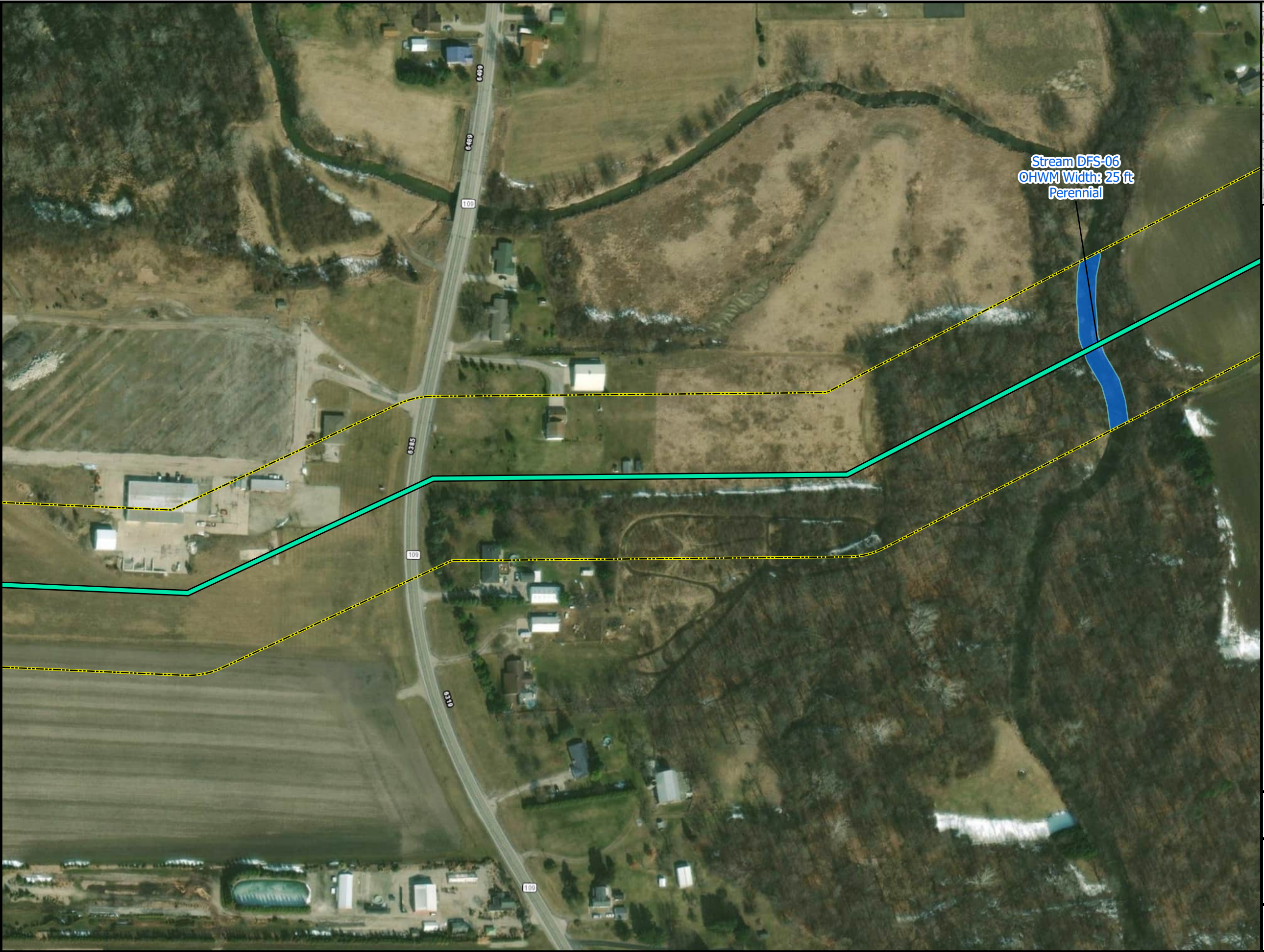
	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-12  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

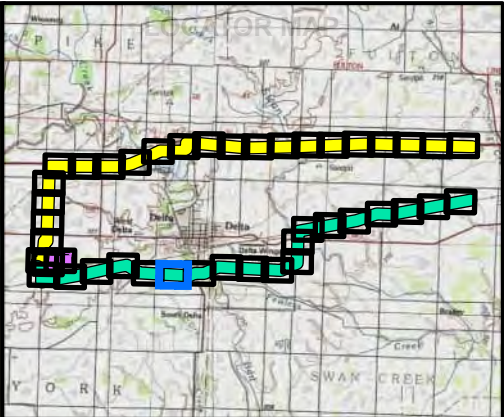
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
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ALTERNATE ROUTE  
FIGURE 3-13  
DELINEATED FEATURES MAP










DATE: 2/23/2023	
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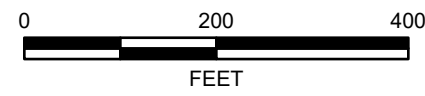


**LEGEND:**

-  Culvert
-  Preferred Route
-  Alternate Route
-  Extension Line
-  Tie Line
-  Delineated PEM Wetland
-  Delineated PFO Wetland
-  Delineated Pond
-  Delineated Stream
-  Proposed Melbourne Station
-  Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



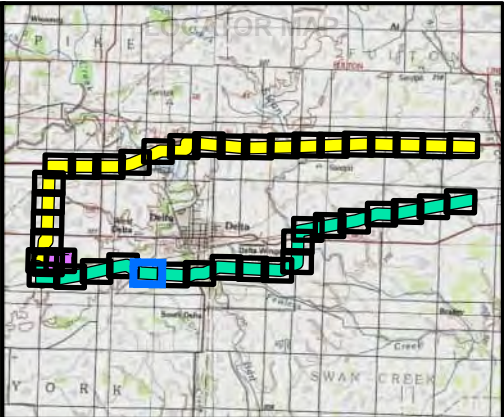
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-14  
DELINEATED FEATURES MAP

DATE: 2/23/2023	<b>Jacobs</b>
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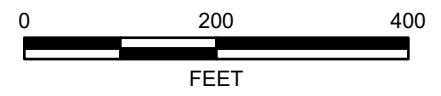


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary




BASE MAP SOURCE:  
Esri World Imagery



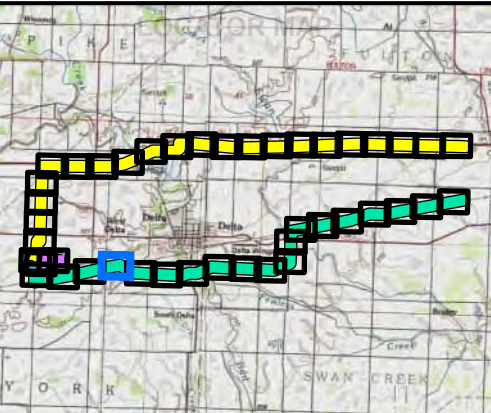
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-15  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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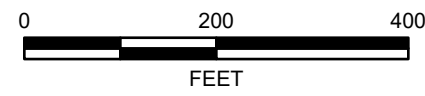


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary



BASE MAP SOURCE:  
Esri World Imagery



*Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project*

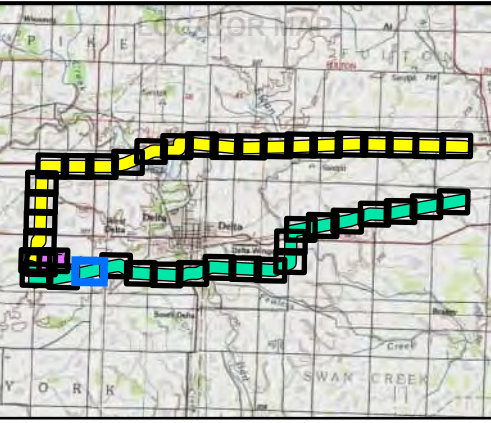
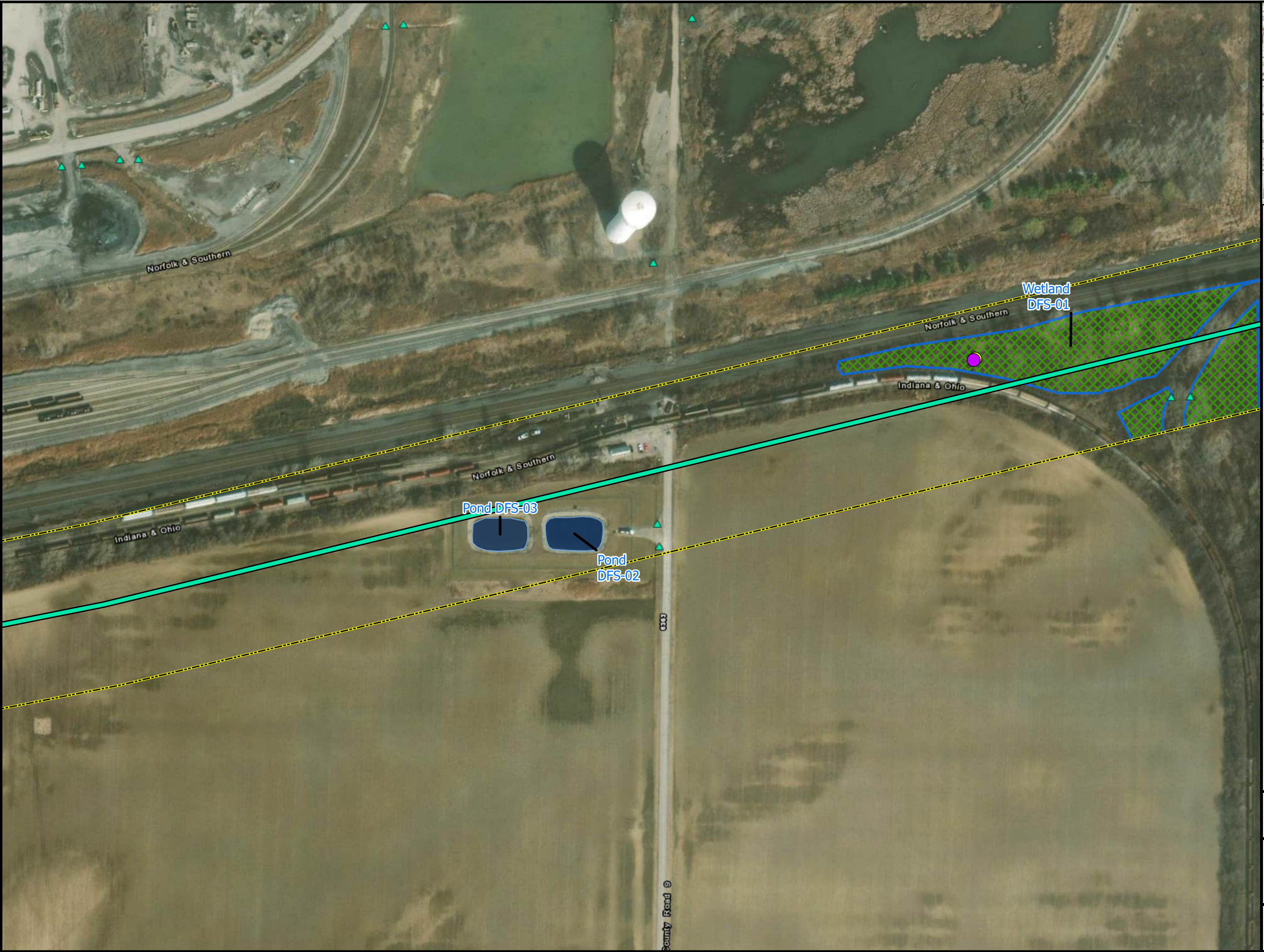
ALTERNATE ROUTE  
FIGURE 3-16  
DELINEATED FEATURES MAP

DATE: 2/23/2023





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- LEGEND:**
- Culvert
  - Upland Data Point
  - Wetland Data Point
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - Delineated PEM Wetland
  - Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary



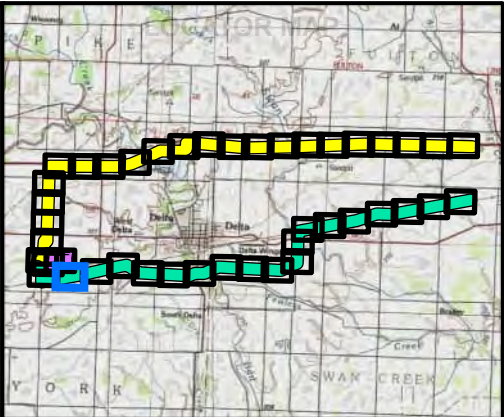
 American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-17  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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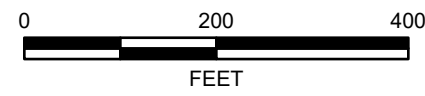


**LEGEND:**

- Culvert
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Proposed Melbourne Station
- Environmental Survey Boundary




BASE MAP SOURCE:  
Esri World Imagery



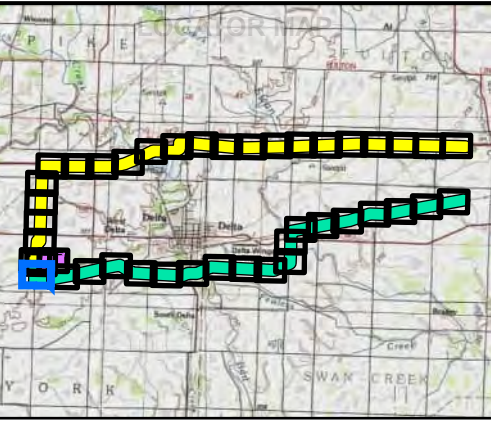
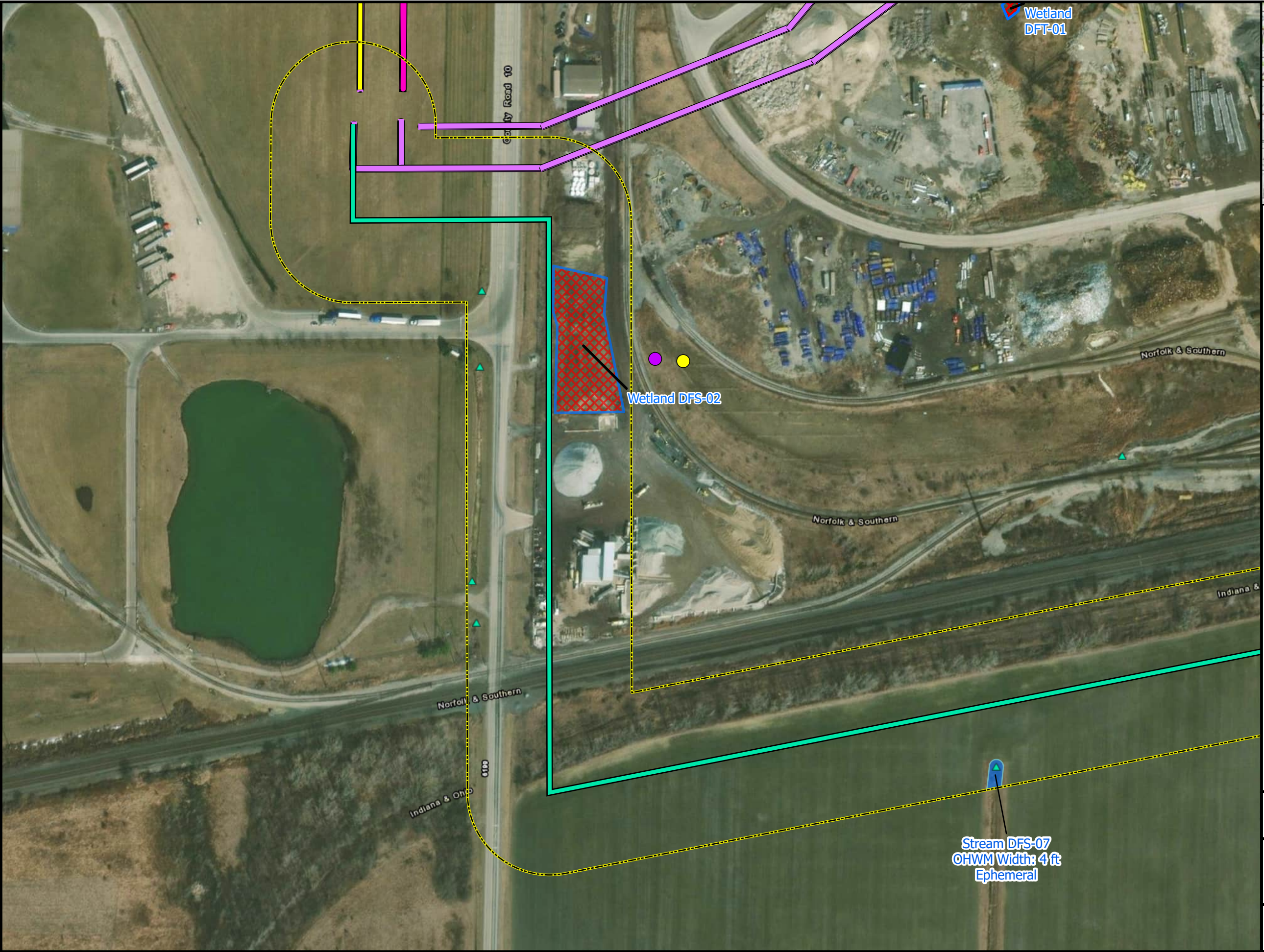
 <small>American Transmission Systems, Inc. A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-18  
DELINEATED FEATURES MAP

DATE: 2/23/2023	
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- LEGEND:**
- ▲ Culvert
  - Upland Data Point
  - Wetland Data Point
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - ▨ Delineated PEM Wetland
  - ▨ Delineated PFO Wetland
  - ▨ Delineated Pond
  - ▨ Delineated Stream
  - ▭ Proposed Melbourne Station
  - ▭ Environmental Survey Boundary



<b>ATSI</b> American Transmission Systems, Inc. <small>A subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
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ALTERNATE ROUTE  
FIGURE 3-19  
DELINEATED FEATURES MAP

DATE: 2/23/2023	<b>Jacobs</b>
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Appendix B  
USACE Wetland Determination Field Data Forms

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 12/20/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFS-01  
Investigator(s): MJA Section, Township, Range: S 14 T 7N R 7E  
Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): Concave Slope (%): 0-2  
Subregion (LRR or MLRA): LRR K Lat: 41.56484 Long: -84.03522 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland DFS-01</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) PFO wetland in low area between railroad tracks	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u>      </u> Surface Soil Cracks (B6)
<u>      </u> Surface Water (A1)	<u>      </u> Water-Stained Leaves (B9)	<u>      </u> Drainage Patterns (B10)
<u>      </u> High Water Table (A2)	<u>      </u> Aquatic Fauna (B13)	<u>      </u> Moss Trim Lines (B16)
<u>      </u> Saturation (A3)	<u>      </u> Marl Deposits (B15)	<u>      </u> Dry-Season Water Table (C2)
<u>      </u> Water Marks (B1)	<u>      </u> Hydrogen Sulfide Odor (C1)	<u>      </u> Crayfish Burrows (C8)
<u>      </u> Sediment Deposits (B2)	<u>      </u> Oxidized Rhizospheres on Living Roots (C3)	<u>      </u> Saturation Visible on Aerial Imagery (C9)
<u>      </u> Drift Deposits (B3)	<u>      </u> Presence of Reduced Iron (C4)	<u>      </u> Stunted or Stressed Plants (D1)
<u>      </u> Algal Mat or Crust (B4)	<u>      </u> Recent Iron Reduction in Tilled Soils (C6)	<u>  X  </u> Geomorphic Position (D2)
<u>      </u> Iron Deposits (B5)	<u>      </u> Thin Muck Surface (C7)	<u>      </u> Shallow Aquitard (D3)
<u>      </u> Inundation Visible on Aerial Imagery (B7)	<u>      </u> Other (Explain in Remarks)	<u>      </u> Microtopographic Relief (D4)
<u>      </u> Sparsely Vegetated Concave Surface (B8)		<u>  X  </u> FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Wetland DFS-01

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Ulmus americana</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>35</u> = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>85</u></td> <td>x 1 = <u>85.0</u></td> </tr> <tr> <td>FACW species <u>80</u></td> <td>x 2 = <u>160.0</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30.0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>175</u> (A)</td> <td><u>275.0</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>1.57</u>	Total % Cover of:	Multiply by:	OBL species <u>85</u>	x 1 = <u>85.0</u>	FACW species <u>80</u>	x 2 = <u>160.0</u>	FAC species <u>10</u>	x 3 = <u>30.0</u>	FACU species <u>0</u>	x 4 = <u>0.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>175</u> (A)	<u>275.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>85</u>	x 1 = <u>85.0</u>																	
FACW species <u>80</u>	x 2 = <u>160.0</u>																	
FAC species <u>10</u>	x 3 = <u>30.0</u>																	
FACU species <u>0</u>	x 4 = <u>0.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>175</u> (A)	<u>275.0</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15</u> )																		
1. <u>Acer rubrum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>															
2. <u>Cornus amomum</u>	<u>55</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Salix nigra</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>100</u> = Total Cover																		
Herb Stratum (Plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Eupatorium perfoliatum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
2. <u>Carex crinita</u>	<u>55</u>	<u>Yes</u>	<u>OBL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>60</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30</u> )				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.														
1. <u>Vitis riparia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10</u> = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No														

**SOIL**

Sampling Point: Wetland DFS-01

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 16	10YR 3/2	97	7.5YR 4/6	3	C	M	Silty loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input checked="" type="checkbox"/> Depleted Matrix (F3)                          |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input type="checkbox"/> Redox Dark Surface (F6)                                  |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L, M**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes   X   No       

Remarks:





Soil



E



S



W



N



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 12/20/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFS-01  
Investigator(s): MJA Section, Township, Range: S 14 T 7N R 7E  
Landform (hillslope, terrace, etc.): Shoulder slope Local relief (concave, convex, none): Convex Slope (%): 5-10  
Subregion (LRR or MLRA): LRR K Lat: 41.56483 Long: -84.03523 Datum: NAD 83  
Soil Map Unit Name: Millgrove-Mermill (s6036) NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	If yes, optional Wetland Site ID: <u>Upland DFS-01</u>
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland point adjacent to railroad	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes _____ No <u>X</u> Depth (inches):	<b>Wetland Hydrology Present? Yes _____ No <u>X</u></b>	
Water Table Present? Yes _____ No <u>X</u> Depth (inches):		
Saturation Present? Yes _____ No <u>X</u> Depth (inches): (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION – Use scientific names of plants.**

 Sampling Point: Upland DFS-01

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																				
1. <u>Acer negundo</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)																			
2. _____	_____	_____	_____																				
3. _____	_____	_____	_____																				
4. _____	_____	_____	_____																				
5. _____	_____	_____	_____																				
6. _____	_____	_____	_____																				
7. _____	_____	_____	_____																				
<u>10</u> = Total Cover																							
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																							
1. <u>Acer negundo</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>65</u></td> <td>x 2 = <u>130</u></td> </tr> <tr> <td>FAC species <u>55</u></td> <td>x 3 = <u>165</u></td> </tr> <tr> <td>FACU species <u>55</u></td> <td>x 4 = <u>220</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>455</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.25</u></td> <td colspan="3"></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>65</u>	x 2 = <u>130</u>	FAC species <u>55</u>	x 3 = <u>165</u>	FACU species <u>55</u>	x 4 = <u>220</u>	UPL species _____	x 5 = _____	Column Totals: <u>140</u> (A)	<u>455</u> (B)	Prevalence Index = B/A = <u>3.25</u>				
Total % Cover of:	Multiply by:																						
OBL species <u>20</u>	x 1 = <u>20</u>																						
FACW species <u>65</u>	x 2 = <u>130</u>																						
FAC species <u>55</u>	x 3 = <u>165</u>																						
FACU species <u>55</u>	x 4 = <u>220</u>																						
UPL species _____	x 5 = _____																						
Column Totals: <u>140</u> (A)	<u>455</u> (B)																						
Prevalence Index = B/A = <u>3.25</u>																							
2. <u>Sambucus nigra</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																				
3. _____	_____	_____	_____																				
4. _____	_____	_____	_____																				
5. _____	_____	_____	_____																				
6. _____	_____	_____	_____																				
7. _____	_____	_____	_____																				
<u>30</u> = Total Cover																							
<b>Herb Stratum (Plot size: <u>5</u> )</b>																							
1. <u>Equisetum hyemale</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																			
2. <u>Setaria faberi</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>																				
3. <u>Cirsium vulgare</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																				
4. <u>Alliaria petiolata</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																				
5. _____	_____	_____	_____																				
6. _____	_____	_____	_____																				
7. _____	_____	_____	_____																				
8. _____	_____	_____	_____																				
9. _____	_____	_____	_____																				
10. _____	_____	_____	_____																				
11. _____	_____	_____	_____																				
12. _____	_____	_____	_____																				
<u>100</u> = Total Cover																							
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																							
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																			
2. _____	_____	_____	_____																				
3. _____	_____	_____	_____																				
4. _____	_____	_____	_____																				
_____ = Total Cover																							
Remarks: (Include photo numbers here or on a separate sheet.)																							



## SOIL

Sampling Point: Upland DFS-01

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 16	10YR 3/3	100					Sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:



Soil



E



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 09/07/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFS-02  
Investigator(s): JBL Section, Township, Range: S 14 T 7N R 7E  
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2  
Subregion (LRR or MLRA): LRR K Lat: 41.56349 Long: -84.05551 Datum: NAD 83  
Soil Map Unit Name: Nappanee-Hoytville (s6028) NWI classification: NA  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland DFS-02</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Lowland area between railroad tracks. Multiple wetland areas connected via culverts under the RR tracks. Western portion of wetland disturbed by active earthwork	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<u>X</u> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)
<u>X</u> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<u>X</u> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>11</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: saturation and multiple secondary hydrology indicators present. Primary source of hydrology is precipitation.		

**VEGETATION – Use scientific names of plants.**

 Sampling Point: Wetland DFS-02

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>50</u></td> <td>x 1 = <u>50.0</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70.0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90.0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>210.0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.83</u>	Total % Cover of:	Multiply by:	OBL species <u>50</u>	x 1 = <u>50.0</u>	FACW species <u>35</u>	x 2 = <u>70.0</u>	FAC species <u>30</u>	x 3 = <u>90.0</u>	FACU species <u>0</u>	x 4 = <u>0.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>115</u> (A)	<u>210.0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>50</u>	x 1 = <u>50.0</u>																	
FACW species <u>35</u>	x 2 = <u>70.0</u>																	
FAC species <u>30</u>	x 3 = <u>90.0</u>																	
FACU species <u>0</u>	x 4 = <u>0.0</u>																	
UPL species <u>0</u>	x 5 = <u>0.0</u>																	
Column Totals: <u>115</u> (A)	<u>210.0</u> (B)																	
_____ = Total Cover																		
<b>Sapling/Shrub Stratum (Plot size: <u>15</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: <u>5</u> )</b>																		
1. <u>Typha X glauca</u>	<u>50</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Echinochloa crus-galli</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>															
3. <u>Phragmites australis</u>	<u>20</u>	<u>No</u>	<u>FACW</u>															
4. <u>Juncus torreyi</u>	<u>15</u>	<u>No</u>	<u>FACW</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>115</u> = Total Cover																		
<b>Woody Vine Stratum (Plot size: <u>30</u> )</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.																		
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No																		
Remarks: (Include photo numbers here or on a separate sheet.) hydrophytic vegetation present as dominance test is greater than 50% and PI is less than 3																		



**SOIL**

Sampling Point: Wetland DFS-02

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 18	10YR 4/2	80	10YR 4/6	20	C	M	Sandy clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input checked="" type="checkbox"/> Depleted Matrix (F3)                          |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input type="checkbox"/> Redox Dark Surface (F6)                                  |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L, M**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes   X   No       

Remarks:

hydric soil indicator present as depleted matrix



N



E



S



W





Soil

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dowling-Fulton 345 kV Transmission Line Tap to Melbo City/County: Fulton County Sampling Date: 09/07/2022  
Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFS-02  
Investigator(s): JBL Section, Township, Range: S 14 T 7 N R 7 E  
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
Subregion (LRR or MLRA): LRR K Lat: 41.56350 Long: -84.05573 Datum: NAD 83  
Soil Map Unit Name: Nappanee-Hoytville (s6028) NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>Upland DFS-02</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Hillside upland by RR tracks	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: None		



**VEGETATION – Use scientific names of plants.**

 Sampling Point: Upland DFS-02

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Total % Cover of:</td> <td style="width: 50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0.0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20.0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0.0</u></td> </tr> <tr> <td>FACU species <u>90</u></td> <td>x 4 = <u>360.0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0.0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>380.0</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.80</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0.0</u>	FACW species <u>10</u>	x 2 = <u>20.0</u>	FAC species <u>0</u>	x 3 = <u>0.0</u>	FACU species <u>90</u>	x 4 = <u>360.0</u>	UPL species <u>0</u>	x 5 = <u>0.0</u>	Column Totals: <u>100</u> (A)	<u>380.0</u> (B)	Prevalence Index = B/A = <u>3.80</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0.0</u>																			
FACW species <u>10</u>	x 2 = <u>20.0</u>																			
FAC species <u>0</u>	x 3 = <u>0.0</u>																			
FACU species <u>90</u>	x 4 = <u>360.0</u>																			
UPL species <u>0</u>	x 5 = <u>0.0</u>																			
Column Totals: <u>100</u> (A)	<u>380.0</u> (B)																			
Prevalence Index = B/A = <u>3.80</u>																				
_____ = Total Cover																				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.																
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>																
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
_____ = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.) hydrophytic vegetation indicators not present																				

## SOIL

Sampling Point: Upland DFS-02

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 17	10YR 3/3	99	10YR 4/4	1	C	M	Sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input type="checkbox"/> Depleted Matrix (F3)                                     |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input type="checkbox"/> Redox Dark Surface (F6)                                  |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- |   |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR K, L, MLRA 149B</b> )       |
| <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>LRR K, L, R</b> )     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) ( <b>LRR K, L, R</b> )  |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR K, L, M</b> )             |
| <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR K, L</b> )     |
| <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR K, L</b> )           |
| <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR K, L, R</b> )   |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149B</b> ) |
| <input type="checkbox"/> Mesic Spodic (TA6) ( <b>MLRA 144A, 145, 149B</b> )   |
| <input type="checkbox"/> Red Parent Material (F21)                            |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)                     |
| <input type="checkbox"/> Other (Explain in Remarks)                           |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:

no hydric soil indicators observed





N



W



S



Soil

## Appendix C

### OEPA ORAM Data Forms

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<b>Site:</b> Wetland DFS-01	<b>Rater(s):</b> MJA	<b>Date:</b> 12/20/2022
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<b>3.0</b>	<b>3.0</b>	<b>Metric 1. Wetland Area (size).</b>
max 6 pts.	subtotal	

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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

<b>2.0</b>	<b>5.0</b>	<b>Metric 2. Upland buffers and surrounding land use.</b>
max 14 pts.	subtotal	

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)
- ☐ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>6.5</b>	<b>11.5</b>	<b>Metric 3. Hydrology.</b>
max 30 pts.	subtotal	

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

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)

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

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

Check all disturbances observed

- |  |   |
|--|---|
| <input type="checkbox"/> ditch<br><input type="checkbox"/> tile<br><input type="checkbox"/> dike<br><input type="checkbox"/> weir<br><input type="checkbox"/> stormwater input | <input type="checkbox"/> point source (nonstormwater)<br><input type="checkbox"/> filling/grading<br><input checked="" type="checkbox"/> road bed/RR track<br><input type="checkbox"/> dredging<br><input type="checkbox"/> other _____ |
|--|---|

<b>11.0</b>	<b>22.5</b>	<b>Metric 4. Habitat Alteration and Development.</b>
max 20 pts.	subtotal	

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

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

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

- ☐ None or none apparent (9)
- ☒ Recovered (6)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- |   |  |
|---|--|
| <input type="checkbox"/> mowing<br><input type="checkbox"/> grazing<br><input type="checkbox"/> clearcutting<br><input checked="" type="checkbox"/> selective cutting<br><input type="checkbox"/> woody debris removal<br><input type="checkbox"/> toxic pollutants | <input type="checkbox"/> shrub/sapling removal<br><input type="checkbox"/> herbaceous/aquatic bed removal<br><input type="checkbox"/> sedimentation<br><input type="checkbox"/> dredging<br><input type="checkbox"/> farming<br><input type="checkbox"/> nutrient enrichment |
|---|--|

**22.5**

subtotal this page

<b>Site:</b> Wetland DFS-01	<b>Rater(s):</b> MJA	<b>Date:</b> 12/20/2022
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22.5

subtotal first page

0.0	22.5
-----	------

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)

5.0	27.5
-----	------

max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 1 Shrub
- ☐ 1 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)
- ☐ 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)
- ☐ 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 breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

27.5

**GRAND TOTAL (max 100 pts)**



<b>Site:</b> Wetland DFS-02	<b>Rater(s):</b> JBL	<b>Date:</b>
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<b>3.0</b>	<b>3.0</b>	<b>Metric 1. Wetland Area (size).</b>
max 6 pts.	subtotal	

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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

<b>1.0</b>	<b>4.0</b>	<b>Metric 2. Upland buffers and surrounding land use.</b>
max 14 pts.	subtotal	

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)
- ☒ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>8.0</b>	<b>12.0</b>	<b>Metric 3. Hydrology.</b>
max 30 pts.	subtotal	

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> ditch</li> <li><input checked="" type="checkbox"/> tile</li> <li><input type="checkbox"/> dike</li> <li><input type="checkbox"/> weir</li> <li><input checked="" type="checkbox"/> stormwater input</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> point source (nonstormwater)</li> <li><input checked="" type="checkbox"/> filling/grading</li> <li><input checked="" type="checkbox"/> road bed/RR track</li> <li><input checked="" type="checkbox"/> dredging</li> <li><input type="checkbox"/> other _____</li> </ul> |
|---|--|

<b>4.5</b>	<b>16.5</b>	<b>Metric 4. Habitat Alteration and Development.</b>
max 20 pts.	subtotal	

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

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☒ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> mowing</li> <li><input type="checkbox"/> grazing</li> <li><input type="checkbox"/> clearcutting</li> <li><input type="checkbox"/> selective cutting</li> <li><input type="checkbox"/> woody debris removal</li> <li><input checked="" type="checkbox"/> toxic pollutants</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> shrub/sapling removal</li> <li><input checked="" type="checkbox"/> herbaceous/aquatic bed removal</li> <li><input checked="" type="checkbox"/> sedimentation</li> <li><input checked="" type="checkbox"/> dredging</li> <li><input type="checkbox"/> farming</li> <li><input type="checkbox"/> nutrient enrichment</li> </ul> |
|---|---|

**16.5**

subtotal this page

<b>Site:</b> Wetland DFS-02	<b>Rater(s):</b> JBL	<b>Date:</b>
-----------------------------	----------------------	--------------

16.5

subtotal first page

0.0	16.5
-----	------

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)

-1.0	15.5
------	------

max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 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)
- ☐ 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)
- ☐ 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
- ☐ 1 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

15.5

**GRAND TOTAL (max 100 pts)**



## Appendix D

### QHEI Stream Data Forms

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**Stream & Location:** Stream DFS-03 Dowling-Fulton T-Line Tap to Melbourne Substation **RM:** 36.9 **Date:** 9/8/22  
S-JBL-090822-06 **Scorers Full Name & Affiliation:** JBL Jacobs  
**River Code:** 04100009 07 02 **STORET #:** **Lat./ Long.:** 41.56370 / -83.94712 **Office verified location** ☒

**1] SUBSTRATE** Check **ONLY Two** substrate **TYPE BOXES**, estimate % or note every type present

Check ONE (Or 2 &amp; average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate <div>13</div> <div>Maximum 20</div>
<input type="checkbox"/> BLDR /SLABS [10]				<input type="checkbox"/> HARDPAN [4]		<input type="checkbox"/> LIMESTONE [1]		<input checked="" type="checkbox"/> SILT		<input type="checkbox"/> HEAVY [-2]		
<input type="checkbox"/> BOULDER [9]				<input type="checkbox"/> DETRITUS [3]		<input checked="" type="checkbox"/> TILLS [1]				<input checked="" type="checkbox"/> MODERATE [-1]		
<input type="checkbox"/> COBBLE [8]	5	10		<input type="checkbox"/> MUCK [2]		<input type="checkbox"/> WETLANDS [0]				<input checked="" type="checkbox"/> NORMAL [0]		
<input checked="" type="checkbox"/> GRAVEL [7]	10	50		<input type="checkbox"/> SILT [2]	40	<input type="checkbox"/> HARDPAN [0]				<input type="checkbox"/> FREE [1]		
<input checked="" type="checkbox"/> SAND [6]	45	30		<input type="checkbox"/> ARTIFICIAL [0]		<input type="checkbox"/> SANDSTONE [0]				<input type="checkbox"/> EXTENSIVE [-2]		
<input type="checkbox"/> BEDROCK [5]				(Score natural substrates; ignore sludge from point-sources)		<input type="checkbox"/> RIP/RAP [0]				<input checked="" type="checkbox"/> MODERATE [-1]		
						<input type="checkbox"/> LACUSTURINE [0]				<input checked="" type="checkbox"/> NORMAL [0]		
						<input type="checkbox"/> SHALE [-1]				<input type="checkbox"/> NONE [1]		
						<input type="checkbox"/> COAL FINES [-2]						

**NUMBER OF BEST TYPES:** ☐ 4 or more [2] ☒ 3 or less [0]

**Comments**

**2] INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

**AMOUNT**

Check ONE (Or 2 &amp; average)

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
2 OVERHANGING VEGETATION [1]	0 ROOTWADS [1]	1 AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
0 SHALLOWS (IN SLOW WATER) [1]	0 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-<25% [3]
0 ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]

**Comments**

Cover  
Maximum  
20

8

**3] CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

**Comments**

Channel  
Maximum  
20

10

**4] BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for **EACH BANK** (Or 2 per bank & average)  
River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]				
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]				
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]				
	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]					
	<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]					

**Comments**

Indicate predominant land use(s) past 100m riparian.

Riparian  
Maximum  
10

10

**5] POOL / GLIDE AND RIFFLE / RUN QUALITY**

**MAXIMUM DEPTH**

Check ONE (ONLY!)

- ☐ > 1m [6]  
☐ 0.7-<1m [4]  
☐ 0.4-<0.7m [2]  
☐ 0.2-<0.4m [1]  
☒ < 0.2m [0]

**CHANNEL WIDTH**

Check ONE (Or 2 &amp; average)

- ☒ POOL WIDTH > RIFFLE WIDTH [2]  
☐ POOL WIDTH = RIFFLE WIDTH [1]  
☐ POOL WIDTH < RIFFLE WIDTH [0]

**CURRENT VELOCITY**

Check ALL that apply

- ☐ TORRENTIAL [-1] ☒ SLOW [1]  
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]  
☐ FAST [1] ☐ INTERMITTENT [-2]  
☐ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

**Recreation Potential**  
**Primary Contact**  
**Secondary Contact** x  
(circle one and comment on back)

Pool /  
Current  
Maximum  
12

3

**Comments**

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 &amp; average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

**Comments**

Riffle /  
Run  
Maximum  
8

1.5

**6] GRADIENT**

( 8.61 ft/mi)  
**DRAINAGE AREA**  
( 11.1 mi<sup>2</sup>)

- ☐ VERY LOW - LOW [2-4]  
☒ MODERATE [6-10]  
☐ HIGH - VERY HIGH [10-6]

%POOL: 50

%GLIDE: 35

%RUN: 10

%RIFFLE: 5

Gradient  
Maximum  
10

10



AJ SAMPLED REACH

Check ALL that apply

METHOD STAGE

☐ BOAT

☒ WADE

☐ L. LINE

☐ OTHER

1st-sample pass- 2nd

☐ HIGH

☐ UP

☐ NORMAL

☒ LOW

☐ DRY

DISTANCE

☐ 0.5 Km

☐ 0.2 Km

☐ 0.15 Km

☐ 0.12 Km

☒ OTHER

100  
meters

CANOPY

☐ > 85%- OPEN

☒ 55%-<85%

☐ 30%-<55%

☐ 10%-<30%

☐ <10%- CLOSED

CLARITY

1st --sample pass-- 2nd

☒ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

1st \_\_\_\_\_ cm

pass

2nd \_\_\_\_\_ cm

CJ RECREATION

AREA DEPTH

POOL: ☐ >100ft<sup>2</sup> ☐ >3ft

BJ AESTHETICS

☐ NUISANCE ALGAE

☐ INVASIVE MACROPHYTES

☐ EXCESS TURBIDITY

☐ DISCOLORATION

☐ FOAM / SCUM

☐ OIL SHEEN

☐ TRASH / LITTER

☐ NUISANCE ODOR

☐ SLUDGE DEPOSITS

☐ CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA

ACTIVE / HISTORIC / BOTH / NA

YOUNG - SUCCESSION - OLD

SPRAY / SNAG / REMOVED

MODIFIED / DIPPED OUT / NA

LEVEED / ONE SIDED

RELOCATED / CUTOFFS

MOVING - BEDLOAD - STABLE

ARMoured / SLUMPS

ISLANDS / SCoured

IMPOUNDED / DESICCATED

FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

WWTP / CSO / NPDES / INDUSTRY

HARDENED / URBAN / DIRT&GRIME

CONTAMINATED / LANDFILL

BMPs - CONSTRUCTION - SEDIMENT

LOGGING / IRRIGATION / COOLING

BANK / EROSION / SURFACE

FALSE BANK / MANURE / LAGOON

WASH H2O / TILE / H2O TABLE

ACID / MINE / QUARRY / FLOW

NATURAL / WETLAND / STAGNANT

PARK / GOLF / LAWN / HOME

ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

$\bar{x}$  width 7

$\bar{x}$  depth 6

max. depth

$\bar{x}$  bankfull width

bankfull  $\bar{x}$  depth

W/D ratio

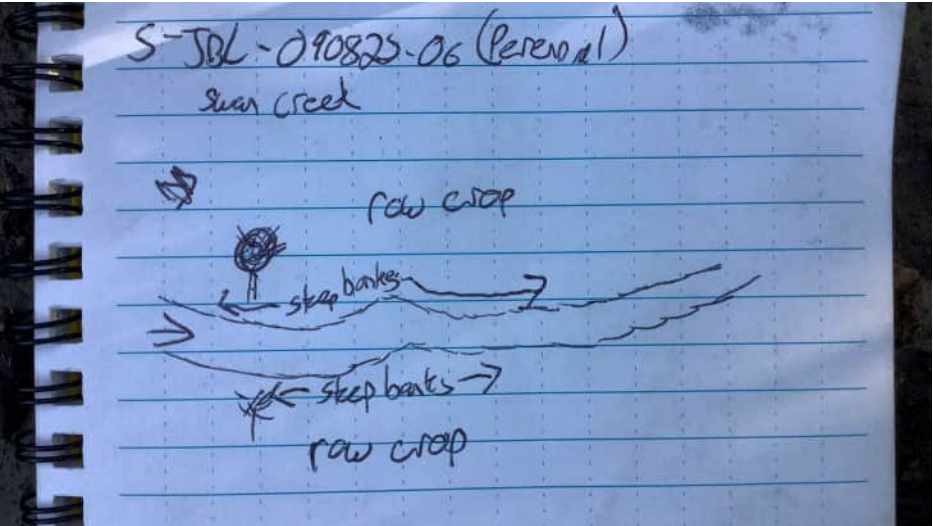
bankfull max. depth

floodprone x<sup>2</sup> width

entrench. ratio

Legacy Tree:

Stream Drawing: Stream DFS-03





Upstream



Downstream



Substrate



Stream &amp; Location: Stream DFS-05

RM:

Date: 1662652800000

S-JBL-090822-05

Scorers Full Name &amp; Affiliation: JBL

Jacobs

River Code:

STORET #:

Lat./ Long.: 41.5569384793° / -83.9531095654°  
(NAD 83 - decimal °)Office verified location ☐1] SUBSTRATE Check ONLY Two substrate TYPE BOXES;  
estimate % or note every type present

Check ONE (Or 2 &amp; average)

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY	
	POOL RIFFLE		POOL RIFFLE				
<input type="checkbox"/> BLDR /SLABS [10]		<input type="checkbox"/> HARDPAN [4]		<input type="checkbox"/> LIMESTONE [1]		<input type="checkbox"/> HEAVY [-2]	<b>Substrate</b> <div>7.5</div> <div>Maximum 20</div>
<input type="checkbox"/> BOULDER [9]		<input type="checkbox"/> DETRITUS [3]		<input checked="" type="checkbox"/> TILLS [1]		<input checked="" type="checkbox"/> MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]		<input type="checkbox"/> MUCK [2]		<input type="checkbox"/> WETLANDS [0]		<input type="checkbox"/> NORMAL [0]	
<input type="checkbox"/> GRAVEL [7]	5	<input checked="" type="checkbox"/> SILT [2]	65	<input type="checkbox"/> HARDPAN [0]		<input type="checkbox"/> FREE [1]	
<input checked="" type="checkbox"/> SAND [6]	30	<input type="checkbox"/> ARTIFICIAL [0]		<input type="checkbox"/> SANDSTONE [0]		<input type="checkbox"/> EXTENSIVE [-2]	
<input type="checkbox"/> BEDROCK [5]				<input type="checkbox"/> RIP/RAP [0]		<input checked="" type="checkbox"/> MODERATE [-1]	
				(Score natural substrates; ignore sludge from point-sources)		<input type="checkbox"/> LACUSTURINE [0]	<input checked="" type="checkbox"/> NORMAL [0]
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]				<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> NONE [1]	
Comments				<input type="checkbox"/> COAL FINES [-2]			

## 2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

## AMOUNT

Check ONE (Or 2 &amp; average)

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
2 OVERHANGING VEGETATION [1]	0 ROOTWADS [1]	0 AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
0 SHALLOWS (IN SLOW WATER) [1]	0 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-<25% [3]
1 ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments

**Cover**  
Maximum 20  
8

## 3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 &amp; average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

**Channel**  
Maximum 20  
9

## 4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank &amp; average)

River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY			
L	R	L	R	L	R	L	R
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> CONSERVATION TILLAGE [1]
<input checked="" type="checkbox"/> MODERATE [2]	<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]	<input type="checkbox"/> MINING / CONSTRUCTION [0]
		<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> FENCED PASTURE [1]	Indicate predominant land use(s) past 100m riparian.	
		<input type="checkbox"/> NONE [0]	<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<b>Riparian</b>	

Comments

**Riparian**  
Maximum 10  
10

## 5] POOL / GLIDE AND RIFFLE / RUN QUALITY

## MAXIMUM DEPTH

Check ONE (ONLY!)

- ☐ > 1m [6]  
☐ 0.7-<1m [4]  
☐ 0.4-<0.7m [2]  
☐ 0.2-<0.4m [1]  
☒ < 0.2m [0]

## CHANNEL WIDTH

Check ONE (Or 2 &amp; average)

- ☒ POOL WIDTH > RIFFLE WIDTH [2]  
☐ POOL WIDTH = RIFFLE WIDTH [1]  
☐ POOL WIDTH < RIFFLE WIDTH [0]

## CURRENT VELOCITY

Check ALL that apply

- ☐ TORRENTIAL [-1] ☒ SLOW [1]  
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]  
☐ FAST [1] ☐ INTERMITTENT [-2]  
☒ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Comments

**Recreation Potential**  
**Primary Contact**  
**Secondary Contact**  
(circle one and comment on back)**Pool / Current**  
Maximum 12  
4

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 &amp; average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

**Riffle / Run**  
Maximum 8  
0

## 6] GRADIENT

( 12.4 ft/mi)  
DRAINAGE AREA  
( 4.15 mi<sup>2</sup>)

- ☐ VERY LOW - LOW [2-4]  
☒ MODERATE [6-10]  
☐ HIGH - VERY HIGH [10-6]

%POOL: 20

%GLIDE: 80

%RUN:

%RIFFLE:

**Gradient**  
Maximum 10  
8

AJ SAMPLED REACH

Check ALL that apply

METHOD

☐ BOAT

☒ WADE

☐ L. LINE

☐ OTHER

STAGE

1st-sample pass- 2nd

☐ HIGH

☐ UP

☒ NORMAL

☐ LOW

☐ DRY

DISTANCE

☐ 0.5 Km

☐ 0.2 Km

☐ 0.15 Km

☐ 0.12 Km

☒ OTHER

100  
meters

CANOPY

☐ > 85%- OPEN

☒ 55%-<85%

☐ 30%-<55%

☐ 10%-<30%

☐ <10%- CLOSED

CLARITY

1st --sample pass-- 2nd

☒ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

BJ AESTHETICS

☐ NUISANCE ALGAE

☐ INVASIVE MACROPHYTES

☐ EXCESS TURBIDITY

☐ DISCOLORATION

☐ FOAM / SCUM

☐ OIL SHEEN

☐ TRASH / LITTER

☐ NUISANCE ODOR

☐ SLUDGE DEPOSITS

☐ CSOs/SSOs/OUTFALLS

CJ RECREATION

AREA DEPTH

POOL: ☐ >100ft<sup>2</sup> ☐ >3ft

DJ MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA

ACTIVE / HISTORIC / BOTH / NA

YOUNG - SUCCESSION - OLD

SPRAY / SNAG / REMOVED

MODIFIED / DIPPED OUT / NA

LEVEED / ONE SIDED

RELOCATED / CUTOFFS

MOVING - BEDLOAD - STABLE

ARMOURED / SLUMPS

ISLANDS / SCoured

IMPOUNDED / DESICCATED

FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

WWTP / CSO / NPDES / INDUSTRY

HARDENED / URBAN / DIRT&GRIME

CONTAMINATED / LANDFILL

BMPs - CONSTRUCTION - SEDIMENT

LOGGING / IRRIGATION / COOLING

BANK / EROSION / SURFACE

FALSE BANK / MANURE / LAGOON

WASH H2O / TILE / H2O TABLE

ACID / MINE / QUARRY / FLOW

NATURAL / WETLAND / STAGNANT

PARK / GOLF / LAWN / HOME

ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

$\bar{x}$  width 9

$\bar{x}$  depth

max. depth 4

$\bar{x}$  bankfull width 20

bankfull  $\bar{x}$  depth 6

W/D ratio

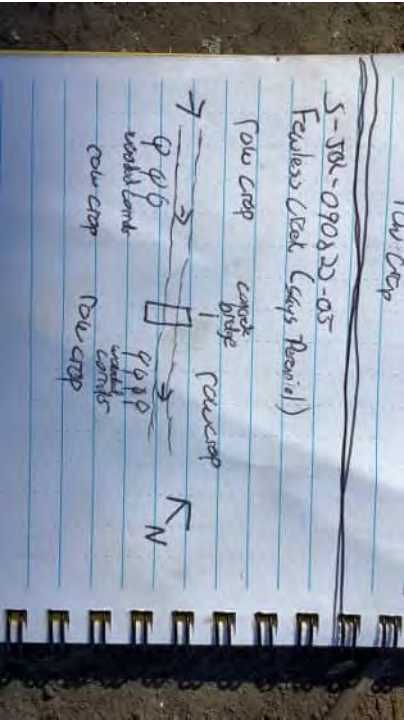
bankfull max. depth

floodprone x<sup>2</sup> width

entrench. ratio

Legacy Tree:

Stream Drawing: Stream DFS-05







Upstream



Downstream



Substrate

Stream &amp; Location: Stream DFS-06

RM: 13.6

Date: 9/8/22

S-JBL-090822-04

Scorers Full Name &amp; Affiliation: JBL

Jacobs

River Code: 04100009 03 02

STORET #: \_\_\_\_\_

Lat./ Long.: 41.55176

/ -83.98877

Office verified location ☒

## 1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

Check ONE (Or 2 &amp; average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate <div>9</div> Maximum 20
<input type="checkbox"/> BLDR /SLABS [10]	_____	<input type="checkbox"/> HARDPAN [4]	_____	<input type="checkbox"/> LIMESTONE [1]	_____	<input type="checkbox"/> HEAVY [-2]	_____	<input checked="" type="checkbox"/> SILT	_____	<input checked="" type="checkbox"/> MODERATE [-1]	_____	
<input type="checkbox"/> BOULDER [9]	_____	<input type="checkbox"/> DETRITUS [3]	_____	<input checked="" type="checkbox"/> TILLS [1]	_____	<input type="checkbox"/> NORMAL [0]	_____	<input type="checkbox"/> WETLANDS [0]	_____	<input type="checkbox"/> FREE [1]	_____	
<input checked="" type="checkbox"/> COBBLE [8]	10 70	<input type="checkbox"/> MUCK [2]	_____	<input type="checkbox"/> SANDSTONE [0]	_____	<input checked="" type="checkbox"/> EXTENSIVE [-2]	_____	<input type="checkbox"/> HARDPAN [0]	_____	<input checked="" type="checkbox"/> MODERATE [-1]	_____	
<input type="checkbox"/> GRAVEL [7]	0 10	<input checked="" type="checkbox"/> SILT [2]	80 10	<input type="checkbox"/> RIP/RAP [0]	_____	<input type="checkbox"/> NORMAL [0]	_____	<input type="checkbox"/> SANDSTONE [0]	_____	<input type="checkbox"/> NONE [1]	_____	
<input type="checkbox"/> SAND [6]	10 10	<input type="checkbox"/> ARTIFICIAL [0]	_____	<input type="checkbox"/> LACUSTURINE [0]	_____			<input type="checkbox"/> RIP/RAP [0]	_____			
<input type="checkbox"/> BEDROCK [5]	_____	(Score natural substrates; ignore sludge from point-sources)		<input type="checkbox"/> SHALE [-1]	_____			<input type="checkbox"/> COAL FINES [-2]	_____			

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments \_\_\_\_\_

## 2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

## AMOUNT

Check ONE (Or 2 &amp; average)

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
1 OVERHANGING VEGETATION [1]	1 ROOTWADS [1]	1 AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
1 SHALLOWS (IN SLOW WATER) [1]	0 BOULDERS [1]	0 LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-<25% [3]
0 ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments \_\_\_\_\_

Cover  
Maximum 20

9

## 3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 &amp; average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	Channel Maximum 20
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]	10.5
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]	
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		

Comments \_\_\_\_\_

## 4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank &amp; average)

River right looking downstream

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		Riparian Maximum 10
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]			
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]			
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]			
	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]				
	<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]				

Comments \_\_\_\_\_

Indicate predominant land use(s) past 100m riparian.

## 5] POOL / GLIDE AND RIFFLE / RUN QUALITY

## MAXIMUM DEPTH

Check ONE (ONLY!)

- ☐ > 1m [6]  
☐ 0.7-<1m [4]  
☒ 0.4-<0.7m [2]  
☐ 0.2-<0.4m [1]  
☐ < 0.2m [0]

## CHANNEL WIDTH

Check ONE (Or 2 &amp; average)

- ☒ POOL WIDTH > RIFFLE WIDTH [2]  
☐ POOL WIDTH = RIFFLE WIDTH [1]  
☐ POOL WIDTH < RIFFLE WIDTH [0]

## CURRENT VELOCITY

Check ALL that apply

- ☐ TORRENTIAL [-1] ☒ SLOW [1]  
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]  
☐ FAST [1] ☐ INTERMITTENT [-2]  
☒ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential  
Primary Contact  
Secondary Contact  
(circle one and comment on back)

Pool /  
Current  
Maximum 12

6

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 &amp; average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS	Riffle / Run Maximum 8
<input type="checkbox"/> BEST AREAS > 10cm [2] <input type="checkbox"/> BEST AREAS 5-10cm [1] <input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0]	<input type="checkbox"/> MAXIMUM > 50cm [2] <input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] <input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] <input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> NONE [2] <input type="checkbox"/> LOW [1] <input checked="" type="checkbox"/> MODERATE [0] <input type="checkbox"/> EXTENSIVE [-1]	

Comments \_\_\_\_\_

## 6] GRADIENT

DRAINAGE AREA

( 42.8 mi<sup>2</sup>)

- ☐ VERY LOW - LOW [2-4]  
☒ MODERATE [6-10]  
☐ HIGH - VERY HIGH [10-6]

%POOL: 40

%GLIDE: 40

%RUN: 10

%RIFFLE: 10

Gradient  
Maximum 10

8



## AJ SAMPLED REACH

Check ALL that apply

### METHOD

- ☐ BOAT  
☒ WADE  
☐ L. LINE  
☐ OTHER

### STAGE

1st-sample pass- 2nd

- ☐ HIGH ☐  
☐ UP ☐  
☒ NORMAL ☐  
☐ LOW ☐  
☐ DRY ☐

### DISTANCE

- ☐ 0.5 Km  
☐ 0.2 Km  
☐ 0.15 Km  
☐ 0.12 Km  
☒ OTHER

meters

### CANOPY

- ☐ > 85%- OPEN  
☐ 55%-<85%  
☐ 30%-<55%  
☐ 10%-<30%  
☐ <10%- CLOSED

### CLARITY

1st --sample pass-- 2nd

- ☐ < 20 cm  
☒ 20-<40 cm  
☐ 40-70 cm  
☐ > 70 cm/ CTB  
☐ SECCHI DEPTH

### BJ AESTHETICS

- ☐ NUISANCE ALGAE  
☐ INVASIVE MACROPHYTES  
☐ EXCESS TURBIDITY  
☐ DISCOLORATION  
☐ FOAM / SCUM  
☐ OIL SHEEN  
☐ TRASH / LITTER  
☐ NUISANCE ODOR  
☐ SLUDGE DEPOSITS  
☐ CSOs/SSOs/OUTFALLS

### DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA  
ACTIVE / HISTORIC / BOTH / NA  
YOUNG - SUCCESSION - OLD  
SPRAY / SNAG / REMOVED  
MODIFIED / DIPPED OUT / NA  
LEVEED / ONE SIDED  
RELOCATED / CUTOFFS  
MOVING - BEDLOAD - STABLE  
ARMoured / SLUMPS  
ISLANDS / SCoured  
IMPOUNDED / DESICCATED  
FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

### EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY  
HARDENED / URBAN / DIRT&GRIME  
CONTAMINATED / LANDFILL  
BMPs - CONSTRUCTION - SEDIMENT  
LOGGING / IRRIGATION / COOLING  
BANK / EROSION / SURFACE  
FALSE BANK / MANURE / LAGOON  
WASH H2O / TILE / H2O TABLE  
ACID / MINE / QUARRY / FLOW  
NATURAL / WETLAND / STAGNANT  
PARK / GOLF / LAWN / HOME  
ATMOSPHERE / DATA PAUCITY

### FJ MEASUREMENTS

- $\bar{x}$  width 25  
 $\bar{x}$  depth 8  
max. depth 24  
 $\bar{x}$  bankfull width 40  
bankfull  $\bar{x}$  depth  
W/D ratio  
bankfull max. depth  
floodprone  $x^2$  width  
entrench. ratio

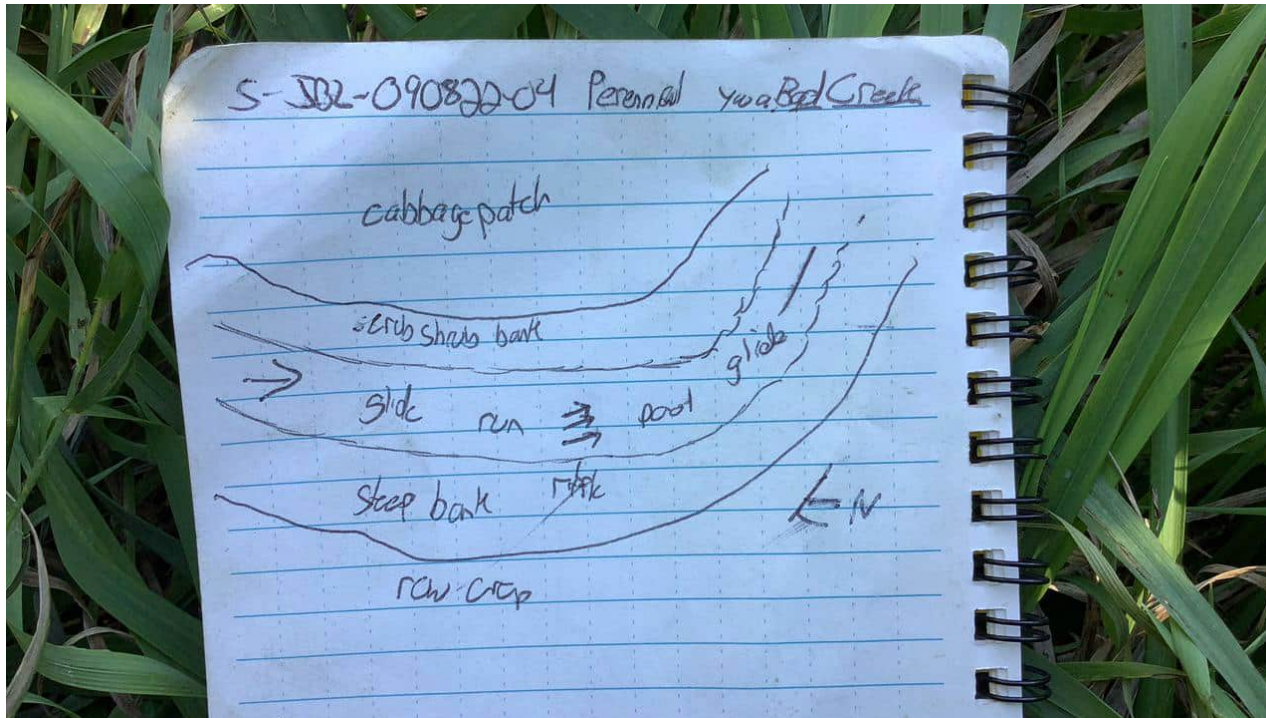
Legacy Tree:

### CJ RECREATION

AREA DEPTH

POOL: ☒ >100ft<sup>2</sup> ☒ >3ft

**Stream Drawing:** Stream DFS-06





Upstream



Downstream



Substrate



## Appendix E

### HHEI Stream Data Forms

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## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

45

SITE NAME/LOCATION Stream DFS-01 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-091422-01 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 1.25

LENGTH OF STREAM REACH (ft) LAT 41.58378 LONG -83.92121 RIVER MILE

DATE 09/14/2022 SCORER JBL COMMENTS Channelized along RR tracks. Flows under the RR tracks to the south outside of the survey area

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type present).** Check *ONLY* two predominant substrate *TYPE* boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	75
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5	<input type="checkbox"/> ARTIFICIAL [3 pts]	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 6

(B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
PointsSubstrate  
Max = 40

10

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]

Pool Depth  
Max = 30

15

COMMENTS

MAXIMUM POOL DEPTH (inches):

3

3. **BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check *ONLY* one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

Bankfull  
Width  
Max=30

20

COMMENTS

AVERAGE BANKFULL WIDTH (feet):

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft)
☐ Flat to Moderate
☐ Moderate (2 ft/100 ft)
☐ Moderate to Severe
☐ Severe (10 ft/100 ft)



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ai Creek Distance from Evaluated Stream >2 miles  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Swan Creek Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 9/11/22 Quantity: 0.25

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 95Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Upstream



Downstream



Substrate





## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

33

SITE NAME/LOCATION Stream DFS-02 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-090922-01 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.91

LENGTH OF STREAM REACH (ft) LAT 41.56818867733333 LONG -83.94551137750001 RIVER MILE

DATE 09/09/2022 SCORER JBL COMMENTS Channelized in ag field

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B			<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">8</div>																											
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This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)			
L	R	L	R		
<input type="checkbox"/> <input type="checkbox"/>	Wide >10m	<input type="checkbox"/> <input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/> <input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/> <input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/> <input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/> <input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/> <input type="checkbox"/>	Residential, Park, New Field	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/> <input type="checkbox"/>	None	<input type="checkbox"/> <input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/> <input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Swan Creek Distance from Evaluated Stream 0.83 mile  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Swanton, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Swan Creek Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/04/2022 Quantity: 0.49

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

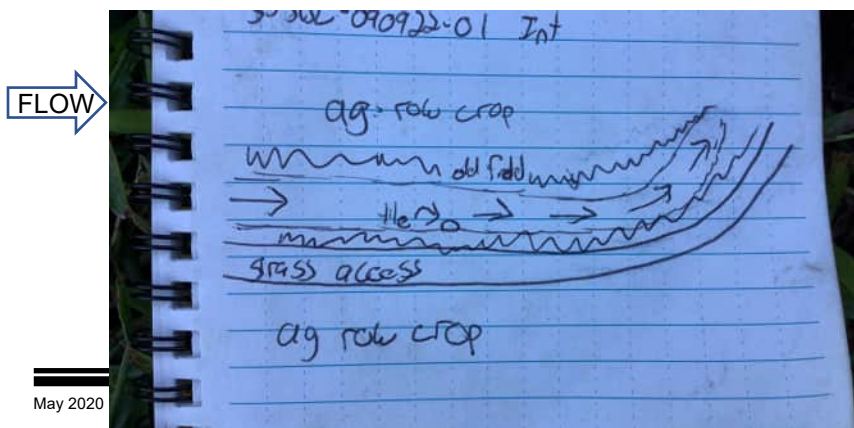
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







Upstream



Downstream



Substrate



## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

55

SITE NAME/LOCATION Stream DFS-04 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-091422-02 RIVER BASIN 04100009 RIVER CODE DRAINAGE AREA (mi<sup>2</sup>) 0.81

LENGTH OF STREAM REACH (ft) LAT 41.567626917666665 LONG -83.97011389766668 RIVER MILE

DATE 09/14/2022 SCORER JBL COMMENTS Channelized S-JBL-091422-02. Goes under co rd 5-2

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B				<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">10</div> A + B																											
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This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS intermittent

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Fewless Creek Distance from Evaluated Stream 1.28 miles  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Delta, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Fulton County Township/City: Swan Creek Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 09/11/2022 Quantity: 0.25

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 100Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Upstream



Downstream



Substrate





# Headwater Habitat Evaluation Index Field Form

**HHEI Score (sum of metrics 1+2+3)**
**49**

 SITE NAME/LOCATION Stream DFS-07 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

 SITE NUMBER S-JBL-090622-01 RIVER BASIN 04100009 RIVER CODE \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) 0.30

 LENGTH OF STREAM REACH (ft) \_\_\_\_\_ LAT 41.55987547783334 LONG -84.05293839666668 RIVER MILE \_\_\_\_\_

 DATE 09/06/2022 SCORER JBL COMMENTS Channelized stream in agriculture field
**NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions**
**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <i>ONLY</i> two predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B			<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; text-align: center;">9</div>																											
<table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]</td> <td><u>60</u></td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td><u>30</u></td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td><u>10</u></td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>_____</td> </tr> </table>	TYPE	PERCENT		TYPE	PERCENT	<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<u>60</u>	<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>30</u>	<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>10</u>	<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____	
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Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u>																														
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <div style="border: 1px solid black; padding: 2px;">6</div>		TOTAL NUMBER OF SUBSTRATE TYPES: (B) <div style="border: 1px solid black; padding: 2px;">3</div>																												
<b>2. Maximum Pool Depth (Measure the <u>maximum</u> pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box):</b>			<b>Pool Depth Max = 30</b>  <div style="border: 1px solid black; padding: 5px; text-align: center;">25</div>																											
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> &lt; 5 cm [5pts]</td> </tr> <tr> <td><input checked="" type="checkbox"/> &gt; 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </table>				<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]	<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																					
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COMMENTS _____			MAXIMUM POOL DEPTH (inches): <div style="border: 1px solid black; padding: 2px;">4</div>																											
<b>3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check <i>ONLY</i> one box):</b>			<b>Bankfull Width Max=30</b>  <div style="border: 1px solid black; padding: 5px; text-align: center;">15</div>																											
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 4.0 meters (&gt; 13') [30 pts]</td> <td><input checked="" type="checkbox"/> &gt; 1.0 m - 1.5 m (&gt; 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 3.0 m - 4.0 m (&gt; 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 1.5 m - 3.0 m (&gt; 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </table>				<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																						
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<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																														
COMMENTS _____			AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px;">4</div>																											

 This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/> <input type="checkbox"/>	Wide >10m	<input type="checkbox"/> <input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/> <input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/> <input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/> <input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/> <input type="checkbox"/>	None	<input type="checkbox"/> <input type="checkbox"/>	Fenced Pasture
<input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/>	Conservation Tillage
		<input type="checkbox"/> <input type="checkbox"/>	Urban or Industrial
		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Open Pasture, Row Crop
		<input type="checkbox"/> <input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

**FLOW REGIME (At Time of Evaluation)** (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY (Number of bends per 61 m (200 ft) of channel)** (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: North Turkeyfoot Creek Distance from Evaluated Stream >2 miles

☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quadrangle Name: Delta, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_

County: Fulton County Township/City: York Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 09/04/2022 Quantity: 0.49

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): \_\_\_\_\_Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

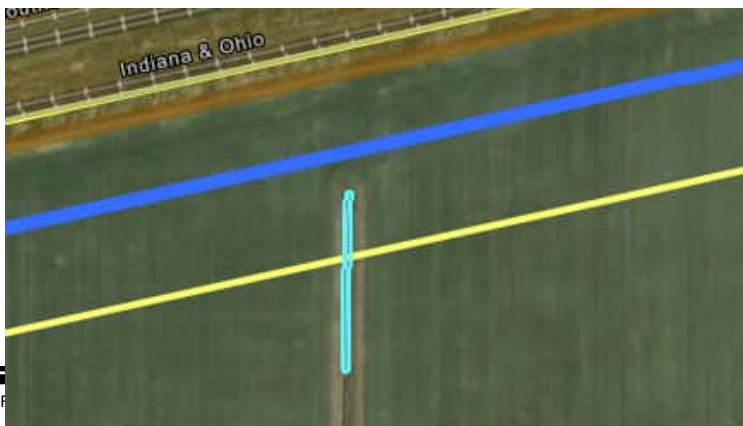
Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW







Upstream



Downstream



Substrate

Appendix F  
Jacobs Open Water/Pond Data Forms

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## POND DATA SHEET

FEATURE ID Pond DFS-01		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 09/14/2022	CLIENT/PROJECT NAME: FirstEnergy		Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation
INVESTIGATORS:		ROUTE:	
STATE/COUNTY: OH Fulton		IS THIS A MAPPED NWI FEATURE?: yes PUBGx	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:	Residential pond		
AVG. DEPTH:	1 ft		
AVG. WIDTH (WATER SURFACE):	60 ft		
APPROXIMATE SIZE:	1/4 acre		
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:	Clear		
PRIMARY SUBSTRATE (IF OBSERVED):	Silt		
POTENTIAL HABITAT FOR:	Fish, amphibians, insects		
SURROUNDING LAND USE:	Mowed lawn		
WETLAND FRINGE (IF PRESENT):	None		
COMMENTS			



S



W



SW



Substrate



## POND DATA SHEET

FEATURE ID Pond DFS-02		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 09/06/2022	CLIENT/PROJECT NAME: FirstEnergy		Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation
INVESTIGATORS:		ROUTE:	
STATE/COUNTY: OH Fulton		IS THIS A MAPPED NWI FEATURE?: no	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:	Sewage treatment		
AVG. DEPTH:	10		
AVG. WIDTH (WATER SURFACE):	50		
APPROXIMATE SIZE:	0.25		
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:	Cloudy		
PRIMARY SUBSTRATE (IF OBSERVED):			
POTENTIAL HABITAT FOR:			
SURROUNDING LAND USE:			
WETLAND FRINGE (IF PRESENT):			
COMMENTS			



N



## POND DATA SHEET

FEATURE ID Pond DFS-03		ASSOCIATED FEATURES:	
SURVEY TYPE: Wetland and waterbodies delineation			
DATE: 09/06/2022	CLIENT/PROJECT NAME: FirstEnergy		Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation
INVESTIGATORS:		ROUTE:	
STATE/COUNTY: OH Fulton		IS THIS A MAPPED NWI FEATURE?: no	
WATERBODY CHARACTERISTICS			
WATERBODY TYPE:	Sewage treatment pond		
AVG. DEPTH:	10		
AVG. WIDTH (WATER SURFACE):	50		
APPROXIMATE SIZE:	.2 acre		
QUALITATIVE ATTRIBUTES			
AVERAGE WATER APPEARANCE:	Cloudy		
PRIMARY SUBSTRATE (IF OBSERVED):			
POTENTIAL HABITAT FOR:			
SURROUNDING LAND USE:			
WETLAND FRINGE (IF PRESENT):			
COMMENTS			





**Appendix 8-3C**  
**Wetland and Waterbody Delineation Report**  
**for the Proposed Melbourne Substation and**  
**345 kV Tie Lines (Melbourne Substation to**  
**Sydney Substation)**

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# **Wetland and Waterbody Delineation Report**

**Dowling-Fulton 345 kV Transmission Line Tap to  
Melbourne Substation Project –  
Proposed Melbourne Substation and 345 kV Tie Lines  
(Melbourne Substation to Sydney Substation)  
Fulton County, Ohio**

Prepared for



February 2023

## **Jacobs**

Jacobs Engineering Group Inc.  
2 Crowne Point Court, Suite 100  
Cincinnati, OH 45241



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3-1	Soil Map Units
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3-1 to 3-2	Delineated Features Map
<b>B</b>	<b>USACE Wetland Determination Field Data Forms</b>
<b>C</b>	<b>OEPA ORAM Data Forms</b>
<b>D</b>	<b>HHEI Stream Data Forms</b>

# Acronyms and Abbreviations

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ATSI	American Transmission Systems, Incorporated
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESB	environmental survey boundary
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GNSS	global navigation satellite system
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
Jacobs	Jacobs Engineering Group Inc.
kV	kilovolt
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	obligate wetland
OEPA	Ohio Environmental Protection Agency
OHWM	ordinary high water mark
ORAM	Ohio Rapid Assessment Method
PEM	palustrine emergent
PFO	palustrine forested
Project	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
PUB	palustrine unconsolidated bottom
ROW	right-of-way
TNW	traditionally navigable water
UPL	upland
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey



# 1 Introduction

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This wetland and waterbody delineation report (Report) summarizes the results of the wetland and waterbody delineation surveys conducted on the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project (Project) in Fulton County, Ohio by Jacobs Engineering Group Inc. (Jacobs), for American Transmission Systems, Incorporated (ATSI), a wholly-owned subsidiary of FirstEnergy Corporation. ATSI has proposed to construct the proposed Melbourne Substation, 345kV Tie Lines from Melbourne Substation to Sydney Substation, and the extension line from Fulton-North Star Steel 345kV transmission line to Melbourne Substation as part of the Project. This Report specifically includes the survey results for the tie-lines, the extension line, and the proposed Melbourne Substation. The proposed tie-lines and extension line consist of new 345 kV transmission lines, each approximately 0.5 mile long. The Project components are within York Township, Ohio and are shown on Figure 1, Appendix A. The environmental survey boundary (ESB) includes the proposed Melbourne Substation area and a 570-foot-wide survey corridor consisting of two proposed parallel 150-foot right-of-way (ROW) plus a 100-foot buffer on each side. This Report contains the following components:

- Figure 1 in Appendix A provides an overview map of the ESB overlain on ArcGIS Online USA topographic maps.
- Figures 2-1 to 2-2 in Appendix A show U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil map units, the location of National Wetland Inventory (NWI) polygons, national hydrography dataset (NHD) streams, and Federal Emergency Management Agency (FEMA) 100-year floodplain and floodway information. Table 2-1 summarizes recent precipitation data and Table 2-2 lists the 12-digit hydrologic unit codes crossed by the Project. Table 3-1 lists the soils types identified within the ESB and Table 3-2 lists the NWI wetland types identified within the ESB.
- Figures 3-1 to 3-2 in Appendix A provide the location of all features mapped during the delineation by Jacobs biologists. This includes all wetlands, data points, and waterbodies. Tables 4-1 (wetlands) and 4-2 (streams) follow the text, providing detailed information for all delineated features within the ESB.
- U.S. Army Corps of Engineers (USACE) wetland determination field data forms are in Appendix B.
- Ohio Rapid Assessment Method for Wetlands (ORAM) two-page forms are in Appendix C.
- Headwater Habitat Evaluation Index (HHEI) Stream Forms are in Appendix D.

## 2 Background Information

The ESB consists of the tie-lines, extension line, and proposed substation (Figure 1) which are located in York Township, Fulton County, Ohio. The tie lines begin at the proposed Melbourne Substation and end at the existing Sydney Substation located on the North Star Steel property.

Review of the USGS 7.5-minute topographic maps indicates that the ESB is within the Delta, OH USGS 7.5-minute topographic quadrangle. Additional review of the USGS 7.5-minute topographic maps of the area indicates that unnamed tributaries to Bad Creek drain the ESB. Topographic relief is generally flat, with elevation ranging from 741 to 763 feet above sea level (Figure 1).

Land use and natural communities observed within the ESB include industrial, maintained lawn, and road.

### 2.1 Annual Precipitation

Precipitation history for Wauseon, Ohio was reviewed prior to completing environmental survey to determine if climatic conditions were normal at the time of the surveys. Rainfall recorded in Wauseon ranged from above average to below average prior to and during the surveys conducted in early January 2023 (Table 2-1; USDA, 2022), suggesting that climatic conditions were approximately normal for the region and time of year. This was taken into consideration during the delineation.

TABLE 2-1: Recent Precipitation Data

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project- Proposed 345kV Tie Lines*

Precipitation Data	Jul	Aug	Sep	Oct	Nov	Dec	Total
2022 Monthly Sum <sup>1,3</sup>	3.22	5.82	1.51	1.10	2.21	1.95	15.81
Normal Precipitation <sup>2,3</sup>	2.25-3.92	2.28-4.48	1.90-3.76	1.76-3.10	1.86-3.51	1.57-2.91	11.62-21.68
Monthly climatic condition	Average	Above average	Below average	Below average	Average	Average	Average

<sup>1</sup>Monthly weather summary from weather station WAUSEON WATER PLANT, OH

<sup>2</sup>USDA WETS Station Climate Data 1971-2000 (USDA 2022)

<sup>3</sup>Displayed in inches

### 2.2 Drainage Basins

The Project is within the Lower Maumee watershed, corresponding to 8-digit Hydrologic Unit Code (HUC) 04100009. More specifically it is within Lower Bad Creek drainage area, 12-digit HUC 04100009-0302.

### 2.3 Traditional Navigable Waters

The U.S. Environmental Protection Agency (EPA) and USACE assert jurisdiction over “all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce including all waters which are subject to the ebb and flow of the tide” (USACE and EPA, 2008). These waters are considered traditionally navigable waters (TNW). No TNW directly cross the ESB.



# 3 Wetland and Waterbody Delineation

## 3.1 Desktop Review

Prior to conducting the field investigations, Jacobs reviewed the following resources to identify the potential for wetlands within the ESB:

- Aerial photo-based maps (ArcGIS Online, World Imagery Map, 2018)
- Topographic maps (ArcGIS Online, USA Topo Maps, 2019)
- NRCS Web Soil Survey (USDA-NRCS, 2021)
- NWI shapefile (USFWS, 2020)
- National Hydrography Dataset (NHD) (USGS, 2020)

According to the NRCS soil survey of Fulton County (USDA-NRCS, 2021), the ESB consists of five soil map units (Figures 2-1 to 2-2). Of these, three units are listed as predominantly nonhydric and two are predominantly hydric (Table 3-1). Hydric or predominantly hydric soils comprise 58 percent of the ESB.

Generally, hydric soils are those soils that indicate through their color and structure that they have experienced dominantly reducing (i.e. oxygen poor) conditions. Oxygen-poor conditions result from inundation and/or saturation by water. Partially hydric soils have both hydric and non-hydric soil components identified in the soil map unit.

TABLE 3-1: Soil Map Units

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project- Proposed 345kV Tie Lines*

Soil type	Soil type description	Hydric status	Acres (ac) within ESB
HkA	Haskins loam, 0 to 3 percent slopes	Predominantly Nonydric	1.9
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydric	24.1
Mf	Mermill loam	Predominantly Hydric	5.1
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Nonydric	17.3
RnA	Rimer loamy fine sand, 0 to 3 percent slopes	Predominantly Nonydric	2.2

NWI data were obtained from the USFWS for review of potential wetlands that may occur within the ESB. The NWI data (USFWS, 2020) identify the type of wetland or open water present at a location using the USFWS classification system (Cowardin et al., 1979). The NWI data indicated that there are no NWI features within the ESB (Figure 2-1 to 2-2; USFWS, 2020). The presence of an NWI feature is not a definitive indicator that a wetland or waterbody is present. The information on NWI maps is obtained largely from aerial interpretation, may be outdated, and is only sporadically field-checked.

As shown on the FEMA floodplain panels (Figures 2-1 to 2-2), there are no floodplains within the ESB (FEMA, 2019).

## 3.2 Field Survey Methodology

On January 9, 2023, Jacobs biologists surveyed the ESB by walking the area and evaluating for wetlands and other waters of the U.S. The boundaries of each wetland and waterbody within the ESB were delineated and recorded using handheld global navigation satellite system (GNSS) receivers. For

waterbodies identified within the Project area, the ordinary high-water mark (OHWM) was used as the jurisdictional boundary.

Wetland data were recorded on USACE Northcentral and Northeast Regional Supplement wetland determination data forms and stream data were recorded on Headwater Habitat Evaluation Index (HHEI) forms. All other land use, habitat, and other supplemental data were collected in a digital geodatabase during the environmental survey.

### 3.2.1 Wetland Delineation

Wetland boundaries were field-delineated according to using the routine onsite methodology described in the Technical Report Y-87-1 *Corps of Engineers Wetlands Delineation Manual* and subsequent guidance documents (Environmental Laboratory, 1987) and according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0) (USACE, 2012). Wetland delineation data were recorded on the USACE Regional Supplement wetland determination data forms. Representative wetland and upland data points were recorded during the wetland delineation to determine the presence/absence of wetlands and/or to document upland conditions within the Project area. Upland data points were determined not to be within wetlands because they did not have positive indicators of one or more of the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

#### 3.2.1.1 Soils

Jacobs biologists examined soils using a shovel to extract soil cores, which were examined for hydric soil characteristics. A *Munsell Soil Color Chart* (Munsell Color, 2012) was used to identify the hue, value, and chroma of the matrix and concentrations/depletions of the soils. Generally, mottled soils with a matrix chroma of two or less, or unmottled soils with a matrix chroma of one or less are considered to exhibit hydric soil characteristics (Environmental Laboratory, 1987). In sandy soils, mottled soils with a matrix chroma of three or less, or unmottled soils with a matrix chroma of two or less are hydric soils.

#### 3.2.1.2 Hydrology

The *1987 Manual* requires that an area be inundated or saturated to the surface for an absolute minimum of five percent of the growing season. Areas saturated between five percent and 12.5 percent of the growing season may or may not be wetlands, while areas saturated over 12.5 percent of the growing season fulfill the hydrology requirements for wetlands. The *Regional Supplement* states that the growing season dates are determined through onsite observations of the following indicators of biological activity in a given year; (1) above-ground growth and development of vascular plants, and/or (2) soil temperature (12-in. depth is 41 degrees Fahrenheit or higher) as an indicator of soil microbial activity. Therefore, the beginning of the growing season in a given year is indicated by whichever condition occurs earlier, and the end of the growing season by whichever persists later.

The soils and ground surface were examined by Jacobs biologists for evidence of wetland hydrology in lieu of detailed hydrological data. This is an acceptable approach according to the *1987 Manual* and the *Regional Supplement*. Evidence indicating wetland hydrology typically includes primary indicators such as surface water, saturation, water marks, drift deposits, water-stained leaves, sediment deposits, and oxidized rhizospheres on living roots; and secondary indicators such as drainage patterns, geomorphic position, microtopographic relief, and a positive Facultative (FAC)-neutral test (USACE, 2012).

#### 3.2.1.3 Vegetation

Dominant vegetation was visually assessed for each stratum (tree, sapling/shrub, herb, and woody vine) and an indicator status (obligate wetland [OBL], facultative wetland [FACW], facultative [FAC],



facultative upland [FACU], upland [UPL]) was assigned to each plant species based on the 2020 National Wetland Plant List. Under normal circumstances, an area is determined to have hydrophytic vegetation when any of the following are true: all dominant species are OBL or FACW; more than 50 percent of the dominant species are OBL, FACW or FAC; or the average total cover of plants, when weighted based on indicator status, calculates to a prevalence index of less than or equal to three.

Wetland quality was evaluated using the Ohio Environmental Protection Agency (OEPA) Ohio Rapid Assessment Method (ORAM) for Wetlands Version 5.0 (Mack 2001). Categorization was conducted in accordance with the latest quantitative score calibration (OEPA, 2000). Wetlands are scored based on hydrology, upland buffer, habitat alteration, special wetland communities, and vegetation communities. Each of these subject areas is further divided into subcategories under ORAM v5.0 resulting in a score that describes the wetland using a range from 0 (low quality and high disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1", 30 to 59.9 are "Category 2" and 60 to 100 are "Category 3". Transitional zones exist between Categories 1 and 2 from 30 to 34.9 and between Categories 2 and 3 from 60 to 64.9. However, according to the OEPA, if the wetland score falls into the transitional range, it must be given the higher Category unless scientific data can prove it should be in a lower category (Mack, 2001).

### **3.2.2 Stream Assessment**

Jurisdictional streams were identified as those waters that possessed a continuously defined bed and bank, OHWM indicators, and lacked a dominance of upland vegetation in the channel. Per USACE guidance, the OHWM is defined as the "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" (USACE, 2005). Channels that parallel a roadway or railroad were identified as upland drainage features and were not considered to be jurisdictional unless they had an identifiable OHWM, were identified on the USGS topographic map, or represented a presumed relocation of a natural channel.

During the field survey, functional stream assessments were conducted using the methods described in *Field Methods for Evaluating Primary Headwater Streams in Ohio* (OEPA, 2020). The HHEI is appropriate for first-order and second-order headwater streams (drainage areas less than one square mile).

## 4 Field Survey Results

Jacobs biologists identified four wetlands and one stream within the ESB. The features are displayed and identified on the Wetlands and Waterbodies Delineation Map (Figures 3-1 to 3-2). Jacobs defaults to the USACE and OEPA for the final determination of hydrologic connectivity and jurisdiction.

### 4.1 Wetlands

Four wetlands, ranging in size from 0.16 to 1.15 acres, were delineated within the ESB. Three of the wetlands were identified as palustrine emergent (PEM) wetlands and one was identified as a PEM/palustrine forested (PFO) wetland complex. These wetlands are depicted in Figures 3-1 to 3-2. The reported wetland acreage only corresponds to areas delineated within the ESB, as some wetlands extended beyond the survey boundary.

Completed USACE wetland and upland determination forms are provided in Appendix B; representative photographs were taken of each wetland during the field survey and are appended to each USACE wetland and upland form. Detailed information for each delineated wetland within the ESB is provided in Table 4-1.

TABLE 4-1: Delineated Wetland Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-  
Proposed 345kV Tie Lines & Melbourne Station*

Wetland ID	Location		Wetland Type <sup>1</sup>	Area (ac) within ESB	ORAM Score, Category
	Latitude	Longitude			
Wetland DFT-01	41.56589	-84.05320	PEM	0.21	16.5, Category 1
Wetland DFT-02	41.56687	-84.05185	PEM	0.16	21.5, Category 1
Wetland DFT-03	41.56684	-84.05069	PEM	0.62	17, Category 1
Wetland DFT-04	41.56621	-84.04972	PEM	0.84	28, Category 1
	41.56634	-84.05017	PFO	1.15	
Total Wetland Area (ac)				2.98	

<sup>1</sup>Cowardin et al. 1979.

#### 4.1.1 Wetland ORAM Results

All four wetlands identified within the ESB were classified as Category 1 wetlands. No Category 2 or 3 wetlands were identified. These wetlands were classified as Category 1 wetlands based on ORAM scores ranging from 16.5 to 28. Generally, the Category 1 wetlands scored low due to factors such as small size, narrow buffer width, high intensity surrounding land use, modifications to hydrology and substrate, and presence of invasive species. Completed ORAM forms are included in Appendix C.

TABLE 4.1.1: Wetland ORAM Summary Table

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project-  
Proposed 345kV Tie Lines & Melbourne Station*

Wetland Type	ORAM Category			Number of Wetlands	Acreage within Addedndum ESC
	Category 1	Category 2	Category 3		
PEM	4	0	0	4	2.98



## 4.2 Streams

One intermittent stream was identified, totaling 1,607 linear feet within the ESB. This stream is shown in Figures 3-1 to 3-2; the completed HHEI form and representative photos are provided in Appendix D. Detailed information for the delineated stream is provided in Table 4-2.

**TABLE 4-2: Delineated Stream Table**

*Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project- Proposed 345kV Tie Lines & Melbourne Station*

Stream ID	Location		Flow Regime <sup>1</sup>	Length (ft) within ESB	Average OHWM Width (ft)	Average TOB Width (ft)	HHEI/QHEI Score	Category/ Designation
	Latitude	Longitude						
Stream DFT-01	41.56655	-84.05242	Intermittent	1,607	8	30	54	Modified Class II
<b>Total Stream Length (ft)</b>				<b>1,607</b>				

<sup>1</sup>Flow regime estimated based on analysis of drainage area, gradient, and observations at the time of survey

## 4.3 Ponds/Open Water

No ponds were identified within the ESB.

## 5 Conclusion

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Jacobs conducted an environmental survey of the proposed 345kV tie-lines, and the Melbourne Substation, of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project on January 9, 2023. Four wetlands and one stream were delineated within the environmental survey boundary. The four wetlands totaled 2.98 acres within the ESB and were identified as three PEM wetlands and one PEM/PFO wetland complex. All four wetlands were identified as Category 1 wetlands. No Category 2 or 3 wetlands were identified within the ESB. The one intermittent stream, totalling 1,607 linear feet within the ESB, was assessed using the HHEI methodology (drainage area less than 1 mi<sup>2</sup>).

Jacobs defaults to the USACE and OEPA for the final determination of hydrologic connectivity and jurisdiction. Further coordination is recommended prior to the submittal of any permit or construction activities.

The results of the wetland and waterbody field survey described in this Report conducted by Jacobs are limited to the what was identified within the ESB. The information contained in this Report is for a study area that may be much larger than the actual Project limits-of-disturbance for construction; therefore, lengths and acreages listed in this Report may likely not constitute the actual impacts of the Project at the time of construction. If permits are determined to be necessary, actual impacted lengths and/or acreages will be submitted in subsequent permit applications.

The wetland and waterbodies field survey results presented within this report apply to the site conditions at the time of our assessment. Changes within the environmental survey boundary that may occur with time due to natural processes or human impacts at the project site or on adjacent properties, could invalidate the findings of this report, especially if Jacobs is unaware and has not had the opportunity to revisit the Project. Additionally, changes in applicable standards and regulations may also occur as a result of legislation or the expansion of information over time. Therefore, the findings of this Report may be invalidated, wholly or in part, by changes that are beyond the control of Jacobs.



## 6 References

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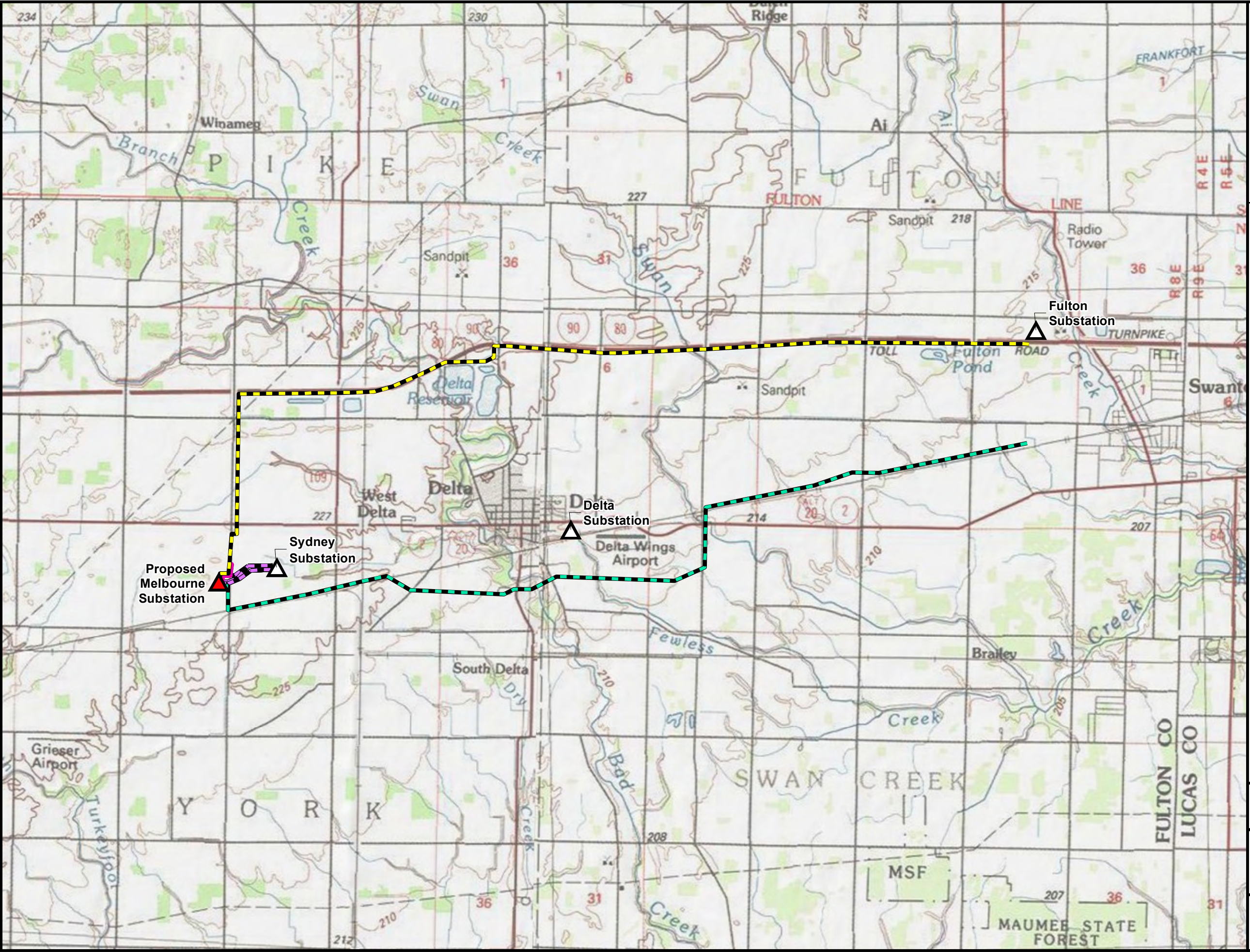
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## Appendix A Figures

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**LOCATOR MAP**

**LEGEND:**

- Existing Substation
- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line (Preferred and Alternate Routes)

BASE MAP SOURCE:  
Esri USA Topo Map  
USGS 7.5 Minute  
Topographic Quadrangles:  
Delta and Swanton

Coordinate System: State Plane  
Ohio North FIPS 3401 Feet  
Datum: NAD 1983  
Scale: 1:24,000

2/6/2023

**ATSI**  
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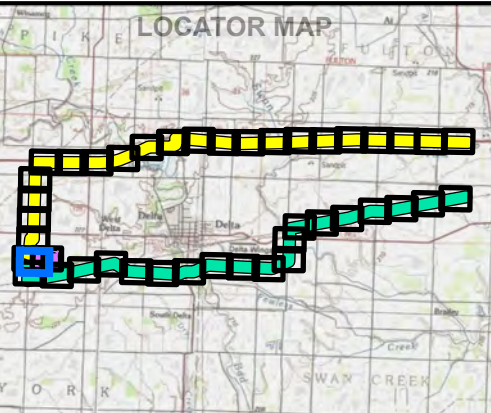
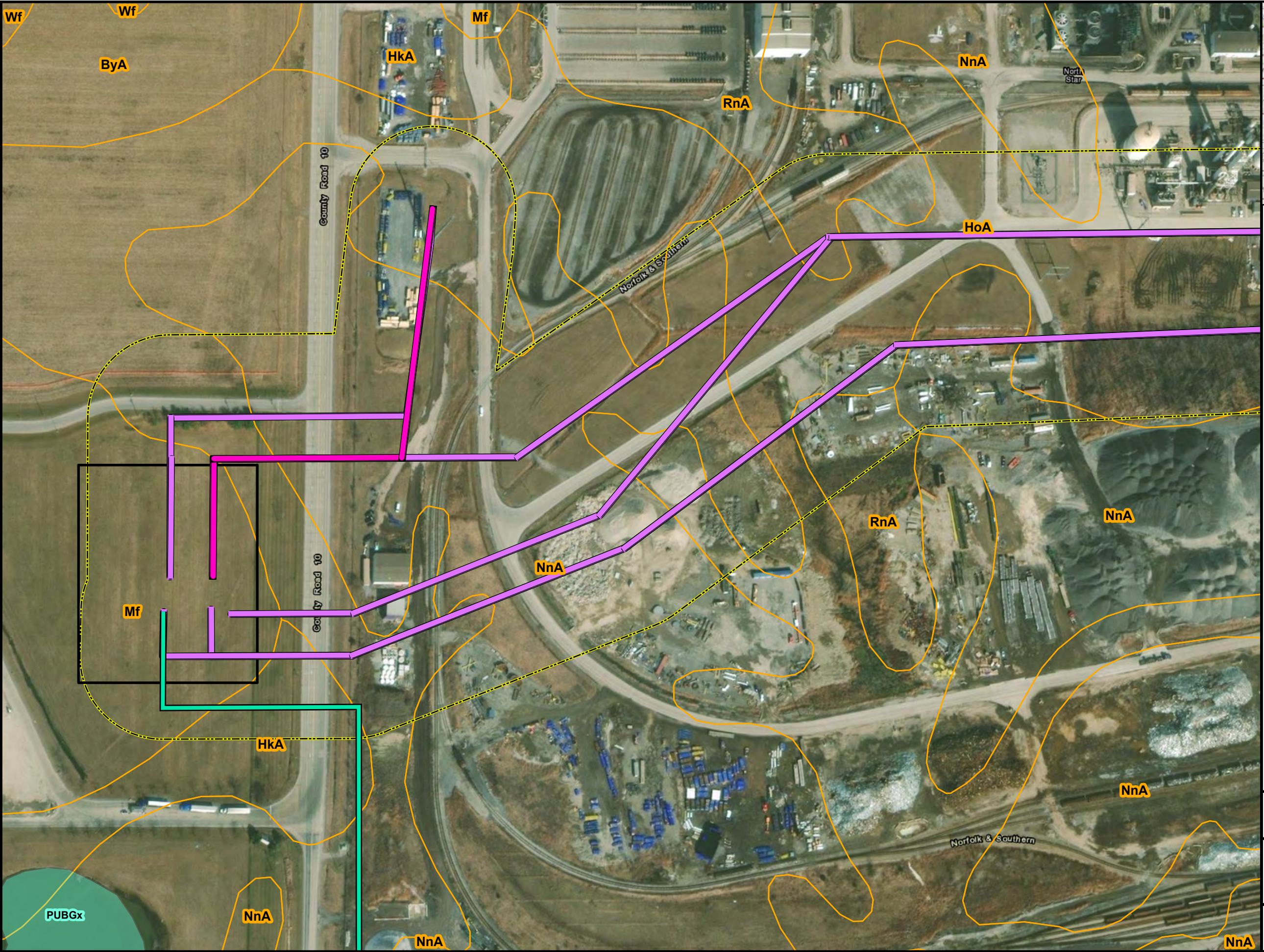
**Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project**

**FIGURE 1  
OVERVIEW MAP**

0 4,500 9,000  
FEET



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**LEGEND:**

- Extension Line
- Tie Line
- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- Proposed Melbourne Station
- Soil Map Unit

N

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

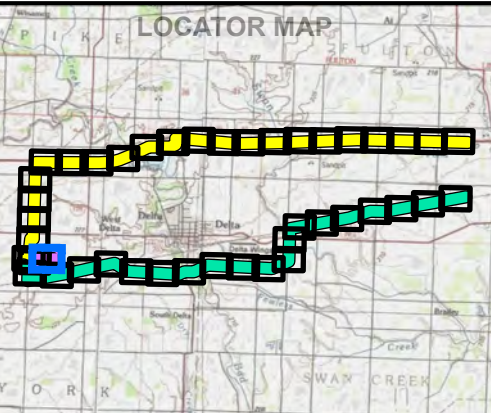
**TIE LINE ROUTE**  
**FIGURE 2-1**  
**SOILS, NHD, NWI, FEMA MAP**

DATE: 2/23/2023

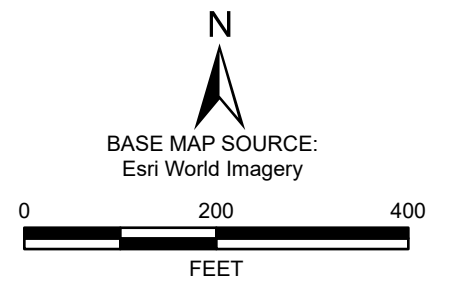
**Jacobs**




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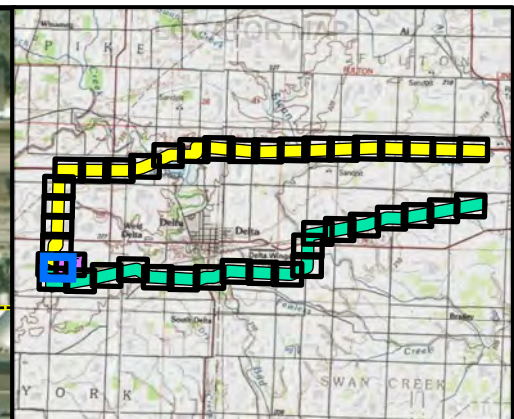
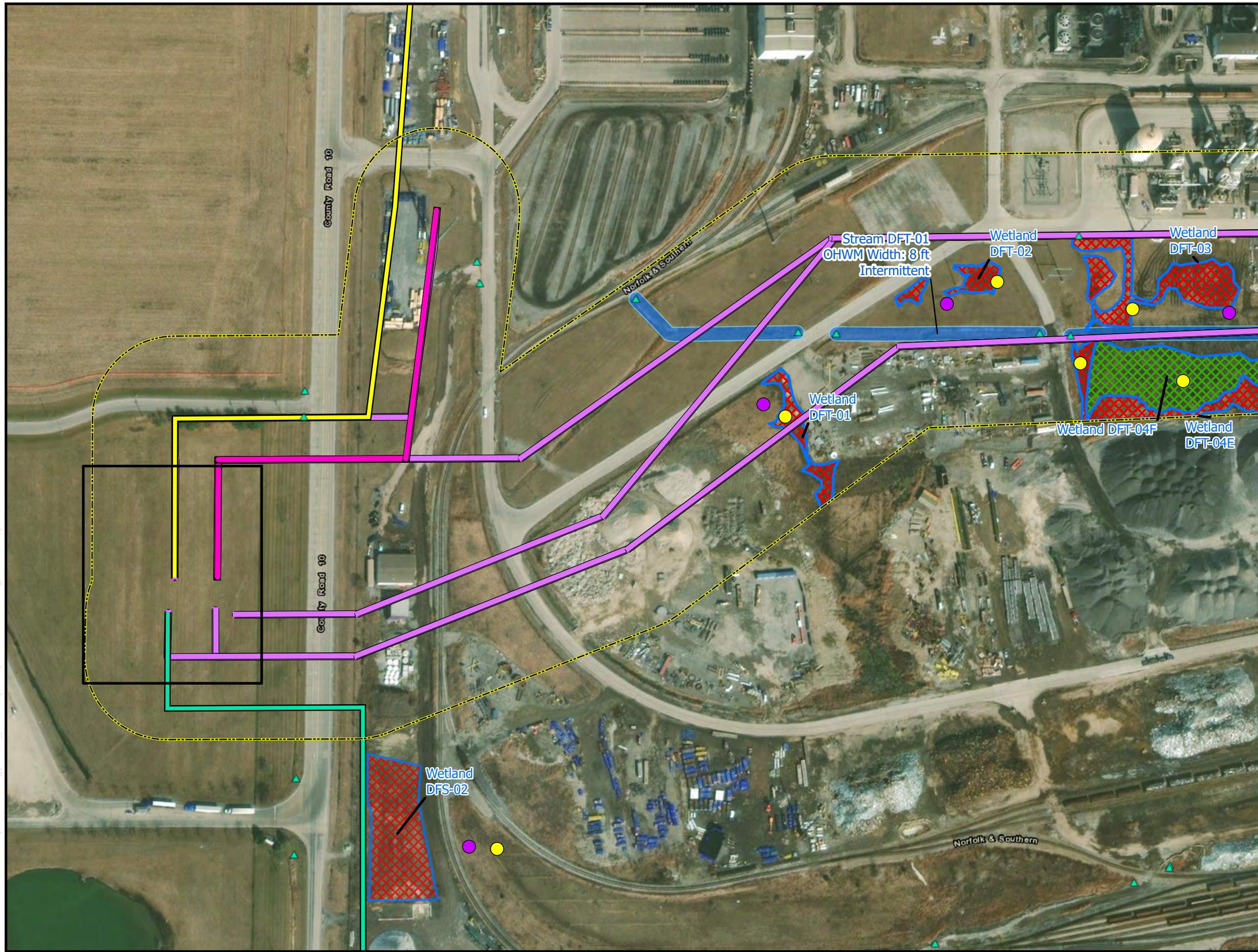
- LEGEND:**
- Tie Line
  - Preferred Route
  - Alternate Route
  - Environmental Survey Boundary
  - NHD Stream
  - NWI Wetlands
  - 100 Yr Floodplain
  - Floodway
  - Proposed Melbourne Station
  - Soil Map Unit



 American Transmission Systems, Inc. <small>a subsidiary of FirstEnergy Corp.</small>	<b>Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project</b>
<b>TIE LINE ROUTE FIGURE 2-2 SOILS, NHD, NWI, FEMA MAP</b>	
DATE: 2/23/2023	<b>Jacobs</b>



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**LEGEND:**

- ▲ Culvert
- Upland Data Point
- Wetland Data Point
- Preferred Route
- Alternate Route
- Extension Line
- Tie Line
- ▨ Delineated PEM Wetland
- ▨ Delineated PFO Wetland
- ▨ Delineated Pond
- ▨ Delineated Stream
- ▭ Proposed Melbourne Station
- ▭ Environmental Survey Boundary

BASE MAP SOURCE:  
Esri World Imagery

0 200 400  
FEET

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Dowling-Fulton 345 kV  
Transmission Line Tap to  
Melbourne Substation Project

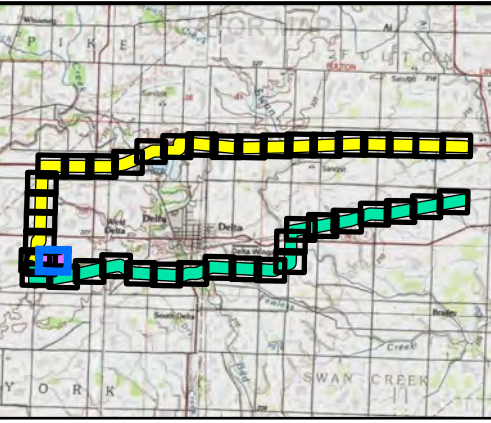
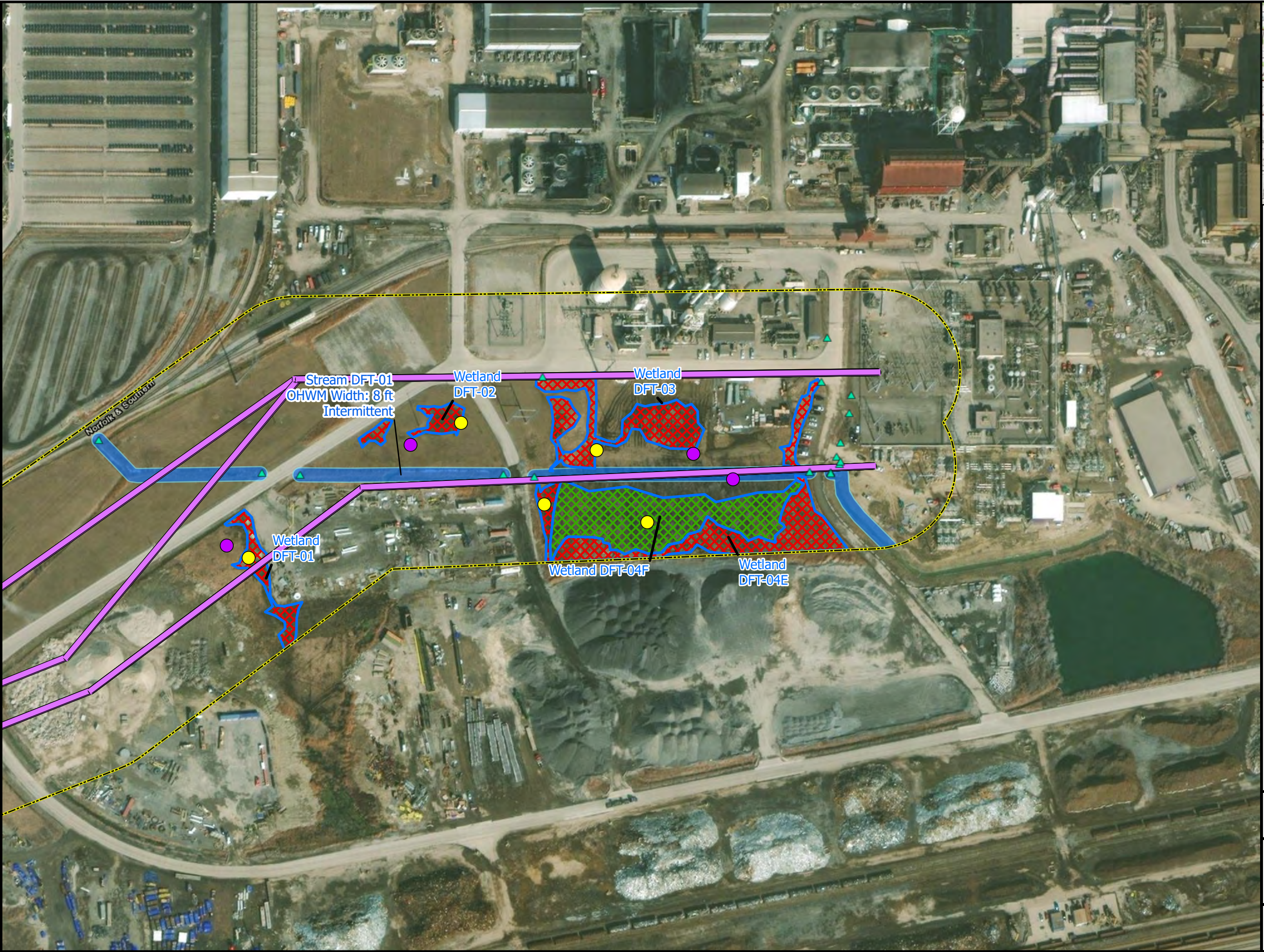
**TIE LINE ROUTE  
FIGURE 3-1  
DELINEATED FEATURES MAP**

DATE: 2/23/2023

**Jacobs**



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- LEGEND:**
- ▲ Culvert
  - Upland Data Point
  - Wetland Data Point
  - Preferred Route
  - Alternate Route
  - Extension Line
  - Tie Line
  - ▨ Delineated PEM Wetland
  - ▨ Delineated PFO Wetland
  - Delineated Pond
  - Delineated Stream
  - Proposed Melbourne Station
  - Environmental Survey Boundary



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**TIE LINE ROUTE  
FIGURE 3-2  
DELINEATED FEATURES MAP**

DATE: 2/23/2023

**Jacobs**



**Appendix B**  
**USACE Wetland Determination Field Data Forms**



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		____ Surface Soil Cracks (B6)
____ Surface Water (A1)	____ Water-Stained Leaves (B9)	____ Drainage Patterns (B10)
____ High Water Table (A2)	____ Aquatic Fauna (B13)	____ Moss Trim Lines (B16)
____ Saturation (A3)	____ Marl Deposits (B15)	____ Dry-Season Water Table (C2)
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)	____ Crayfish Burrows (C8)
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)	____ Saturation Visible on Aerial Imagery (C9)
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)	____ Stunted or Stressed Plants (D1)
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)	____ Geomorphic Position (D2)
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)	____ Shallow Aquitard (D3)
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)	____ Microtopographic Relief (D4)
____ Sparsely Vegetated Concave Surface (B8)		____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

# VEGETATION – Use scientific names of plants.

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				



## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
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<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input type="checkbox"/> Depleted Matrix (F3)                                     |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input type="checkbox"/> Redox Dark Surface (F6)                                  |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- |   |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR K, L, MLRA 149B</b> )       |
| <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>LRR K, L, R</b> )     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) ( <b>LRR K, L, R</b> )  |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR K, L, M</b> )             |
| <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR K, L</b> )     |
| <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR K, L</b> )           |
| <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR K, L, R</b> )   |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149B</b> ) |
| <input type="checkbox"/> Mesic Spodic (TA6) ( <b>MLRA 144A, 145, 149B</b> )   |
| <input type="checkbox"/> Red Parent Material (F21)                            |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)                     |
| <input type="checkbox"/> Other (Explain in Remarks)                           |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:

## General Site Photos







## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present? Yes _____ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		Wetland Hydrology Present? Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



Sampling Point:

Tree Stratum (Plot size: _____ )		Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____ )				
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		_____ = Total Cover		
Herb Stratum (Plot size: _____ )				
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
		_____ = Total Cover		
Woody Vine Stratum (Plot size: _____ )				
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
		_____ = Total Cover		

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

**Dominance Test worksheet:**

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

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

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

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation

\_\_\_ 2 - Dominance Test is >50%

\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
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<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

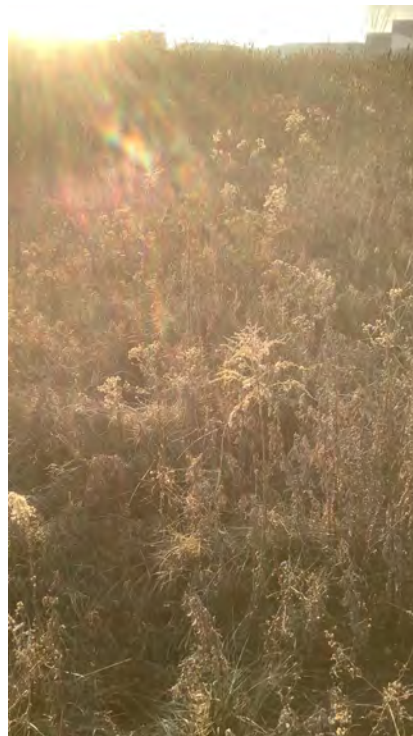
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:



## General Site Photos



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		____ Surface Soil Cracks (B6)
____ Surface Water (A1)	____ Water-Stained Leaves (B9)	____ Drainage Patterns (B10)
____ High Water Table (A2)	____ Aquatic Fauna (B13)	____ Moss Trim Lines (B16)
____ Saturation (A3)	____ Marl Deposits (B15)	____ Dry-Season Water Table (C2)
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)	____ Crayfish Burrows (C8)
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)	____ Saturation Visible on Aerial Imagery (C9)
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)	____ Stunted or Stressed Plants (D1)
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)	____ Geomorphic Position (D2)
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)	____ Shallow Aquitard (D3)
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)	____ Microtopographic Relief (D4)
____ Sparsely Vegetated Concave Surface (B8)		____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
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<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:



General Site Photos



## General Site Photos





## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

# **VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____



## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

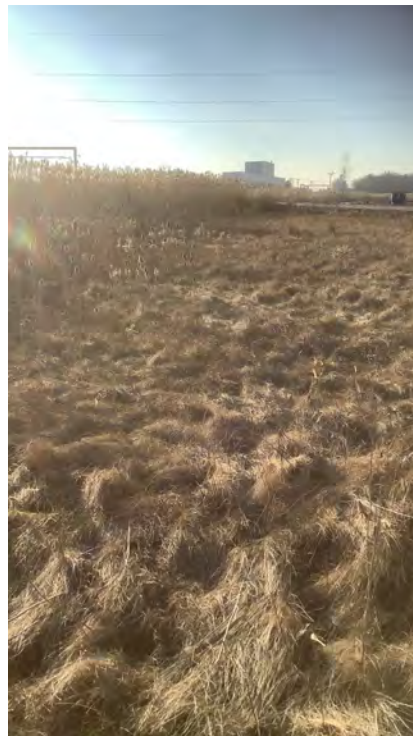
Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:

## General Site Photos





## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

# **VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				



## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

Histosol (A1)  
Histic Epipedon (A2)  
Black Histic (A3)  
Hydrogen Sulfide (A4)  
Stratified Layers (A5)  
Depleted Below Dark Surface (A11)  
Thick Dark Surface (A12)  
Sandy Mucky Mineral (S1)  
Sandy Gleyed Matrix (S4)  
Sandy Redox (S5)  
Stripped Matrix (S6)  
Dark Surface (S7) (**LRR R, MLRA 149B**)

Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
Loamy Mucky Mineral (F1) (**LRR K, L**)  
Loamy Gleyed Matrix (F2)  
Depleted Matrix (F3)  
Redox Dark Surface (F6)  
Depleted Dark Surface (F7)  
Redox Depressions (F8)

Indicators for Problematic Hydric Soils<sup>3</sup>:

2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
Coast Prairie Redox (A16) (**LRR K, L, R**)  
5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
Dark Surface (S7) (**LRR K, L, M**)  
Polyvalue Below Surface (S8) (**LRR K, L**)  
Thin Dark Surface (S9) (**LRR K, L**)  
Iron-Manganese Masses (F12) (**LRR K, L, R**)  
Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
Red Parent Material (F21)  
Very Shallow Dark Surface (TF12)  
Other (Explain in Remarks)

Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present? Yes No
Type:  Depth (inches):	

Remarks:

## General Site Photos







## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                                 | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) |
| <input type="checkbox"/> Histic Epipedon (A2)                          | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> )       |
| <input type="checkbox"/> Black Histic (A3)                             | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> )             |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                         | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                 |
| <input type="checkbox"/> Stratified Layers (A5)                        | <input type="checkbox"/> Depleted Matrix (F3)                                     |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)             | <input type="checkbox"/> Redox Dark Surface (F6)                                  |
| <input type="checkbox"/> Thick Dark Surface (A12)                      | <input type="checkbox"/> Depleted Dark Surface (F7)                               |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                      | <input type="checkbox"/> Redox Depressions (F8)                                   |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                      |   |
| <input type="checkbox"/> Sandy Redox (S5)                              |   |
| <input type="checkbox"/> Stripped Matrix (S6)                          |   |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> ) |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- |   |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR K, L, MLRA 149B</b> )       |
| <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>LRR K, L, R</b> )     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) ( <b>LRR K, L, R</b> )  |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR K, L, M</b> )             |
| <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR K, L</b> )     |
| <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR K, L</b> )           |
| <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR K, L, R</b> )   |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149B</b> ) |
| <input type="checkbox"/> Mesic Spodic (TA6) ( <b>MLRA 144A, 145, 149B</b> )   |
| <input type="checkbox"/> Red Parent Material (F21)                            |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)                     |
| <input type="checkbox"/> Other (Explain in Remarks)                           |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:



## General Site Photos



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1) ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)  
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)  
☐ Depleted Below Dark Surface (A11) ☐ Redox Dark Surface (F6)  
☐ Thick Dark Surface (A12) ☐ Depleted Dark Surface (F7)  
☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:



General Site Photos







## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				



## SOIL

Sampling Point: \_\_\_\_\_

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.
<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators:</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) ( <b>LRR R, MLRA 149B</b> )	<input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR R, MLRA 149B</b> ) <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR R, MLRA 149B</b> ) <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR K, L</b> ) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)
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<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR K, L, MLRA 149B</b> ) <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>LRR K, L, R</b> ) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) ( <b>LRR K, L, R</b> ) <input type="checkbox"/> Dark Surface (S7) ( <b>LRR K, L, M</b> ) <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR K, L</b> ) <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR K, L</b> ) <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR K, L, R</b> ) <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149B</b> ) <input type="checkbox"/> Mesic Spodic (TA6) ( <b>MLRA 144A, 145, 149B</b> ) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
---

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b>  Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes ____    No ____
Remarks:	

General Site Photos





## General Site Photos



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: \_\_\_\_\_ City/County: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Applicant/Owner: \_\_\_\_\_ State: \_\_\_\_\_ Sampling Point: \_\_\_\_\_

Investigator(s): \_\_\_\_\_ Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): \_\_\_\_\_ Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ 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 _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		____ Surface Soil Cracks (B6)
____ Surface Water (A1)	____ Water-Stained Leaves (B9)	____ Drainage Patterns (B10)
____ High Water Table (A2)	____ Aquatic Fauna (B13)	____ Moss Trim Lines (B16)
____ Saturation (A3)	____ Marl Deposits (B15)	____ Dry-Season Water Table (C2)
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)	____ Crayfish Burrows (C8)
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)	____ Saturation Visible on Aerial Imagery (C9)
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)	____ Stunted or Stressed Plants (D1)
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)	____ Geomorphic Position (D2)
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)	____ Shallow Aquitard (D3)
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)	____ Microtopographic Relief (D4)
____ Sparsely Vegetated Concave Surface (B8)		____ FAC-Neutral Test (D5)
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes _____ No _____
Surface Water Present? Yes _____ No _____ Depth (inches): _____		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



# VEGETATION – Use scientific names of plants.

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <div style="display: flex; justify-content: space-between;"> <span>Total % Cover of:</span> <span>Multiply by:</span> </div> OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: \_\_\_\_\_

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.
<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)  
☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)  
☐ Loamy Mucky Mineral (F1) (**LRR K, L**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)  
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)  
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)  
☐ Dark Surface (S7) (**LRR K, L, M**)  
☐ Polyvalue Below Surface (S8) (**LRR K, L**)  
☐ Thin Dark Surface (S9) (**LRR K, L**)  
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)  
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)  
☐ Red Parent Material (F21)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b>  Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes ____    No ____
Remarks:	



## General Site Photos



## General Site Photos





## **Appendix C**

### **OEPA ORAM Data Forms**

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<b>Site:</b> Wetland DFT-01	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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1.0	1.0	<b>Metric 1. Wetland Area (size).</b>
max 6 pts.	subtotal	

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) (2pts)
- ☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

2.0	3.0	<b>Metric 2. Upland buffers and surrounding land use.</b>
max 14 pts.	subtotal	

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)
- ☐ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

7.0	10.0	<b>Metric 3. Hydrology.</b>
max 30 pts.	subtotal	

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> ditch</li> <li><input type="checkbox"/> tile</li> <li><input type="checkbox"/> dike</li> <li><input type="checkbox"/> weir</li> <li><input type="checkbox"/> stormwater input</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> point source (nonstormwater)</li> <li><input checked="" type="checkbox"/> filling/grading</li> <li><input checked="" type="checkbox"/> road bed/RR track</li> <li><input checked="" type="checkbox"/> dredging</li> <li><input type="checkbox"/> other _____</li> </ul> |
|---|---|

5.5	15.5	<b>Metric 4. Habitat Alteration and Development.</b>
max 20 pts.	subtotal	

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

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☒ Recovering (2)
- ☒ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> mowing</li> <li><input type="checkbox"/> grazing</li> <li><input checked="" type="checkbox"/> clearcutting</li> <li><input type="checkbox"/> selective cutting</li> <li><input type="checkbox"/> woody debris removal</li> <li><input checked="" type="checkbox"/> toxic pollutants</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> shrub/sapling removal</li> <li><input type="checkbox"/> herbaceous/aquatic bed removal</li> <li><input checked="" type="checkbox"/> sedimentation</li> <li><input type="checkbox"/> dredging</li> <li><input type="checkbox"/> farming</li> <li><input type="checkbox"/> nutrient enrichment</li> </ul> |
|--|---|

15.5

subtotal this page



<b>Site:</b> Wetland DFT-01	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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15.5

subtotal first page

0.0	15.5
-----	------

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)

1.0	16.5
-----	------

max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 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)
- ☐ 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)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☒ 1 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

16.5

**GRAND TOTAL (max 100 pts)**

<b>Site:</b> Wetland DFT-02	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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<b>1</b>	<b>1</b>
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) (2pts)
- ☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

<b>4</b>	<b>5</b>
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)
- ☐ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>6.5</b>	<b>11.5</b>
max 30 pts.	subtotal

### Metric 3. Hydrology.

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> ditch<br><input type="checkbox"/> tile<br><input type="checkbox"/> dike<br><input type="checkbox"/> weir<br><input checked="" type="checkbox"/> stormwater input | <input type="checkbox"/> point source (nonstormwater)<br><input checked="" type="checkbox"/> filling/grading<br><input checked="" type="checkbox"/> road bed/RR track<br><input type="checkbox"/> dredging<br><input type="checkbox"/> other _____ |
|--|--|

<b>7</b>	<b>18.5</b>
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)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☒ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☒ Fair (3)
- ☐ Poor to fair (2)
- ☐ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> mowing<br><input type="checkbox"/> grazing<br><input type="checkbox"/> clearcutting<br><input type="checkbox"/> selective cutting<br><input type="checkbox"/> woody debris removal<br><input type="checkbox"/> toxic pollutants | <input type="checkbox"/> shrub/sapling removal<br><input type="checkbox"/> herbaceous/aquatic bed removal<br><input type="checkbox"/> sedimentation<br><input type="checkbox"/> dredging<br><input type="checkbox"/> farming<br><input type="checkbox"/> nutrient enrichment |
|---|--|

**18.5**

subtotal this page



<b>Site:</b> Wetland DFT-02	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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18.5

subtotal first page

<b>0</b>	<b>18.5</b>
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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)

<b>3</b>	<b>21.5</b>
----------	-------------

max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 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)
- ☐ 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)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ 1 Vegetated hummocks/tussocks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☒ 1 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

**21.5**

**GRAND TOTAL (max 100 pts)**

<b>Site:</b> Wetland DFT-03	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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<b>2</b>	<b>2</b>
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) (2pts)  
☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)  
☐ <0.1 acres (0.04ha) (0 pts)

<b>1</b>	<b>3</b>
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)  
☒ 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)  
☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>8</b>	<b>11</b>
max 30 pts.	subtotal

**Metric 3. Hydrology.**

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

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

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)  
☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)  
☐ Recovered (7)  
☒ Recovering (3)  
☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> ditch<br><input type="checkbox"/> tile<br><input type="checkbox"/> dike<br><input type="checkbox"/> weir<br><input type="checkbox"/> stormwater input | <input type="checkbox"/> point source (nonstormwater)<br><input checked="" type="checkbox"/> filling/grading<br><input checked="" type="checkbox"/> road bed/RR track<br><input type="checkbox"/> dredging<br><input type="checkbox"/> other _____ |
|---|--|

<b>5</b>	<b>16</b>
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)  
☐ Recovered (3)  
☐ Recovering (2)  
☒ Recent or no recovery (1)

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

- ☐ Excellent (7)  
☐ Very good (6)  
☐ Good (5)  
☐ Moderately good (4)  
☐ Fair (3)  
☒ Poor to fair (2)  
☐ Poor (1)

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

- ☐ None or none apparent (9)  
☐ Recovered (6)  
☒ Recovering (3)  
☒ Recent or no recovery (1)

Check all disturbances observed

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> mowing<br><input type="checkbox"/> grazing<br><input type="checkbox"/> clearcutting<br><input type="checkbox"/> selective cutting<br><input type="checkbox"/> woody debris removal<br><input checked="" type="checkbox"/> toxic pollutants | <input checked="" type="checkbox"/> shrub/sapling removal<br><input type="checkbox"/> herbaceous/aquatic bed removal<br><input type="checkbox"/> sedimentation<br><input type="checkbox"/> dredging<br><input type="checkbox"/> farming<br><input type="checkbox"/> nutrient enrichment |
|--|---|

**16**

subtotal this page



<b>Site:</b> Wetland DFT-03	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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16

subtotal first page

0	16
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)

1	17
max 20 pts.	subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 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)
- ☒ X Low (1)
- ☐ None (0)

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 1 Vegetated hummocks/tussocks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding 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 not always, the presence of rare, threatened, or endangered spp

### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

17

**GRAND TOTAL (max 100 pts)**

<b>Site:</b> Wetland DFT-04	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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<b>2</b>	<b>2</b>
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) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

<b>1</b>	<b>3</b>
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)
- ☒ 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)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>12</b>	<b>15</b>
max 30 pts.	subtotal

### Metric 3. Hydrology.

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

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

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)
- ☒ <0.4m (<15.7in) (1)

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

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

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)

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

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

Check all disturbances observed	
<input checked="" type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input checked="" type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input checked="" type="checkbox"/> filling/grading <input checked="" type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other _____

<b>7</b>	<b>22</b>
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)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☒ Recent or no recovery (1)

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

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☒ Fair (3)
- ☐ Poor to fair (2)
- ☐ Poor (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input checked="" type="checkbox"/> shrub/sapling removal <input checked="" type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

<b>22</b>
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subtotal this page



<b>Site:</b> Wetland DFT-04	<b>Rater(s):</b> JBL	<b>Date:</b> 1/9/23
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22

subtotal first page

0	22
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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)

6	28
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max 20 pts.

subtotal

## Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 1 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)
- ☐ 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)
- ☐ 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
- ☐ 1 Amphibian breeding pools

### Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
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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
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### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

### Microtopography Cover Scale

0	Absent
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

28

**GRAND TOTAL (max 100 pts)**

## **Appendix D**

### **HHEI Stream Data Forms**

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## Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3)

54

SITE NAME/LOCATION Stream DFT-01 Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

SITE NUMBER S-JBL-010923-01 RIVER BASIN RIVER CODE DRAINAGE AREA (mi<sup>2</sup>)

LENGTH OF STREAM REACH (ft) LAT 41.56650 LONG -84.04875 RIVER MILE

DATE 01/09/2023 SCORER JBL COMMENTS Channelized along new station. Drains a series of wetlands west of the road

NOTE: Complete All Items On This Form - Refer to "Headwater Habitat Evaluation Index Field Manual" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

<b>1. SUBSTRATE (Estimate percent of every type present).</b> Check <u>ONLY two</u> predominant substrate <i>TYPE</i> boxes. (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B				<b>HHEI Metric Points</b>  Substrate Max = 40  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">9</div> A + B																											
<table border="0"> <tr> <th>TYPE</th> <th>PERCENT</th> <th>TYPE</th> <th>PERCENT</th> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]</td> <td>_____</td> <td><input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]</td> <td>60</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BOULDER (&gt;256 mm) [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td> <td>30</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> <input type="checkbox"/> SAND (&lt;2 mm) [6 pts]</td> <td>_____</td> <td><input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]</td> <td>10</td> </tr> </table>	TYPE	PERCENT	TYPE		PERCENT	<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	60	<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	30	<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____	<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	10	Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0	
TYPE	PERCENT	TYPE	PERCENT																												
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	60																												
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	30																												
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____																												
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____																												
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____																												
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	10																												
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <div style="border: 1px solid black; padding: 2px 10px;">6</div>		TOTAL NUMBER OF SUBSTRATE TYPES: (B) <div style="border: 1px solid black; padding: 2px 10px;">3</div>																													
<b>2. Maximum Pool Depth (Measure the <u>maximum</u> pool depth within the 61 meter (200 feet) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <u>ONLY</u> one box):</b>				<b>Pool Depth Max = 30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">25</div>																											
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 30 centimeters [20 pts]</td> <td><input type="checkbox"/> 5 cm - 10 cm [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 22.5 - 30 cm [30 pts]</td> <td><input type="checkbox"/> &lt; 5 cm [5pts]</td> </tr> <tr> <td><input checked="" type="checkbox"/> &gt; 10 - 22.5 cm [25 pts]</td> <td><input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]</td> </tr> </table>					<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]	<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]	<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																					
<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> 5 cm - 10 cm [15 pts]																														
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5pts]																														
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0pts]																														
COMMENTS _____		MAXIMUM POOL DEPTH (inches): <div style="border: 1px solid black; padding: 2px 10px;">5</div>																													
<b>3. BANK FULL WIDTH (Measured as the average of 3 - 4 measurements) (Check <u>ONLY</u> one box):</b>				<b>Bankfull Width Max=30</b>  <div style="border: 1px solid black; padding: 5px; width: 40px; text-align: center;">20</div>																											
<table border="0"> <tr> <td><input type="checkbox"/> &gt; 4.0 meters (&gt; 13') [30 pts]</td> <td><input type="checkbox"/> &gt; 1.0 m - 1.5 m (&gt; 3' 3" - 4' 8") [15 pts]</td> </tr> <tr> <td><input type="checkbox"/> &gt; 3.0 m - 4.0 m (&gt; 9' 7" - 13') [25 pts]</td> <td><input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]</td> </tr> <tr> <td><input checked="" type="checkbox"/> &gt; 1.5 m - 3.0 m (&gt; 4' 8" - 9' 7") [20 pts]</td> <td></td> </tr> </table>					<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]	<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																						
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]																														
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]																														
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]																															
COMMENTS _____		AVERAGE BANKFULL WIDTH (feet): <div style="border: 1px solid black; padding: 2px 10px;">8</div>																													

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ★ NOTE: River Left (L) and Right (R) as looking downstream ★

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input type="checkbox"/> <input type="checkbox"/> Wide >10m	<input type="checkbox"/> <input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> <input type="checkbox"/> Conservation Tillage	
<input type="checkbox"/> <input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> <input type="checkbox"/> Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Urban or Industrial	
<input type="checkbox"/> <input type="checkbox"/> Narrow <5m	<input type="checkbox"/> <input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> <input type="checkbox"/> Open Pasture, Row Crop	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> None	<input type="checkbox"/> <input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> <input type="checkbox"/> Mining or Construction	

COMMENTS \_\_\_\_\_

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (interstitial)	<input type="checkbox"/> Dry channel, no water (ephemeral)

COMMENTS \_\_\_\_\_

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.**

USGS Quadrangle Name: \_\_\_\_\_ NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_

County: \_\_\_\_\_ Township/City: \_\_\_\_\_

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Yes Date of last precipitation: 1/8/23 Quantity: 0.01

Photo-documentation Notes: \_\_\_\_\_

Elevated Turbidity? (Y/N): No Canopy (% open): 1

Were samples collected for water chemistry? (Y/N): No Lab Sample # or ID (attach results): \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (umhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Yes If not, explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOLOGICAL OBSERVATIONS**

(Record all observations below)

Fish Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Frogs or Tadpoles Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

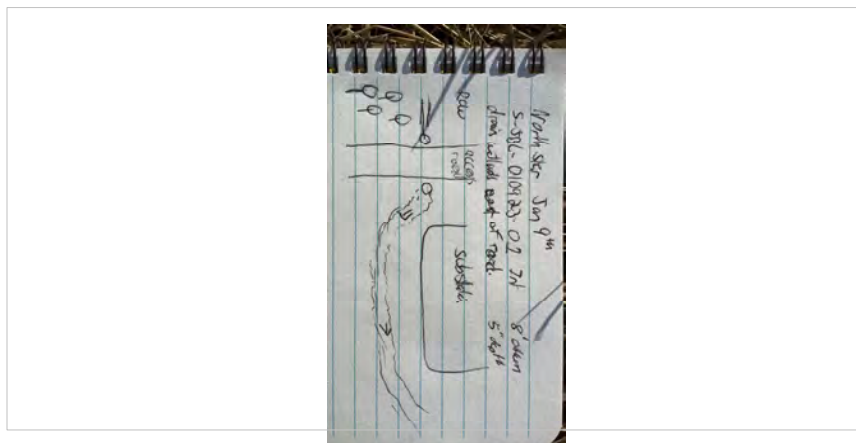
Salamanders Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Aquatic Macroinvertebrates Observed? (Y/N) \_\_\_\_\_ Species observed (if known): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







Upstream



Downstream



Substrate

**This foregoing document was electronically filed with the Public Utilities  
Commission of Ohio Docketing Information System on**

**3/7/2023 2:45:07 PM**

**in**

**Case No(s). 22-0248-EL-BTX**

Summary: Application Application - Part 3 of 3 electronically filed by Ms. Devan K.  
Flahive on behalf of American Transmission Systems Incorporated