Application for Certificate of Environmental Compatibility and Public Need

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

OPSB Case No. 22-0248-EL-BTX

American Transmission Systems, Incorporated

ATSI®

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

Submitted to

Ohio Power Siting Board

March 2023

TABLE OF CONTENTS

4906-5-02 Project Summary and Applicant Information 2-1
(A) Project Summary 2-1
(1) General Purpose of the Facility 2-1
(2) General Location, Size, and Operating Characteristics 2-1
(3) Suitability of Preferred and Alternate Routes for Dowling-Fulton 345 kV Transmission Line Tap 2-2
(4) Schedule 2-3
(B) Applicant Description 2-3
(1) Company History 2-3
(2) Current Operations and Affiliate Relationships 2-4

4906-5-03 Review of Need and Schedule 3-1
(A) Need for Proposed Facility 3-1
(1) Purpose of the Proposed Facility 3-3
(2) System Conditions, Local Requirements, and Other Pertinent Factors 3-4
(3) Power Flow Studies and Contingency Analyses 3-4
(4) System Performance Transcription Diagrams 3-5
(B) Regional Expansion Plans 3-5
(1) Proposed Facility in Long-Term Forecast 3-5
(2) Gas Pipeline Long-Term Forecast Reference 3-7
(C) System Economy and Reliability 3-7
(D) Options to Eliminate the Need for the Proposed Project 3-7
(E) Facility Selection Rationale 3-7
(F) Project Schedule 3-8
(1) Gantt Schedule Bar Chart 3-8
(2) Impact of Critical Delays 3-8

4906-5-04 Route Alternatives Analysis 4-1
(A) Route Selection Study 4-1
(1) Study Area Description and Rationale 4-1
(2) Study Area Map 4-1
(3) Map of Study Area, Study Segments and Routes Evaluated 4-2
(4) Siting Criteria 4-2
(5) Siting Process to Determine the Preferred and Alternate Routes 4-2
(6) Route Descriptions and Rationale for Selecting the Preferred and Alternative Routes 4-3
(B) Comparison Table of Routes, Route Segments, and Site 4-4
(C) Public Involvement 4-5

4906-5-05 Project Description 5-1
(A) Project Area Description 5-1

(1) Project Area Map 5-1
(2) Proposed Right-of-Way, Transmission Length, and Properties Crossed 5-1
(B) Route or Site Alternative Facility Layout and Installation 5-2
(1) Site Clearing, Construction, and Reclamation 5-2
(C) Description of Proposed Transmission Lines or Pipelines 5-5
(1) Electric Power Transmission Lines 5-5
(2) Diagram of Electric Power Transmission Substations 5-6

4906-5-06 Economic Impact and Public Interaction 6-1
(A) Ownership of Proposed Facility 6-1
(B) Capital and Intangible Costs Estimate for Electric Power Transmission Facility Alternatives 6-1
(C) Capital and Intangible Costs Estimate for Gas Transmission Facility Alternatives 6-2
(D) Public Interaction and Economic Impact 6-2
(1) Counties, Townships, Villages, and Cities within 1,000 feet 6-2
(2) Public Officials Contacted 6-3
(3) Planned Public Interaction 6-3
(4) Liability Insurance or Compensation 6-4
(5) Tax Revenues 6-4

4906-5-07 Health and Safety, Land Use, and Regional Development 7-1
(A) Health and Safety 7-1
(1) Compliance with Safety Regulations 7-1
(2) Electric and Magnetic Fields 7-1
(3) Estimate of Radio, Television, and Communications Interference 7-7
(4) Noise from Construction, Operations, and Maintenance 7-7
(B) Land Use 7-8
(1) Map of the Site and Route Alternatives 7-8
(2) Impacts on Identified Land Uses 7-8
(3) Impacts on Identified Nearby Structures 7-13
(C) Agricultural Land Impacts 7-13
(1) Agricultural Land Map 7-14
(2) Impacts on Agricultural Lands and Agricultural Districts 7-14
(D) Land Use Plans and Regional Development 7-16
(1) Impacts on Regional Development 7-16
(2) Compatibility of Proposed Facility with Current Regional Land Use Plans 7-16
(E) Cultural and Archaeological Resources 7-16
(1) Cultural Resources Map 7-16
(2) Cultural Resources in Study Corridor 7-17
(3) Construction, Operation, and Maintenance Impacts on Cultural Resources 7-19
(4) Mitigation Procedures 7-19

(5) Aesthetic Impacts....7-19

4906-5-08 Ecological Information and Compliance with Permitting Requirements....8-1
(A) Ecological Map....8-1
(B) Field Survey Report for Vegetation and Surface Waters....8-1
(1) Vegetative Communities, Wetlands, and Waterbodies in Study Area....8-2
(2) Map of Facility, Right-of-Way, and Delineated Resources....8-13
(3) Construction Impacts on Vegetation and Surface Waters....8-14
(4) Operation and Maintenance Impacts on Vegetation and Surface Water....8-19
(5) Mitigation Procedures....8-19
(C) Literature Survey of Plant and Animal Life Potentially Affected....8-20
(1) Project Vicinity Species Descriptions....8-21
(2) Operation and Maintenance Impacts on Identified Species....8-28
(3) Mitigation Procedures....8-29
(D) Site Geology....8-29
(1) Site Geology....8-29
(2) Slopes and Foundation Soil Suitability....8-29
(E) Environmental and Aviation Regulation Compliance....8-30
(1) Licenses, Permits, and Authorizations Required for the Facility....8-30
(2) Construction Debris....8-30
(3) Stormwater and Erosion Control....8-30
(4) Disposition of Contaminated Soil and Hazardous Materials....8-32
(5) Maximum Height of Above Ground Structures....8-33
(6) Dusty or Muddy Conditions Plan....8-33

Appendices

4-1 Route Selection Study
5-1 Easement Form
5-2 Melbourne Substation Drawing
6-1 List of Public Official Points of Contact
6-2 Public Information Meeting Materials
7-1 Typical Cross Section Profiles of the Normal Calculated Electric Fields and Magnetic Fields for all Scenarios Considered (Exhibits 7-1 through 7-6)
8-1 Ecological Information for the Proposed Melbourne Substation and the Proposed 345 kV Tie Lines (Melbourne Substation to Sydney Substation)
8-2 Correspondence with Ohio Department of Natural Resources and U.S. Fish & Wildlife Service
8-3A Wetland and Waterbody Delineation Report for the Preferred Route
8-3B Wetland and Waterbody Delineation Report for the Alternate Route
8-3C Wetland and Waterbody Delineation Report for the Proposed Melbourne Substation and 345 kV Tie Lines (Melbourne Substation to Sydney Substation)

Figures

2-1 Project Overview
2-2 Detail Map
3-1 Existing Area Topology....3-2
3-2 Load Loss under Contingency....3-2
3-3 Proposed Configuration....3-3
3-4 Future Area Benefits (RTEP s2756)....3-3
3-5 Project Schedule....3-9
5-1A 345kV Single Circuit Tubular Steel Structure Suspension, Angles 0° to 30°
5-1B 345kV Single Circuit Tubular Steel Structure Suspension, Angles 30° to 50°
5-1C 345kV Single Circuit Tubular Steel Structure Deadend, Angles 0° to 50°
5-1D 345kV Single Circuit Tubular Steel Structure Deadend, Angles 50° to 105°
5-1E 345kV Single Circuit Tubular Steel Structure In-Line Deadend, Tap
5-1F 345kV Single Circuit Tubular Steel Structure Vertical Deadend, Angles 0° to 60°
7-1a Land Use Map
7-1b Land Use Map
7-2a Agricultural Land Use Map
7-2b Agricultural Land Use Map
8-1 Wetland and Waterbody Overview Map
8-2A-K Preferred Route Delineated Wetland and Waterbodies Map
8-3A-J Alternate Route Delineated Wetland and Waterbodies Map
8-4 Area of 345 kV Tie Lines -- Delineated Wetland and Waterbodies Map

Tables

3-1 Case Evaluation....3-4
4-1 Alternative Route Ranking Results (Second Scoring of 212 Alternative Routes)....4-5
5-1 Right-of-way Area, Length, and Number of Properties Crossed for the Preferred Route....5-2
5-2 Right-of-way Area, Length, and Number of Properties Crossed for the Preferred Route Tie Lines....5-2
6-1 Estimates of Applicable Intangible and Capital Costs for Both the Preferred and Alternate Routes....6-2
7-1 Transmission Line Loadings....7-2
7-2 EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-1) Span Configuration for the Preferred and Alternate Routes of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation....7-3
7-3 EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-2) Span Configuration within the shared right-of-way of the Fulton-North Star Steel 345 kV Transmission Line and the Preferred Route of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation....7-3
7-4 EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-3) Span Configuration within the shared right-of-way of the Delta-Fulton 138 kV Transmission Line and the Alternate Route of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation....7-4

7-5 EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-4) Span Configuration within the shared right-of-way of the with the Delta-Wauseon 138 kV Transmission Line and the Melbourne-North Star Steel #1 345 kV Transmission tie line and Melbourne-North Star Steel #2 345 kV Transmission tie line....7-4
7-6 EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-5) Span Configuration within the shared right-of-way for the Preferred Routes of the Melbourne-North Star Steel #1 345 kV Transmission Tie Line and Melbourne-North Star Steel #2 345 kV Transmission Tie Line....7-5
7-7 EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-6) Span Configuration in independent right-of-way for the Melbourne-North Star Steel #1 345 kV Transmission Tie Line and the Melbourne-North Star Steel #2 345 kV Transmission Tie Line....7-5
7-8 Length and Percent of Land Uses Crossed by Route Alternatives....7-9
7-9 Acreage and Percent of Land Uses Crossed by Route Alternatives....7-10
7-10 Number of Sensitive Features within or near the Potential Disturbance Area for the Route Alternatives....7-11
8-1 NWI Wetlands within 1,000 Feet of the Preferred and Alternate Routes....8-5
8-2 Delineated Wetlands within the Preferred and Alternate Route Field Survey Area and Potential Disturbance Area/ROW....8-7
8-3 Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW....8-10
8-4 Delineated Ponds within the Preferred Route and Alternate Route Environmental Field Survey Area....8-13
8-5 Approximate Vegetation Impacts along the Potential Disturbance Area/ROW....8-14
8-6 Listed Species in the Project County (Fulton)....8-23

4906-5-02 PROJECT SUMMARY AND APPLICANT INFORMATION

(A) PROJECT SUMMARY

American Transmission Systems, Incorporated ("ATSI"), a FirstEnergy company, proposes to construct a new 345 kilovolt (kV) four-breaker ring bus substation (Melbourne Substation) on an approximately 9-acre site and one new 345 kV transmission line to connect the Melbourne Substation with ATSI's existing 345 kV electric transmission system. The line will extend approximately 9 miles from ATSI's existing Dowling-Fulton 345 kV Transmission Line to the Melbourne Substation in Fulton County, Ohio. Also, as a part of this Project, ATSI plans to construct two, approximately 0.5-mile long, 345 kV transmission lines (Tie Lines) to connect the existing, customer-owned Sydney Substation to the proposed Melbourne Substation. The Project is referred to as the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation (Project). Figures 2-1 and 2-2 provide a general overview of the Project.

(1) General Purpose of the Facility

The Project will mitigate a violation of PJM Interconnection, LLC's ("PJM's")[1] and FirstEnergy's Planning Criteria—loss of load greater than 300 MW—by adding redundancy through a second 345 kV source, via the proposed Melbourne Substation, to the existing North Star BlueScope Steel Sydney Substation. Further, the Project will enable ATSI to meet projected electric service load needs as well as provide operational flexibility to customers. Additional details can be found in this Application's Review of Need and Schedule, in Section 4906-5-03.

(2) General Location, Size, and Operating Characteristics

(a) Melbourne Substation

The proposed Melbourne Substation is located approximately 0.5-miles south of the intersection of U.S. Highway 20A and County Road 10 between the North Star BlueScope Steel and Worthington Steel facilities. An approximately 7.6-acre site (total area required for construction activities) is required for the substation.

(b) Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation (Transmission Line)

The proposed 345 kV transmission line begins west of Swanton, Ohio, along ATSI's existing Dowling-Fulton 345 kV Transmission Line and terminates at the proposed Melbourne Substation. The transmission line will be approximately 8.62 to 9.46 miles in length, depending on the route selected, and will be constructed primarily on single steel monopoles. New permanent right-of-way (ROW) required will range from 95 to 150 feet in width, dependent on the specific segment of the route; if the Preferred Route is selected, a portion will run parallel to the existing Fulton-North Star Steel 345 kV Transmission Line ROW.

[1] PJM is the regional transmission organization (RTO) for the area.

(c) Melbourne Substation to Sydney Substation 345 kV Transmission Lines (Tie Lines)

The two proposed 345 kV Tie Lines, each approximately .51 miles in length, begin at the proposed Melbourne Substation and terminate at the existing Sydney Substation located within the North Star BlueScope Steel facility. The Tie Lines will (like the proposed Dowling-Fulton 345 kV Transmission Line) be constructed primarily on single steel monopoles. Combined, the two transmission tie lines will require an approximately 150-foot-wide permanent ROW on North Star BlueScope Steel property, in addition to a crossing of public road ROW.

(3) Suitability of Preferred and Alternate Routes for Dowling-Fulton 345 kV Transmission Line Tap

ATSI identified Preferred and Alternate Routes for the transmission line after conducting a Route Selection Study (RSS) for the Project, which is included in Appendix 4-1[2]. The RSS provides details on the selection process utilized by ATSI and the siting team to identify the Preferred and Alternate Routes proposed in this Application. A detailed discussion of the RSS's and selected routes are found in Section 4906-5-04 of this Application.

The RSS process is an iterative and incremental process that starts with the identification of numerous feasible alternative routes that could fulfill the Project need, within a defined physical siting study area, while minimizing impacts to the human and natural environment. Potential routes for review and consideration were initially selected based on the avoidance or minimization of impacts to known sensitive land uses, ecological features, and cultural resources, where identification was possible from existing resources. Potential routes were then evaluated, compared, and ranked to narrow down the most viable routes for further evaluation.

For the purposes of identifying the Preferred and Alternate Routes presented in this Application, the siting team considered all the factors as detailed in the RSS, with a particular emphasis on route alternatives that minimized land use/residential impacts and paralleled existing linear infrastructure. Stakeholder and public comments were also considered and incorporated, where possible, to further reduce impacts.

Ultimately, the RSS process identified the Preferred and Alternate Routes for the proposed Dowling-Fulton 345 kV Transmission Line Tap, which represent, in ATSI's analysis, the minimum adverse environmental and land use impacts considering all relevant factors.

(a) Preferred Route

The Preferred Route, which spans from ATSI's existing Dowling-Fulton 345 kV Transmission Line to the Melbourne Substation, is approximately 9.46 miles in length.

[2] The RSS did not entail analysis of route alternatives for the Tie Lines due to their short length, configuration, and function. For the avoidance of doubt, however, ATSI has included the Tie Lines (along with the proposed Melbourne Substation) within the scope of its motion for partial waiver of the requirement in OAC Rule 4906-3-05 to include fully developed information on two sites/routes.

The Preferred Route begins along ATSI's existing Dowling-Fulton 345 kV Transmission Line directly south of Interstate 80/90 (I-80/90) and runs west, paralleling I-80/90, for approximately 5.0 miles. At County Road 7-2, the route turns south, then runs west between the Delta Reservoir and Delta Motorsports Park, before continuing to parallel I-80/90 for approximately 2.0 miles. Just east of County Road 10, the Preferred Route turns south and runs approximately 1.3 miles, paralleling ATSI's existing Fulton-North Star 345 kV Transmission Line. The Preferred Route then crosses the Fulton-North Star 345 kV Transmission Line and continues south for 0.4 miles, before turning west and terminating at the proposed Melbourne Substation.

Even though it is longer than the Alternate Route, the Preferred Route maximizes existing ROW corridors and has fewer overall impacts to current land use, including fewer streams and properties crossed.

(b) Alternate Route

The Alternate Route, which spans from ATSI's existing Dowling-Fulton 345 kV Transmission Line to the Melbourne Substation, is approximately 8.62 miles in length.

The Alternate Route begins along ATSI's existing Dowling-Fulton 345 kV Transmission Line directly north of the Norfolk Southern Company railroad, approximately 0.2 miles south of County Road H, and runs west, paralleling the railroad and the existing Delta-Fulton 138 kV Transmission Line, for approximately 3.1 miles. At County Road 5-2, the route turns south and runs approximately 0.6 miles, then turns west and runs approximately 1.4 miles across agricultural land. South of the Village of Delta, the Alternate Route crosses Jefferson Street, Bad Creek, and State Route (SR) 109, then continues across agricultural land. At County Road FG, the route turns northwest, then runs west paralleling the railroad for approximately 1.5 miles. At County Road 10, the Alternate Route runs north for approximately 0.2 miles, crossing the railroad, before turning west and terminating at the proposed Melbourne Substation.

(4) Schedule

Construction of the Project is anticipated to begin in the third quarter of 2025 with an anticipated in-service date of June 2026. The current Project schedule, including all major activities and milestones, is illustrated in a Gantt schedule bar chart provided in Section 4906-5-03(F)(1).

(B) APPLICANT DESCRIPTION

(1) Company History

ATSI's facilities are comprised, in large part, of the transmission assets formerly owned by the operating utilities of FirstEnergy in western Pennsylvania and Ohio (i.e., Pennsylvania Power Company in western Pennsylvania, and Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company in Ohio). ATSI began providing electric transmission service subject to the Federal Energy Regulatory Commission's (FERC's) jurisdiction on September 1, 2000, following approval from the Public Utilities Commission of Ohio (PUCO) to transfer transmission assets from the FirstEnergy Ohio operating companies to ATSI.

FirstEnergy was formed in 1997 through the merger of Ohio Edison Company and Centerior Energy Corporation. Through this merger, FirstEnergy became the holding company for Ohio Edison and its Pennsylvania Power Company subsidiary, as well as The Cleveland Electric Illuminating Company and The Toledo Edison Company. At that time, FirstEnergy served 2.2 million customers within 13,200 square miles of northern and central Ohio and western Pennsylvania and had approximately 12,000 megawatts of generating capacity.

In 2001, FirstEnergy nearly doubled its customers to more than 4.3 million when it merged with the former GPU, Inc., based in Morristown, New Jersey. GPU served 2.1 million customers in a 24,000 square-mile service area in Pennsylvania and New Jersey through its three operating companies: Metropolitan Edison Company, Pennsylvania Electric Company, and Jersey Central Power & Light Company.

In 2011, FirstEnergy completed a merger with Allegheny Energy, a Greensburg, Pennsylvania-based company that served 1.6 million customers in Pennsylvania, West Virginia, Maryland, and Virginia.

Today, FirstEnergy is one of the nation's largest investor-owned electric systems serving 6 million customers within a service territory of 65,000 square miles across six states.

(2) Current Operations and Affiliate Relationships

ATSI is a transmission-only company (a Transco) that provides transmission services in the western portion of Pennsylvania and in the State of Ohio. Currently, ATSI owns and maintains over 8,100 circuit-miles of transmission lines, substations, and other transmission facilities that are located primarily in the ATSI Zone of PJM. ATSI also owns certain limited transmission facilities outside of its zone that are necessary to tie ATSI's transmission system into the transmission and generation facilities in neighboring utilities' territories or otherwise necessary to support transmission service in ATSI's zone. ATSI's transmission facilities are under PJM's functional control.

Figures

Fulton Substation

Fulton-North Star Steel 345kV T-Line

Fulton-Swanton 138kV

Dowling-Fulton 345 kV Transmission Line

Proposed Melbourne Substation

Sydney Substation

Refer to Figure 2-2 Detail Map

Norfolk Southern Railroad

Ohio Railway

N

0 2,500 5,000 10,000

Feet

Legend

- Proposed Melbourne Substation
- FirstEnergy Substation
- Preferred Route
- Alternate Route
- Fulton-North Star Steel 345 kV Transmission Line Extension to Melbourne Substation (Future Filing)
- Melbourne Station-Sydney Station 345 kV Tie Lines (Tie-Lines for Both Preferred/ Alternate Shown)
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Roads
- Interstates
- Railroad
- Corporation Limits

Base Map Source:
ESRI Topographic

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 2-1
Project Overview

3/3/2023

ATSI
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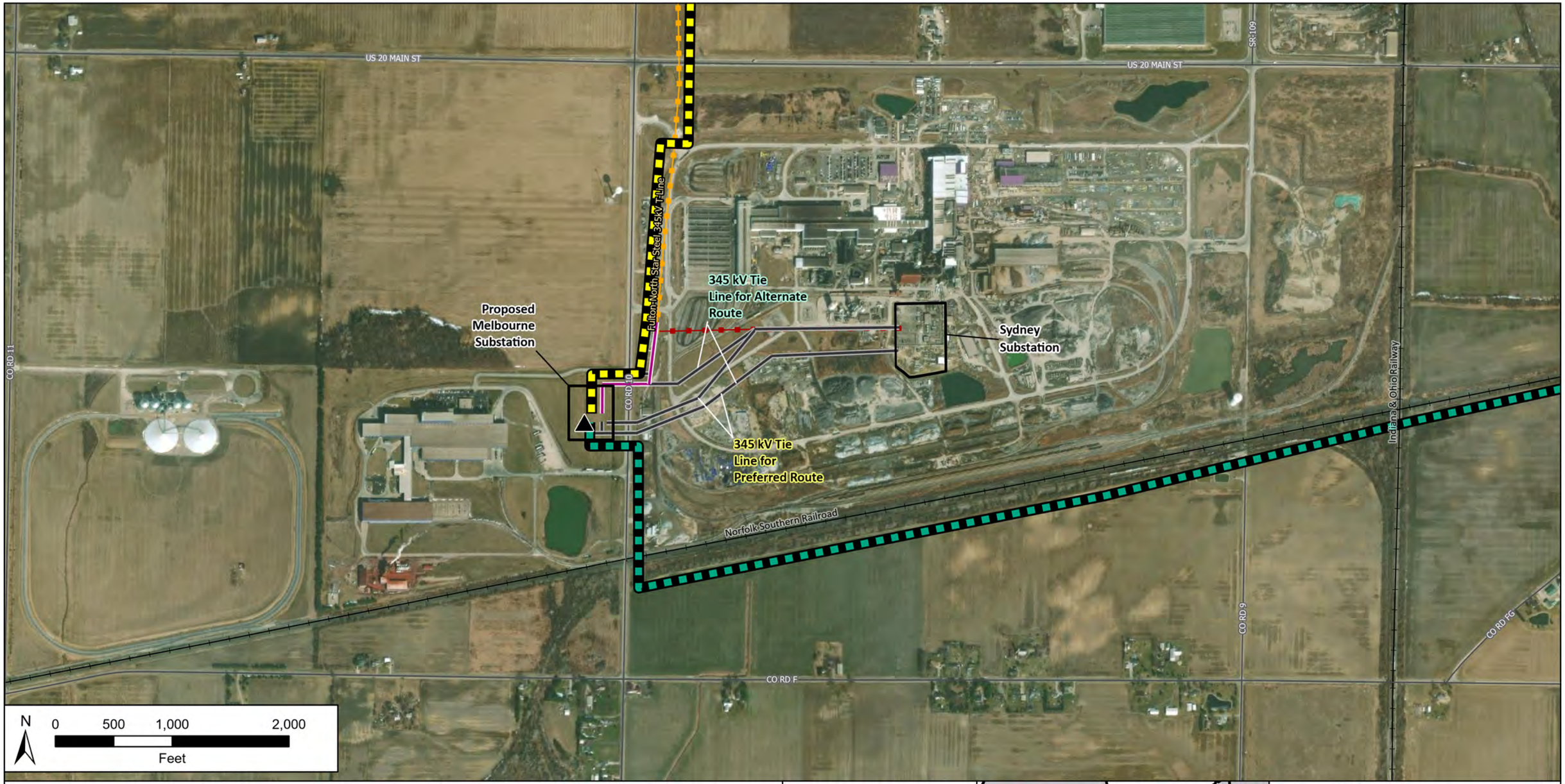

Legend

- Proposed Melbourne Substation
- FirstEnergy Substation
- Preferred Route
- Alternate Route
- Fulton-North Star Steel 345 kV Transmission Line Extension to Melbourne Substation (Future Filing)
- Melbourne Station-Sydney Station 345 kV Tie Lines (Tie-Lines for Both Preferred/ Alternate Shown)
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Roads
- Interstates
- Railroad

Base Map Source:
ESRI Topographic

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 2-2
Detail Map

3/3/2023

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4906-5-03 REVIEW OF NEED AND SCHEDULE

(A) NEED FOR PROPOSED FACILITY

The Project addresses reliability and operational issues in ATSI's transmission system serving the Delta and surrounding areas by ensuring that safe and reliable electric service will continue to be supplied as well as that capacity for economic development and load growth in the area will be increased.

The need for this Project was identified in 2020 by PJM in its no harm analysis of the customer's load increase. PJM identified that the load increase under certain contingencies on the transmission system will result in a planning criteria violation (i.e., loss of load of more than 300 MW). PJM used the PJM 2019 RTEP power flow model for the year 2024 to conduct the analysis. Because PJM identified, and ATSI confirmed, a loss of load planning criteria violation, it is mandatory for ATSI to mitigate the planning criteria violation. ATSI determined this Project to be the most practical and beneficial solution to satisfy the immediate and future needs of the area.

The Project will directly mitigate a violation of PJM's and FirstEnergy's transmission planning criteria—loss of load greater than 300 MW. This Project will also provide additional reliability and benefit to the Delta and surrounding areas by enabling a future ATSI-planned project (PJM RTEP # s2756) that will provide additional support to the 138 kV transmission system in the immediate area.

Construction of a new 345 kV transmission line is required to prevent more than 300 MWs of load loss because one of ATSI's large industrial customer, North Star BlueScope Steel, currently operates off a radial 345 kV transmission line with a load of 300 MW. The loss of this radial transmission line and any other transmission line on the transmission system in the area would cause a loss of over 300 MW: a PJM and FirstEnergy planning criteria violation that must be mitigated. Adding another 345 kV line to the transmission system in the area and creating a loop feed to the large industrial customer ensures that loss of load over 300 MW will not occur under any contingency on the transmission system in the immediate area (see Figures 3-1 & 3-2[1]).

[1] The topology diagrams in Figures 3-1, 3-2, and 3-3 show the electrical system configuration, but are not geographically or relationally to scale.

Figure 3-1: Existing Area Topology

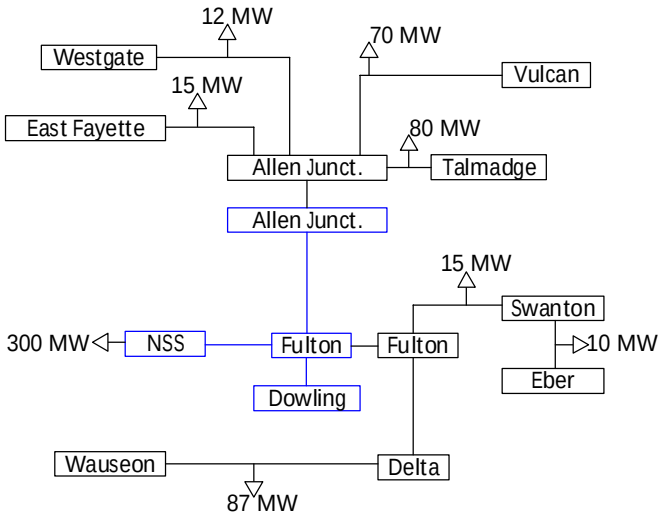


Figure 3-2: Load Loss under Contingency

The loss of the Fulton- North Star Steel 345 kV Line and the loss of the Delta-Wauseon 138 kV Line results in a loss of approximately 387 MWs.

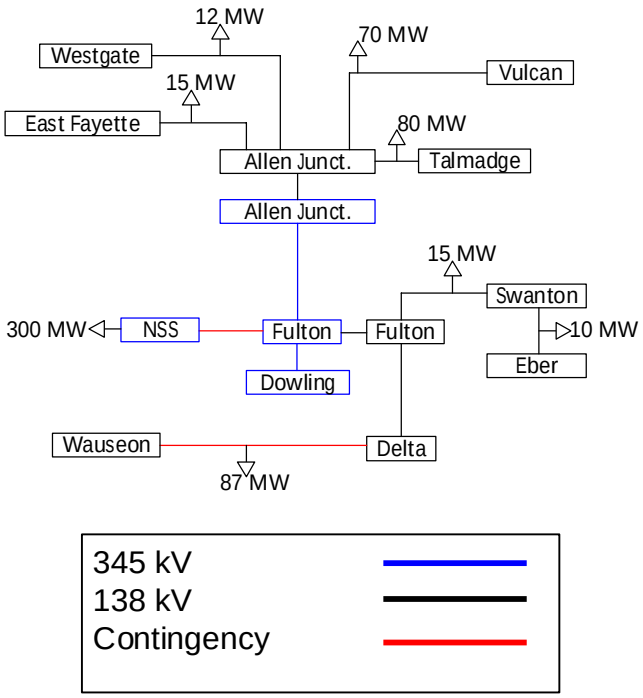
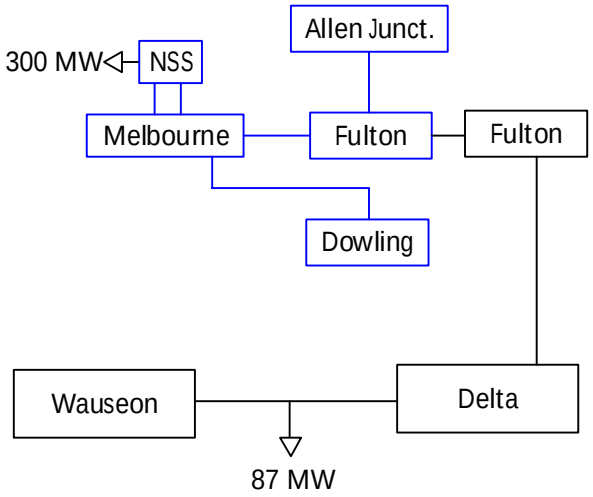


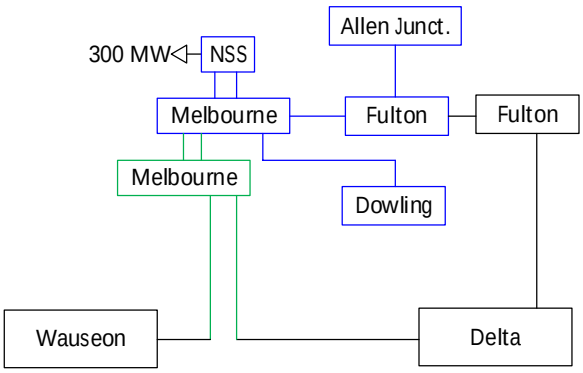
Figure 3-3: Proposed Configuration



(1) Purpose of the Proposed Facility

The purpose of this Project is to mitigate the planning criteria violation illustrated in Figure 3-2. With the implementation of this solution, loss of more than 300 MW could not occur, which meets the FirstEnergy and PJM planning criteria. An additional benefit of this Project will be to further reinforce the transmission system in the area, with the intent of accommodating a future 345/138 kV transformation project to strengthen the 138 kV transmission system. The future project is shown in green in Figure 3-4 below.

Figure 3-4: Future Area Benefits (RTEP s2756)



This future solution will further decrease the amount of load lost under contingency scenarios due to the addition of two more 138 kV transmission lines supporting the Project Study Area. This future project reinforces the 138 kV transmission system in the Delta and surrounding areas, which has experienced significant industrial load growth over the past few years and is projected to increase further in future years due to existing customer load growth and other economic development opportunities.

(2) System Conditions, Local Requirements, and Other Pertinent Factors

North Star Bluescope Steel is a large industrial customer of ATSI, with 300 MW of load. The North Star Bluescope Steel facility is currently served via a single radial 345 kV line. Loss of that radial 345 kV line along with any other transmission line in the area would cause a load loss of over 300 MW, which violates the FirstEnergy and PJM planning criteria. FirstEnergy is therefore obligated to pursue a solution to mitigate this violation.

(3) Power Flow Studies and Contingency Analyses

FirstEnergy modeled various planning scenarios and performed multiple studies of the Project Area's transmission system using the PJM 2020 RTEP summer power flow peak conditions for model year 2025 with and without the proposed Project. These studies included evaluation of the effects of the specific contingencies resolved by the proposed Project.

Power Flow Study Results

Table 3-1 provides a summary of the evaluation and the amount of load (in MWs) interrupted before and after the Project is completed.

The largest load loss contingency scenario (387 MW) would occur with the loss of the radial North Star Steel (Fulton) 345 kV Transmission Line, followed by the loss of the Delta-Wauseon 138 kV Transmission Line, which results in the loss of approximately 387 MWs of load.

Table 3-1: Case Evaluation

Contingency	Monitored Facility	Before Project Load Loss (MW)	After Project Load Loss (MW)
Loss of radial 345 kV line feeding NSS and the Delta-Wauseon 138 kV Line	Delta OH	387	87
Loss of radial 345 kV line feeding NSS and the Allen Junct-East Fayette line	Delta, OH	315	15
Loss of both 345 kV lines feeding NSS	Delta, OH	N/A	260
Loss of radial 345 kV feeding NSS and Allen Junction – Vulcan 138 kV Line	Delta, OH	370	70
Loss of radial 345 kV feeding NSS and Allen Junction – Westgate 138 kV Line	Delta, OH	312	12
Loss of radial 345 kV feeding NSS and Allen Junction – Talmadge 138 kV Line	Delta, OH	380	80
Loss of radial 345 kV feeding NSS and Fulton-Swanton 138 kV Line	Delta, OH	315	15
Loss of radial 345 kV feeding NSS and Eber-Swanton 138 kV Line	Delta, OH	310	10

All models and associated files to study the transmission system should be requested through PJM. This is due to the fact that the data in the power flow model and the associated files is owned

by PJM. ATSI only provides some of the data that goes into the model. All the other Transmission Owners (TOs) and stakeholders in PJM also provide input to the model and associated files. PJM assembles the data and creates the model and the associated files. The model and the associated file are not owned or controlled by ATSI.

(4) System Performance Transcription Diagrams

FirstEnergy does not create System Performance Transcription Diagrams. Therefore, no such diagrams are provided for this Project.

(B) REGIONAL EXPANSION PLANS

The Project need was submitted as a Supplemental Project to the PJM Regional Transmission Expansion Plan ("RTEP") at the Transmission Expansion Advisory Committee on November 22, 2019, and the solution was presented November 4, 2020. See section (1) (c) below.

(1) Proposed Facility in Long-Term Forecast

(a) Reference in Recent Long-Term Forecast

The Project is included on page 83 of the FirstEnergy Corp. 2022 Long-Term Forecast Report ("LTFR") (Case No. 22-0504-EL-FOR).

(b) Explanation if Not Referenced

Not applicable; see Section 4906-5-03(B)(1)(a) directly above.

(c) Reference in Regional Expansion Plans

The Project need was submitted as a Supplemental Project to the PJM RTEP at the Transmission Expansion Advisory Committee on November 22, 2019, and the solution was presented November 4, 2020. The Project is needed to improve the operational flexibility, reliability, and infrastructure resilience; reduce the amount of local load loss under contingency conditions; and mitigate planning criteria concerns on the >100 kV system. PJM evaluated the proposed Project and did not identify any FirstEnergy or PJM Planning Criteria violations caused by the Project. As such, there is no need for additional network system upgrades as a result of the Project. PJM assigned the Project supplemental upgrade identification number s2237.2.

PJM, in its capacity as the regional Transmission Planning Coordinator, Transmission Planner, and Transmission Operator, identifies the need and timing for mandatory transmission system upgrades as part of the reliability planning, economic planning, and interconnection planning process to preserve the reliability of the electricity grid under its operational control as the RTO. The PJM planning process is an 18-month cycle starting in September of every calendar year. The process ultimately produces a PJM Board-approved RTEP 18 months later (February). The RTEP identifies transmission system upgrades and enhancements to provide for the operational, economic, and reliability requirements of PJM. The RTEP consists of system upgrades produced from one or more of four planning processes: reliability planning; economic planning; interconnection planning; and local planning.

Baseline upgrades are identified as part of the reliability planning and economic planning analysis. The analysis consists of a comprehensive series of detailed studies that are designed to satisfy PJM's reliability planning criteria and those of the applicable TOs, including FirstEnergy's Transmission Planning Criteria, as well as the North American Electric Reliability Corporation (NERC) and ReliabilityFirst Corporation (RF) reliability standards. The transmission planning process, and the baseline RTEP projects selected for construction under that process, are required by the applicable reliability and planning criteria. Once approved by PJM, TOs are obligated to build these projects under Section 1.7 of Schedule 6 of the PJM Operating Agreement. These projects are identified by PJM with an upgrade ID starting with the letter "b" followed by a four-digit number.

Supplemental upgrades are TO-initiated projects and are part of the local planning process. In accordance with Attachment M-3 of the PJM Open Access Transmission Tariff (OATT), FirstEnergy provides information regarding the criteria used to plan and identify Supplemental Projects at an Assumptions meeting. The process for developing Supplemental upgrades includes identification and review of system needs at a separate Needs meeting and an opportunity for stakeholders to comment. Next, there is a Solutions meeting where potential solutions and any considered alternatives are discussed. Stakeholders may then provide comments on the potential solutions.

FirstEnergy Supplemental upgrades are typically: (i) a request for electric service from new or existing customers; and/or, (ii) a project identified pursuant to FirstEnergy's Energizing the Future methodology. This methodology and any identified projects are presented to PJM and the PJM stakeholders in accordance with the PJM OATT, Attachment M-3, as described above. ATSI Reliability Enhancement projects, such as the proposed Project, are presented at the PJM Sub-Regional RTEP–Western or PJM Transmission Expansion Advisory committee meetings that occur monthly. Supplemental upgrades that have been reviewed through the Attachment M-3 process are identified by PJM with an "s" followed by a four-digit number. Supplemental upgrades are not mandated or directed by PJM but are necessary in order to address planning functions not transferred to PJM (e.g., asset management, customer interconnections). These projects reflect the TOs' obligation to provide reliable service in its local service territory and are grounded in Good Utility Practice.

The Project is identified as a supplemental project under item (i) in the above paragraph because it compelled as a result of North Star Steel's load increase. Planning criteria violations determined to be caused by such a load addition are assigned as supplemental projects to address the identified violations and restore the transmission system to a similar state of reliability as it was before the load addition.

In general, FirstEnergy's Reliability Enhancement methodology is intended to: (i) proactively upgrade or replace transmission lines and substation components that present an increasing risk to reliability; (ii) modernize the Operating Companies' transmission infrastructure by implementing technological advances to enhance reliability and promote increased efficiencies; (iii) increase or restore load serving capability; (iv) improve the resiliency of the existing transmission system to better withstand and recover from storms and unusual weather events,

such as extreme heat and cold; (v) address heightened concerns with cyber and physical security; (vi) improve customer reliability by installing new equipment with real-time monitoring capabilities to optimize maintenance intervals and reduce the likelihood of equipment failure; and, (vii) better address our customers' needs by reducing the duration and frequency of unscheduled outages. Reliability Enhancement projects, such as the proposed Project, are largely driven to meet customers' increasing reliability demands.

The Project was reviewed in accordance with the PJM OATT, Attachment M-3, process, as described above, and presented at the PJM Transmission Expansion Advisory committee meeting on November 22, 2019, and November 4, 2020. The Project was assigned supplemental upgrade identification number s2237.2.

(2) Gas Pipeline Long-Term Forecast Reference

Gas Pipeline Information; not applicable to this Project.

(C) SYSTEM ECONOMY AND RELIABILITY

Completion of the Project will resolve the identified planning criteria violation resulting from loss of over 300 MW of load under contingency. PJM and FirstEnergy have determined that the completion of this Project will also not cause any adverse effects on the overall transmission system, but instead will increase the overall reliability of the transmission system while supporting additional load growth and future transmission expansion projects in the area, such as incorporating a future project that will provide a 345/138 kV transformation to strengthen the 138 kV transmission system and benefit all customers in the area.

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT

There is no feasible alternative to constructing a new transmission line. ATSI considered one alternative to this Project (still necessitating construction of a new transmission line), but that alternative was rejected as infeasible due to exorbitant cost. ATSI would have had to build a new 345 kV substation and re-terminate the existing Fulton-North Star Steel 345 kV Transmission Line into that substation. This option would have also required the construction of an additional 138 kV substation with transformation between it and the aforementioned newly constructed 345 kV substation. In addition, expansion of the existing Fulton Substation would be required to facilitate the addition of a second 345/138 kV transformer. Likewise, expansion of the existing Delta Substation and construction of a second Delta-Fulton 138 kV Transmission Line along with a second Delta-Wauseon 138 kV Transmission Line would be needed. Lastly, the two Delta-Wauseon 138 kV Transmission Lines would then need to be looped into the newly constructed 138 kV substation to eliminate the load loss criteria violation. Therefore, this alternative was not selected as it required the construction of more new facilities to mitigate the same criteria violation, which was estimated at a substantially higher cost than the proposed Project.

(E) FACILITY SELECTION RATIONALE

The proposed Project was selected because it provided the least costly solution to mitigate the planning criteria violation. The selected Project involves constructing one new 345 kV line, two

short 345 kV Tie Lines, and a 345 kV ring bus substation.[2] Whereas the alternative option (explained in (D)) would entail constructing two new 138 kV lines and two new substations, this Project will serve the public by bringing in another 345 kV transmission line to the area, which provides for future capacity needs and better overall system reliability and resiliency.

(F) PROJECT SCHEDULE

(1) Gantt Schedule Bar Chart

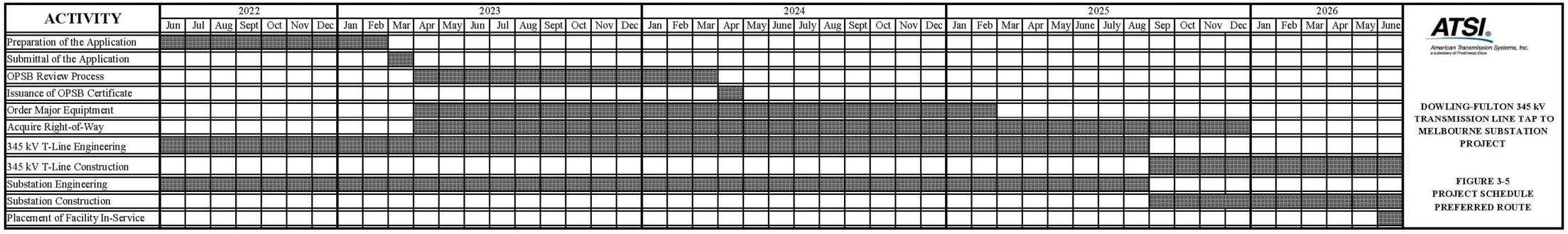
A detailed schedule for the proposed Project is presented on Figure 3-5.

(2) Impact of Critical Delays

Until this Project is in service, there is imminent risk of load loss greater than 300 MW.

[2] ATSI will submit a separate Construction Notice Application for extension of the existing Fulton-North Star Steel 345 kV Transmission Line: an additional scope of work also related this Project.

Figure 3-5: Project Schedule



4906-5-04 ROUTE ALTERNATIVES ANALYSIS

(A) ROUTE SELECTION STUDY

ATSI and its siting team conducted an independent Route Selection Study ("RSS") for the Dowling-Fulton 345 kV Transmission Line Tap component of the Project. [1] A copy of the RSS for the Project is included in Appendix 4-1. The goal of the RSS was to identify feasible routes, while avoiding or minimizing effects on sensitive land uses, ecological, and cultural features in the Project vicinity with the ultimate objective being the identification of Preferred and Alternate Route for the Project that meets all applicable criteria for issuance of a Certificate by the OPSB. Potential routes were quantitatively and qualitatively evaluated, compared, and ranked to provide the basis for selecting a Preferred and Alternate Route.

(1) Study Area Description and Rationale

The Project area is in southeastern Fulton County. Existing land use in the Project area is primarily agricultural, with low-density residential use along county roads and higher-density residential use within the Village of Delta. Large commercial/industrial facilities, including the North Star BlueScope Steel facility, are west of Delta. The primary transportation corridors in the Project area are Interstate 80/90 (I-80/I-90), US Highway 20A (US-20A), and State Route 109 (SR-109).

The study area was determined by the geographic area between ATSI's existing north-south Dowling-Fulton 345 kV Transmission Line and site proposed for Melbourne Substation. The study area was defined to include a reasonable area where potential routes could be developed without adding unnecessary length to the transmission line. The northern boundary allowed the siting team to evaluate routes paralleling the existing Fulton-North Star 345 kV Transmission Line and I-80 corridor. The southern boundary captured opportunities for routes through the southeastern part of Fulton County while avoiding a large area of protected land managed by the Black Swamp Conservancy. Extending the study area east of the Dowling-Fulton 345 kV Transmission Line or west of the Melbourne Substation would have added unnecessary length to the transmission line component of the Project. Given these considerations, the siting team identified a study area encompassing approximately 41,293 acres (64.5 square miles) in Fulton County, Ohio.

(2) Study Area Map

Figure 2 in the attached RSS report (Appendix 4-1) illustrates the approximate boundary of the study area.

[1] The RSS did not analyze alternatives for the proposed Melbourne Substation, nor for the Tie Lines, because there were no reasonable alternatives. (*See* ATSI's Motion for Partial Waiver of OAC Rule 4906-3-05, filed concurrently with this Application.)

(3) Map of Study Area, Study Segments and Routes Evaluated

Figures 2 through 12 in the attached RSS report (Appendix 4-1) illustrate the approximate boundary of the study area, study segments, and the alternative routes that were evaluated to guide the siting team in selecting the Preferred and Alternate routes.

(4) Siting Criteria

The list and description of all quantitative siting criteria and the weighting values for each criterion used in the RSS are presented in Appendix C of the RSS report (Appendix 4-1). The quantitative siting criteria were selected to identify potential impacts to the community or environment, as well as technical challenges that may be encountered when designing and constructing the Project; they consist of constraint and attribute data, including, but not limited to, locations of forested lands, wetlands, streams, cultural resources, individual residences, property boundaries, institutional land uses, existing transmission lines, and other land use features. These criteria were assigned weighting values based on the specific study area setting and primary land uses, and the professional judgment of the siting team, which allowed for the calculation of route scores.

(5) Siting Process to Determine the Preferred and Alternate Routes

After identifying the study area, reviewing constraint and opportunity data, and establishing the siting criteria, conceptual route corridors and preliminary study segments were drawn based on mapped attribute and constraint data and review of aerial imagery. The intent when placing these study segments was to minimize impacts to residences and land use by paralleling existing linear infrastructure, including the existing Fulton-North Star 345 kV Transmission Line, I-80/I-90, and Norfolk Southern' s railroad corridor. Following a field review, study segments were refined then combined into 526 alternative routes.

Alternative routes were then assessed and compared based on natural and cultural resources, land uses, and engineering and construction concerns. For comparison of the alternative routes, various siting criteria were quantified for each route and then each quantified value was normalized to assign each criterion a score. This more easily allows a relative comparison of the data and routes. Normalizing the data into a score is vital so that all constraints are directly compared according to the same scale. The alternative routes were then numerically scored to identify the overall ranking of alternative routes.

Based on the initial scoring and ranking results, the siting team recognized that the top 60 ranked routes were very similar to one another, and most routes did not meet the OPSB requirement that alternative routes have no more than 20 percent in common. The top ranked alternatives are also all near the existing Fulton-North Star 345 kV Transmission Line and I-80/I-90 corridor, so proceeding with just these alternatives would disregard siting opportunities in other parts of the study area. Given this situation, the siting team grouped the alternative routes into three general corridors (the northern corridor, central corridor, and southern corridor), primarily based on the initial conceptual route corridors. Because the routes in the southern part of the study area scored the worst in the initial round of scoring (out of 526 alternatives), these routes were dropped from further consideration. Once the routes were grouped, quantitative scoring and ranking was

completed again to gain an understanding of how the alternative routes compared to one another within the northern and central corridors. In addition to the quantitative scoring, ATSI's siting team relied on its extensive experience and familiarity with transmission siting projects to further refine the routes based on several qualitative factors. Qualitative siting criteria used to assess the alternative routes included potential impacts to existing transmission lines during construction, operation, and maintenance of the Project, impacts to future land use and economic development in the study area, and visual impacts to the surrounding community.

The siting team held an informal open house on August 24, 2022, to obtain input from property owners and stakeholders on three alternative routes. The alternatives included a route from the northern corridor (Route 266) and two routes from the central corridor (Route 149 and Route 18). Based on input from landowners during the meeting, the southern-most route (Route 18) was eliminated, primarily from opposition to bisecting several agricultural land parcels on this largely greenfield route. The siting team made significant modifications to Route 149 based on input received from North Star BlueScope Steel representatives concerning conflict with the facility's material handling operations, as well as route shifts to other segments to lessen land use impacts. Lastly, the northern Route 266 underwent a modification to reduce impacts to the Delta Motorsports Park's racetrack and business operations.

Given the numerous route modifications necessitated by input from stakeholders and other opportunities to reduce impacts, a group of 212 alternative routes was re-evaluated through a second scoring and ranking process. Based on quantitative scoring and that Route 266 Modified reduces land use impacts compared to other routes, this route was selected to be advanced and included for presentation in this Application. Based on the route adjustments that resulted in Route 149 Modified, the public's comments, and the siting team's effort to optimize this central route, this route was also selected to be presented in this Application.

ATSI held a public information meeting, pursuant to OAC Rule 4906-3-03, on December 6, 2022, regarding the two refined alternative routes: Route 266 Modified and Route 149 Modified. Based on comments received from property owners in attendance, coupled with the route ranking and qualitative considerations, the siting team selected Route 266 Modified as the Preferred Route and Route 149 Modified as the Alternate Route.

The entire siting process, methodology, and results are described in detail in the RSS report in Appendix 4-1.

(6) Route Descriptions and Rationale for Selecting the Preferred and Alternative Routes

Route 266 Modified was identified as the Preferred Route in the RSS. The Preferred Route is 9.5 miles in total length and has 12 residences within 500 feet of the route centerline, the second lowest residential count of all routes. The route crosses land owned by 33 individuals or entities, the second lowest of all routes. Route 266 Modified has a higher potential for delineated wetlands (based on National Wetland Inventory data) compared to the majority of alternative routes but

has fewer stream crossings and fewer impacts to existing land uses compared to other routes evaluated.

The impacts to sensitive land uses and historical cultural resources are expected to be minimal, and quantities of these sensitive features (historic structures, recreational areas, etc.) are among the lowest. Additionally, the route is among the lowest for overall length and in the middle of the range for the number of angle structures. This route also parallels I-80/I-90 for the majority of its length. This route will be co-located (offset 100 feet) with the existing Fulton-North Star 345 kV Transmission Line for 3.0 miles of the total 9.5-mile route, thereby reducing the amount of potential new ROW that would need to be acquired from landowners.

Route 149 Modified was identified as the Alternate Route in the RSS. This route parallels the Norfolk Southern Company railroad for 4.0 miles of the total 8.5-mile route. The Alternate Route also parallels 2.5 miles of ATSI's existing Delta-Wauseon 138 kV Transmission Line, which follows the railroad corridor.

The Alternate Route is among the lowest for potential wetlands being crossed (based on National Wetland Inventory and hydric soils data), involves five stream crossings (based on desktop data), and is the middle of the range for woodlot impacts. In terms of land use, the Alternate Route has 9 residences within 250 feet of the route centerline and 65 residences within 500 feet of the route centerline, which is in the lower to middle of the impact ranges for all alternative routes evaluated. The route crosses land owned by 45 individuals or entities which is close to the middle of the range. The impacts to sensitive land uses and historical cultural resources are expected to be minimal, and quantities of these sensitive features (historic structures, recreational areas, etc.) are among the lowest. Additionally, the route is among the lowest for overall length (8.5 miles) and in the middle of the range for the number of angle structures.

(B) COMPARISON TABLE OF ROUTES, ROUTE SEGMENTS, AND SITE

Table 4-1 below summarizes the top-ranked routes resulting from the RSS (Appendix 4-1). In addition, Tables 3-1 and 3-2 of the RSS report provide scoring and ranking results for the initial round of route analysis conducted during the RSS. Detailed quantitative analysis results are provided in Appendix D, Appendix E, and Appendix F of the RSS (Appendix 4-1).

Table 4-1: Alternative Route Ranking Results (Second Scoring of 212 Alternative Routes)

Route	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Overall Rank
266	4,17,32,37,63,74,75,80	20.9	27.0	16.3	44.9	24.5	1
306	4,9,11,14,20,29,43,44,55,67,70,76,83	32.6	0.0	23.6	55.2	30.3	2
266 Mod	4,17,32,37,63,74,75,80 (with modifications)	40.2	12.0	17.9	50.9	30.6	3
307	4,9,11,14,20,29,43,44,59,66,67,70,83	30.1	0.0	28.2	53.1	30.9	4
500	14,20,29,43,44,55,67,70,76,78,79	32.2	39.0	16.9	53.7	31.1	5
354	4,9,14,20,29,43,44,55,67,70,76,78,81	31.9	0.0	23.9	59.8	31.1	6
133	3,11,14,20,22,28,43,44,55,67,70,76,83	31.4	39.0	25.0	39.8	31.3	7
149	3,11,16,23,25,31,33,45,47,48,52,65,67	33.4	69.0	29.9	15.7	32.0	8
Routes ranked 9th through 38th were eliminated (all utilize southern segments of central corridor or circuitous routing)		N/A	N/A	N/A	N/A	N/A	9-38
149 Mod	3,11,16,23,25,31,33,45,47,48,52,65,67 (with modifications)	31.0	39.0	42.0	27.3	35.5	39

(C) PUBLIC INVOLVEMENT

ATSI conducted a public information program to raise awareness, communicate Project details, and solicit feedback from residents and local elected officials. ATSI's public involvement for the route selection process entailed two meetings in the area: first, an informal open house; and second, the required public informational meeting pursuant to OAC Rule 4906-3-03. During both meetings, community members were afforded the opportunity to offer comments on proposed route segments and alternatives. Prior to each meeting, ATSI mailed invitation letters to residents and tenants. ATSI also published a public notice of the public information meeting in the local newspaper. A project website was also created with Project mapping and a summary description. Additionally, ATSI set up a virtual open house website to provide stakeholders with a summary of the Project need and purpose, transmission line pole types, vegetation management, environmental permitting, real estate negotiations, and a map of alternative routes. At the meetings, ATSI representatives were available to answer questions, listen, and receive feedback from the public to incorporate in the siting process. Summaries of the meetings are provided below.

First, on August 24, 2022, ATSI conducted an informal open house, from 6:00 pm to 8:00 pm at the American Legion Hall in Delta, Ohio (5939 State Route 109, Delta, OH 43515). Materials on three alternative routes were offered for public comment, along with other Project information during the meeting. Detailed maps of the potential routes were presented, including property boundaries with unique parcel identification (ID) numbers referenced to a list of property owners. This allowed attendees to identify their property on aerial photographs and observe the location of the proposed alignments with respect to their property. Approximately 72 members of the public attended the informal open house.

ATSI encouraged those attendees with specific objections to suggest alternatives. Twenty written comments were collected, including two comments received via e-mail and one comment via the website after the session. Additionally, three comments from owners were transcribed by ATSI's real estate staff during discussions. Comments included concerns about agricultural crop operations, proximity to residences, and visual aesthetics. Comments also included preference for one of the three presented routes. ATSI's siting team reviewed each of the landowners' comments and fully considered the concerns and/or recommendations expressed to aid in the selection of the Preferred and Alternate Routes.

Following the informal open house, ATSI refined its analysis of the route segments for further consideration.

Second, on December 7, 2022, ATSI conducted its public informational meeting, pursuant to OPSB Rule 4906-3-03, from 6:00 pm to 8:00 pm at the American Legion Hall in Delta, Ohio (5939 State Route 109, Delta, OH 43515). Two alternative routes were presented for public comment, along with other Project information during the meeting. Again, detailed maps of the route alternatives were presented, including property boundaries with unique parcel identification (ID) numbers referenced to a list of property owners. This allowed attendees to identify their property on aerial photographs and observe the location of the proposed alignments with respect to their property.

Approximately 30 members of the public attended the public information meeting, and 13 comments were received. Of the 13 comments, seven were in favor of the northern alternative route. Two additional commentors who own property on the northern route expressed concerns including the transmission poles causing more difficult agricultural equipment operations for field crops and concern about the number of easements from all utilities that cross a specific parcel of agricultural crop land. Four comments were received from property owners on the southern route. Some of the four commentors expressed interest in selling their property for purposes of constructing the transmission line and mentioned concerns about perceived health effects from living adjacent to a high voltage transmission line. ATSI's siting team reviewed each of the landowners' comments and fully considered the concerns and/or recommendations expressed to aid in the selection of the Preferred and Alternate Routes.

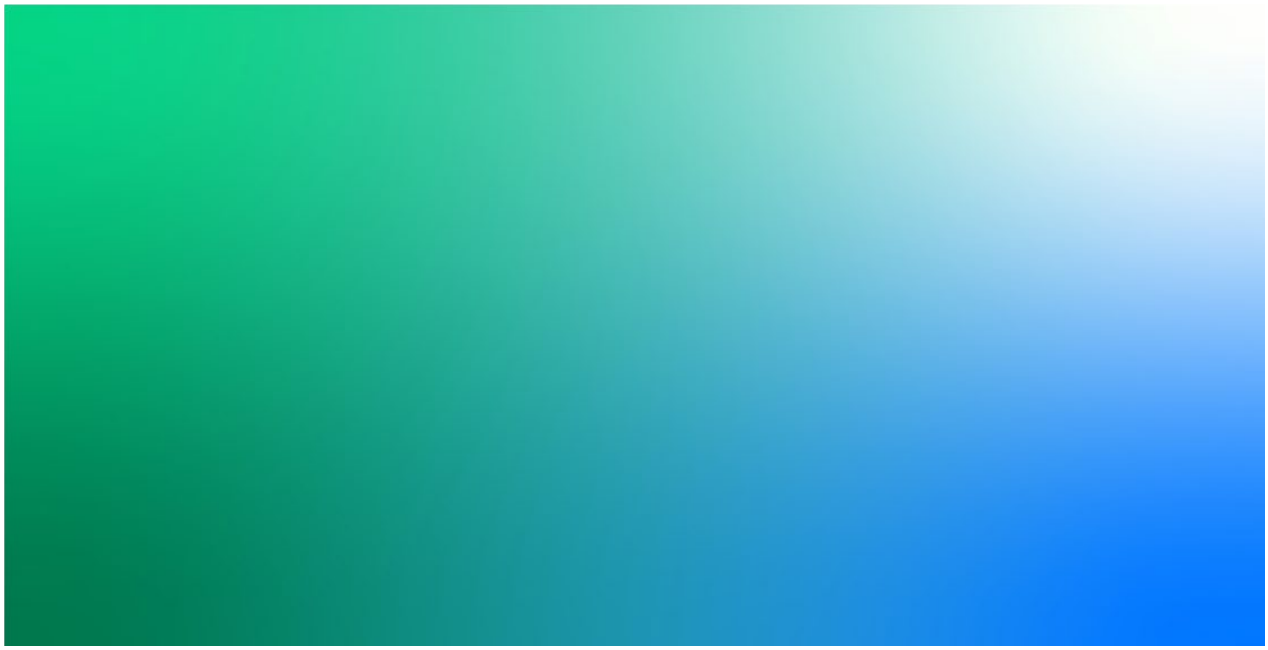
Appendix 4-1
Route Selection Study

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

Route Selection Study

March 2023

American Transmission Systems, Incorporated



Contents

Acronyms and Abbreviations v

1. Introduction and Project Overview 1-1

1.1 Purpose and Need 1-1

1.2 Project Area Description 1-1

1.3 Goal of Siting Study 1-1

2. Route Selection Methodology 2-1

3. Route Selection Study 3-1

3.1 Study Area Delineation 3-1

3.2 Constraint and Opportunity Data 3-1

3.2.1 Raster-Based Suitability Modeling 3-2

3.3 Study Segment Network and Alternative Routes 3-3

3.3.1 Identifying Conceptual Route Corridors 3-3

3.3.2 Developing Initial Study Segments 3-3

3.3.3 Refining the Study Segment Network 3-3

3.3.4 Developing Alternative Routes 3-4

3.4 Evaluating Alternative Routes 3-4

3.4.1 Evaluation Criteria and Process 3-5

3.4.2 Initial Scoring and Ranking Results 3-6

3.4.3 Corridor Scoring and Ranking Results 3-6

3.4.4 Alternative Routes Discussion 3-9

3.5 Public and Stakeholder Engagement 3-11

3.5.1 Stakeholder Engagement 3-12

3.5.2 Public Information Meeting 3-12

3.6 Route Adjustments and Second Scoring of Routes 3-13

3.6.1 Route Adjustments 3-13

3.6.2 Second Scoring and Ranking of Alternative Routes 3-15

3.7 OPSB Jurisdictional Public Information Meeting 3-17

3.8 Selection of the Preferred and Alternate Route 3-18

4. Conclusions 4-1

Appendices

Appendix A Figures
Appendix B GIS Data
Appendix C Alternative Routes
Appendix D Evaluation Criteria
Appendix E Route Scoring Results
Appendix F Corridor Scoring Results
Appendix G Second Route Scoring Results

Tables

3-1 Northern Corridor Alternative Route Evaluation Scores 3-7
3-2 Central Corridor Alternative Route Evaluation Scores 3-8
3-3 Alternative Route Ranking Results (Second Scoring of 212 Alternative Routes) 3-15

Figures

1 Project Overview
2 Study Area and Constraints
3 Overall Suitability Model
4 Conceptual Route Corridors
5 Initial Study Segment Network
6 Refined Study Segment Network
7 Top Ranked Northern Corridor Alternative Routes
8 Top Ranked Central Corridor Alternative Routes
9 Alternative Routes - Initial Public Information Meeting
10 Revised Study Segments for Second Scoring of Alternative Routes
11 Alternative Routes 149 and 266 (Initial and Modified) Jurisdictional Public Information Meeting
12 Preferred and Alternate Routes

No table of contents entries found.

Acronyms and Abbreviations

ATSI	American Transmission Systems, Incorporated
CECPN	Certificate of Environmental Compatibility and Public Need
FE	FirstEnergy
GIS	geographic information system
I-	Interstate
Jacobs	Jacobs Engineering Group Inc.
kV	kilovolt
NWI	National Wetlands Inventory
OAC	Ohio Administrative Code
OPSB	Ohio Power Siting Board
Project	Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
SR-	State Route
US-	US Highway

1. Introduction and Project Overview

1.1 Purpose and Need

American Transmission Systems, Incorporated (ATSI), a FirstEnergy (FE) company, is proposing to develop a new 345-kilovolt (kV) transmission line between ATSI's existing Dowling-Fulton 345 kV Transmission Line and the proposed Melbourne Substation[1] in Fulton County, Ohio (Figure 1). The proposed project, referred to as the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation (Project), will provide a second 345 kV source to the proposed Melbourne Substation to enhance the electric service reliability for existing customers, add redundancy to the transmission network, and allow for future growth in the area. The Project will also alleviate a potential 300-megawatt load loss, which would be a PJM Planning Criteria Violation, as a result of increased load on the transmission system.

The Project requires an Application for a Certificate of Environmental Compatibility and Public Need (CECPN) be submitted to the Ohio Power Siting Board (OPSB). As part of the CECPN process, a route selection study is required that analyzes the siting constraints and siting opportunities used to select a Preferred Route and an Alternate Route for the Project.[2] In accordance with Ohio statutory requirements, this report summarizes the siting process and methodology, and makes a recommendation on a Preferred Route and Alternate Route for the Project.

1.2 Project Area Description

The Project area is in southeastern Fulton County. Existing land uses in the Project area consist primarily of agricultural land, low-density residential along county roads with higher-density residential within the Village of Delta. Large commercial/industrial facilities, including the North Star BlueScope Steel facility, are west of Delta. The primary transportation corridors in the Project area are Interstate 80/90 (I-80/I-90) which runs east to west north of Delta, US Highway 20A (US-20A) which runs east to west through Delta approximately 1.5 miles south of I-80/I-90, and State Route 109 (SR-109) which runs south from Delta.

1.3 Goal of Siting Study

The primary goal of the route selection study was to identify a route for the Project that (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated safely for its service life while meeting the purpose and need of the Project

[1] Site selection for the Melbourne Substation is not included in this report.
[2] OAC § 4906-5-04

2. Route Selection Methodology

In compliance with the OPSB requirements, the route selection process follows a common siting methodology that is routinely used to route electric transmission lines in Ohio and other states. A siting team was convened to implement the route selection process and consisted of multidisciplinary staff from ATSI and Jacobs with experience in transmission line siting, engineering, environmental permitting, impact assessment for the natural and human environment, public engagement, construction, project management, planning, vegetation management, and operations.

The siting process provides a layered approach, employing appropriate methods for the siting team to determine the preferred and alternate routes for the Project. The process used for this Project consisted of the following primary tasks, detailed in the following sections:

1) **Identifying a Project-specific study area:** The first step in the siting process was to develop a Project-specific study area that identifies an appropriate geographic boundary where the siting team can collect detailed constraint and opportunity data. The study area should include a large enough area to investigate reasonable routing alternatives for the Project. To identify a study area, the siting team reviewed publicly available environmental, land use, and socioeconomic information and determined the boundaries of the study area based on the initial opportunity review (to identify where a new transmission line may have the least impacts) and the constraint review (to identify existing land or man-made features that are less suitable for a transmission line siting) review.
2) **Mapping of constraint and opportunity data:** After the siting team developed the study area, further constraint and opportunity data were collected under four broad categories; ecological, cultural, land use, and technical. Detailed data were collected under these broad categories based on their relevance to the Project, the study area, and the availability and quality of the dataset. Once collected, the data were analyzed by way of the following:
    a) The data were mapped within the study area to produce an overall constraint and opportunity map. This initial mapping gave the siting team insight into all constraints within the study area generally.
    b) After the data mapping was complete, the opportunity and constraint information was converted into raster-based (or grid cell) layers and assigned a suitability value related to its suitability to host a transmission line. For example, an existing utility right-of-way would be assigned a high suitability score, while a residential area or wooded wetland would be assigned a low score. These individual suitability layers were combined to form an overall suitability surface, which assists the siting team with developing a study segment network.
3) **Developing a study segment network and identification of alternative routes:** Once the suitability mapping and raster-based layers were completed, the information gleaned from the data analysis was used to develop an initial study segment network. Study segments were developed by using corridors that were the most conducive to electric transmission line development. A site visit was then conducted to review the study area and initial study segments. Following the site visit, study segments were revised based on additional opportunities and constraints identified during the visit. Based on the revised study segments, the siting team developed unique alternative routes for the Project by combining study segments from the existing Dowling-Fulton 345 kV Transmission Line to the proposed Melbourne Substation.
4) **Comparing alternative routes:** Once the alternative routes were identified, the siting team established a set of metrics to compare and rank the routes. These metrics were based on opportunities and

constraints in the study area and weighted based on the specific Project area setting and primary land uses, as well as the professional judgement of the siting team in routing projects in a similar setting.

Based on quantitative scores and qualitative factors, the siting team identified three alternative routes to present at a public information meeting. As part of this process, the siting team chose routes that met the OPSB requirement that alternative routes submitted as part of the CECPN application have no more than 20 percent of their length in common. [3]

5) **Conducting public and stakeholder meetings:** The Project team held a stakeholder meeting in January 2022 and a public information meeting in the Project area in August of 2022 to present the Project, three alternative routes and solicit written comments from the public to incorporate in the siting process. The public information meeting in August was supplemented with an OPSB jurisdictional public meeting in December 2022.

6) **Adjusting and re-evaluating routes**: The Project team made study segment and route adjustments based on applicable and relevant feedback from property owners at the public information meeting as well as detailed engineering and re-evaluated alternative routes. Because of the nature of the data collection and analysis process used to review siting options, the siting team was (and remains) able to reevaluate routes, corridors, and data with minimal additional processing of data inputs.

7) **Selecting a Preferred and Alternate route:** In addition to the quantitative evaluation, qualitative factors play a crucial role in the selection of a Preferred Route and Alternate Route for the CEPCN application. The qualitative factors vary from project to project and could include visual impacts, local public perception and preferences, current land use, and proposed future land use. The siting team used its experience to determine the type and extent to which qualitative data influenced routing decisions. Further record of qualitative information gleaned through the project is discussed in other sections of this document. The siting team then used the qualitative and quantitative analysis to select the Preferred and Alternate routes presented in the Application.

[3] OAC § 4906-3-05

3. Route Selection Study

3.1 Study Area Delineation

The study area's boundaries include the area between ATSI's existing Dowling-Fulton 345 kV Transmission Line and the proposed Melbourne Substation. It was defined to include a reasonable area where potential routes could be identified. Given these considerations, the siting team identified a study area encompassing approximately 41,293 acres (64.5 square miles) in Fulton County, Ohio (Figure 2).

The eastern boundary of the study area extends approximately 8.6 miles from north of County Road J to Township Highway W (the southern boundary of Fulton County), paralleling of the existing Dowling-Fulton 345 kV Transmission Line approximately 0.25 mile to the east. The southern boundary extends west along the county line for approximately 4.8 miles, then north along SR-109 for approximately 2.4 miles before continuing west for another 3.5 miles through agricultural fields to County Road 11. The western boundary extends approximately 6.1 miles north along County Road 11 until just north of County Road J. The northern boundary extends east for approximately 8.8 miles through agricultural fields, north of County Road J and I-80/I-90, until it meets with the eastern boundary (northeast of ATSI's existing Fulton Substation). The siting team believed that extending the study area past these boundaries would add unnecessary area without significant benefit. The northern boundary allows the siting team to evaluate potentially paralleling the existing Fulton-NorthStar 345 kV Transmission Line and I-80/I-90 corridor. The southern boundary captures opportunities for routing through the southern part of the county while avoiding a large area of protected land managed by the Black Swamp Conservancy on the western side of SR-109. Extending the study area east or west of the identified boundaries would have added unnecessary length to the Project.

3.2 Constraint and Opportunity Data

Once the study area was determined, Jacobs reviewed publicly available data in the study area to identify opportunities and constraints that could affect the viability of a proposed transmission line route. Figure 2 shows the study area boundary and the following constraints and opportunity features identified in the study area. Appendix A presents a list of the geographic information system (GIS) data sources used for this study.

Ecological Resources

- Streams, including Bad Creek, Blue Creek, Dry Creek, Fewless Creek, and Swan Creek
- Wetlands
- Floodplains
- Forested areas

Cultural Resources

- Cemeteries
- Ohio Archaeological Inventory listed archaeology sites
- Ohio Historic Inventory listed architectural and historical resources
- National Register of Historic Places eligible resources

Land Use

- Residential development, including the Village of Delta and surrounding areas
- Commercial/Industrial developments, including Nova Tube & Steel, LLC's two new electric resistance welding tube mills, and proposed Tricounty Rural Electric Cooperative, Inc.'s Winameg Area Substation
- Institutional facilities
- Landfills
- Cell towers
- Agricultural district lands
- Recreation areas, including the Delta Reservoirs, Delta Raceway, and Wabash Cannonball Trail
- Protected lands, including Fulton Pond Wildlife Area, Maumee State Forest, and open farm and ranch lands managed by the Black Swamp Conservancy

Technical

- Local roads, including I-80/I-90, County Road J, County Road H, US-20A, County Road D, County Road C, County Road 3, County Road 5-2, SR-109, and County Road F
- Railroads owned and operated by Norfolk Southern Company and Indiana & Ohio Railway
- Transmission lines, including ATSI's existing Dowling-Fulton 345 kV Transmission Line, Fulton-NorthStar 345 kV Transmission Line, Delta-Wauseon 138 kV Transmission Line, Delta-Fulton 138 kV Transmission Line, Fulton-Swanton 138 kV Transmission Line, and NorthStar Steel-Wauseon 138 kV Transmission Line.

3.2.1 Raster-Based Suitability Modeling

Based on siting constraints and opportunities within the study area, a raster-based suitability surface was created. The suitability model analysis resulted in three levels of detail, or tiers of suitability surfaces:

- **Tier 1:** Individual criteria or layers (for example, woodlots, wetlands, streams and floodplain were collected and mapped individually). Each data layer was converted to raster format where each grid cell measured 100 feet by 100 feet and was assigned a "suitability" score between 1 and 10, where 1 is "best" and 10 is "worst." The scores were determined by the Project team using professional experience with similar projects and regulatory guidelines.
- **Tier 2:** Related Tier 1 surfaces were combined into one of three categories (ecological, cultural, land use, and technical) and given a category score. For example, woodlots, wetlands, streams and floodplain were combined to form an "ecological" suitability surface. In addition to serving as the foundational pieces of the suitability model, these grouped layers are useful in communicating the siting process to interested parties.
- **Tier 3:** Tier 3 surfaces were generated by combining and applying statistical weights to the three Tier 2 surfaces. The result was an overall suitability surface model which is color-coded using a progressive chromatic scale from red (least suitable) to green (most suitable).

The overall suitability model (Figure 3) includes a color-coded display that allows for an easy visual assessment of routing constraints and opportunities. The purpose of creating the suitability model for this Project was to identify areas that would be more suitable for developing a routing corridor network. The

suitability model also shows areas where routing constraints would limit the development of routing corridors.

3.3 Study Segment Network and Alternative Routes

Developing routes is an iterative process that allows for re-assessment and adjustment of routes throughout the process as new constraints are identified. The subsections below summarize the stepwise approach used to develop the study segments and alternative routes for the Project.

3.3.1 Identifying Conceptual Route Corridors

Using the overall suitability model and review of aerial photography, topographic maps, and the collected attribute and constraint data, the siting team first identified conceptual route corridors from the Dowling-Fulton 345 kV Transmission Line to the west side of NorthStar Steel's facility because the location of the proposed Melbourne Substation was not finalized at this stage in the routing study. The intent when developing the conceptual route corridors was to avoid less suitable areas for a transmission line (e.g., urban areas, wetlands, forested areas) and follow more suitable areas (e.g., existing developed corridors such as roads and existing transmission lines) that will later be defined into study segments and eventually alternative routes. Along the Dowling-Fulton 345 kV Transmission Line, six areas were identified for potential tap locations: near the Fulton Substation, directly south of I-80/I-90, along the Delta-Fulton 138 kV Transmission Line, south of US-20A, just north of County Road D, and south of County Road C. From these six tie-in points, the conceptual route corridors extend west by following the green (more suitable) areas while avoiding the red (less suitable) areas until reaching the west side of NorthStar Steel's facility. The conceptual route corridors identified for the Project are shown on Figure 4.

3.3.2 Developing Initial Study Segments

Once conceptual route corridors were identified, initial study segments were developed by identifying study segments that avoided constraints and used opportunities within each corridor. In some areas, study segments were developed outside of the conceptual route corridors as constraints (e.g., clusters of residences, environmental features, etc.) within the corridor made it challenging to route a transmission line that will require an approximately 150-foot ROW. Additionally, the siting team looked for areas of opportunity throughout the study area to develop segments that would create connections between the corridors. Sixty-seven initial study segments were developed for the Project and are shown on Figure 5. Many of these segments parallel existing linear infrastructure including the existing Fulton-NorthStar 345 kV Transmission Line, I-80/I-90, and Norfolk Southern' s railroad corridor. Study segments 3, 11, 16, 23, 47, 48, 52, 54 and 65 were developed as a rebuild of the Delta-Wauseon 138 kV Transmission Line and Delta-Fulton 138 kV Transmission Line, as a double circuit 138/345 kV transmission line.

Following development of the initial study segment network, the siting team completed a field review of the study area and study segments to identify any issues/concerns with the study segments developed as well as any additional constraints or opportunities that needed to be considered during the siting process.

3.3.3 Refining the Study Segment Network

Based on the field review, four segments were removed (1, 46, 51, 54), numerous segments were revised, and 16 segments were added (69 to 84). The refined study segments are shown on Figure 6.

Study segment 1 was removed from consideration when a wetland and windbreak managed by the Fulton County Soil and Water Conservation District in the southwest corner of County Road 3 and County Road E was identified. Due to the density of residences in this area, it was not feasible to adjust this segment. Southwest of Delta, the Siting Team reviewed study segments 45, 46 and 47. In this area, there were two options to connect to the north side of the railroad corridor. Segments 45 and 47 were retained because these segments reduce land use impacts in the area and have a better crossing angle over the railroad tracks. Segment 46 was removed from consideration. East of the NorthStar Steel facility, study segment 51 was removed from consideration because it was redundant with segment 53. The siting team chose to keep segment 53 because its location on NorthStar Steel property would reduce impacts to new landowners. Lastly, due to some minor adjustments to study segments south of the railroad corridor, segment 54 was incorporated into segment 65.

In the southeast corner of the study area, the siting team observed a cluster of residences along the smaller county and township roads making it challenging to route a transmission line through this area. The siting team identified a more suitable overgrown tree lot adjacent to agricultural fields and shifted segment 6 to this area to reduce impacts on residences. South of Delta, segment 33 was adjusted to reduce potential impacts to Bad Creek and the associated forested floodplain, and segment 34 was adjusted to shift the segment further away from a newly constructed residence along Jefferson Street. On the west side of the NorthStar Steel facility, segments 63, 64, and 67 were adjusted to account for the confirmed site of the proposed Melbourne Substation. Along the Norfolk Southern railroad corridor, segments were shifted slightly north to provide 100 feet of clearance from the railroad corridor. This distance would allow ATSI to construct the double circuit 138/345 kV transmission line in the clear from the existing Delta-Fulton 138 kV and Delta-Wauseon 138 kV transmission lines.

North of Delta, the siting team identified a well-preserved, potentially historic residence along Fulton County 7-2 as well as residences near one another. To reduce impacts on residences in the area and avoid the potentially historic residence, the siting team shifted segment 50 to run along the south side of I-80/I-90 and cross the Delta Raceway Park. The siting team also identified opportunities to use the area on either side of I-80/I-90 and added study segments in this area. Other areas of opportunity identified during the field review where the siting team added new segments included: the area directly south of the Norfolk Southern railroad corridor east of Delta; directly south of the Norfolk Southern railroad corridor south of the NorthStar Steel facility; and along the north side of NorthStar Steel's property, south of US-20A. As a result of these changes, 79 study segments were developed.

3.3.4 Developing Alternative Routes

Once the study segment network was refined, 526 unique alternative routes were developed starting with segments 2, 3, 4, 5, 6 or 79 and continuing west towards the proposed Melbourne Substation (Appendix B). Segments were combined to progress north, south, or west toward the substation site while avoiding segments that would loop back east.

3.4 Evaluating Alternative Routes

The next step in the route selection study was to evaluate the 526 alternatives routes. Alternative routes were assessed and compared with natural and cultural resources, land uses, and engineering and construction concerns considered. Ultimately, through a quantitative and qualitative analysis and comparison of the alternative routes, the siting team identified routes to present to stakeholders and the public for comment.

3.4.1 Evaluation Criteria and Process

Based on the publicly available data assembled to identify opportunities and constraints within the study area, the siting team developed a set of evaluation criteria to quantitatively compare the alternative routes to one another (Appendix C). The data used to evaluate and compare the routes were chosen based on their relevance to siting a transmission line within the Project's study area and grouped into four categories: ecological, cultural, land use, and technical.

For comparison of the alternative routes, raw data for each data category and each route were collected, quantified, and then normalized to a dimensionless parameter. Lower scores indicate "more favorable" conditions, higher scores indicate "less favorable" conditions. Normalizing the data allows all the constraints to be compared according to the same scale and avoids one constraint being unintentionally influential. It also allows each category to be weighted based on the constraints and opportunities identified within the study area and their importance to the Project. The following formula was used to normalize the raw data:

Normalized Score = ((Xij – [Min Value]j) / Range) *100

where: i = xth value in constraint and j = constraint

This normalizing method uses the established range of collected data in a particular category to compare all route options to one another and avoids one constraint category being unintentionally influential.

The next step in this process was to weigh the criteria within each category and across the four categories (ecological, cultural, land use, and technical). Weighting recognizes that under certain circumstances, one evaluation criterion is more important or relevant than another in determining an outcome. The criteria weighting values were determined by consensus of the siting team and based on the specific Project area setting and professional judgment of the siting team members' experience routing projects in a similar setting. The criteria weighting values are included in Appendix C. Based on the constraints and opportunities identified within the Project area, the siting team determined the following criteria to be most important: number of residences near the route, woodlots (removal), number of landowners impacted, and paralleling existing linear features. These criteria were assigned weighting values that yield the most influence on the route scores.

The criteria were measured and calculated to assess potential impacts and benefits. For ecological constraints, impacts to woodlots and NWI wetlands were measured within the proposed right-of-way to account for construction and clearing of trees, while stream impacts were measured by the number of crossings to account for potential permitting requirements. Residences were counted within 250 feet and out to 1,000 feet from the route centerlines to measure potential direct impacts from the alternative route as well as potential aesthetic impacts. Length of route and paralleling existing transmission line were both measured in units of distance to account for costs and reducing impacts to current land use. In addition, there were various other constraints and attributes that were measured (either in units of distance or total occurrences) along the centerline.

Across the four categories, the land use category was weighted the highest (40 percent), followed by ecological (30 percent), technical (20 percent), and lastly cultural (10 percent).

The siting team assigned the highest weight of 40 percent to the land use category to reflect the priority of minimizing impacts on residents and aesthetics of the area. The land use weighting reflects impacts on

residences within 1,000 feet of the alternative routes. The ecological category was assigned a 30 percent weight to reflect ecological considerations in the study area due to the presence of forested lands and wetland and stream crossings. The technical category was assigned a 20 percent weight to account for the engineering challenges associated with constructing a 345 kV transmission line and the potential for paralleling existing linear corridors to decrease land use impacts in a rural, agricultural community. The study area contains few notable historic or archeological features based on the desktop reviews; therefore, the cultural category was weighted the lowest at 10 percent.

3.4.2 Initial Scoring and Ranking Results

The first step in the route evaluation process involved quantitative scoring and ranking the 526 unique alternative routes to gain an understanding of how the alternative routes compared to one another given the expansive study area and various constraints and opportunities in the area (see Appendix D). Based on the initial scoring and ranking, alternative routes paralleling the existing Fulton-NorthStar 345 kV Transmission Line and I-80/I-90 scored the most favorable, followed by routes along the 138 kV/railroad corridor. The alternative routes in the southern part of the study area (all the routes that started with segment 6) scored the least favorable. Due to the routes in the southern part of the study area scoring the worst in the initial round of scoring, these routes were dropped from future consideration.

3.4.3 Corridor Scoring and Ranking Results

Typically, at this stage in the siting process, the top ranked alternative routes would be identified and evaluated in more detail in the siting study. However, based on the initial scoring and ranking results, the siting team recognized that the top 60 ranked routes were very similar to one another, and selecting from this group of routes would not meet the OPSB requirement that alternative routes have no more than 20 percent of their length in common. The top ranked alternatives are also all near the existing 345 kV transmission line and I-80/I-90 corridor so proceeding with just these alternatives would disregard siting opportunities in other parts of the study area. To ensure the OPSB requirement for alternative routes was met and continue to consider routes throughout the study area, the siting team grouped the alternative routes into two general corridors (northern corridor and central corridor), primarily based on the initial conceptual route corridors developed in the early stages of route development. Alternative routes grouped in the northern corridor included all the routes with segments along the existing 345 kV transmission line and I-80/I-90 corridor. Alternative routes grouped in the central corridor included all the routes comprised of segments along the 138 kV/railroad corridor and segments south of Delta. Once the routes were grouped, quantitative scoring and ranking was completed again to gain an understanding of how the alternative routes compared to one another within the northern and central corridors (Appendix E).

3.4.3.1 Northern Corridor Route Evaluation

Table 3-1 presents the top 12 alternative routes by overall score for the northern corridor. Like the initial scoring and ranking results, many of the top ranked alternatives were very similar, with only one or two segments different. The siting team chose to keep the top ranked alternatives and eliminate any lower ranked route variations that did not present a different option for connecting to the Melbourne Station in the western part of the study area. Based on this, five alternative routes were identified: Route 382, Route 252, Route 392, Route 266, and Route 394 (Figure 7).

Table 3-1. Northern Corridor Alternative Route Evaluation Scores

Route	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Overall Rank
382	5,35,36,37,75,50,69,80	2.6	16.0	13.5	51.8	18.1	1
252	4,17,32,37,75,50,69,80	8.4	16.0	10.6	50.0	18.4	2
392	5,35,38,73,71,64	12.7	0.0	16.2	42.4	18.8	3
388	5,35,38,49,75,50,69,80	2.9	16.0	16.6	51.2	19.4	4
384	5,35,36,37,75,74,72,71,64	11.3	0.0	13.8	57.6	20.4	5
267	4,17,32,37,75,74,72,71,64	17.1	0.0	10.9	55.8	20.6	6
378	5,35,36,37,49,73,71,64	12.3	0.0	14.8	55.9	20.8	7
261	4,17,32,37,49,73,71,64	18.1	0.0	11.9	54.1	21.0	8
383	5,35,36,37,63,74,75,80	7.0	27.0	17.9	46.8	21.3	9
266	4,17,32,37,75,74,63,80	12.8	27.0	15.0	45.0	21.6	10
394	5,60,62,64	25.0	0.0	10.7	48.9	21.6	11
390	5,35,38,49,75,74,72,71,64	11.7	0.0	16.9	56.9	21.6	12

Note:

Routes grayed out were eliminated by the siting team as they are lower ranked variations of the top ranked routes.

Route 382 begins near the existing Fulton Substation and runs west, paralleling the existing Fulton-NorthStar 345 kV Transmission Line for approximately 4.0 miles. The route then cuts south, crossing the existing 345 kV transmission line and I-80/I-90 before continuing west along the south side of I-80/I-90 for another 1.7 miles. West of the Delta Reservoir, Route 382 runs south then southwest through agricultural fields and crosses US-20A. The route then runs west along the north side of North Star BlueScope Steel's facility before turning south and paralleling the existing Fulton-NorthStar 345 kV Transmission Line into the Melbourne Substation.

Route 252 begins along the existing Dowling-Fulton 345 kV Transmission Line just south of I-80/I-90 and runs west, paralleling the south side of I-80/I-90 for approximately 5.8 miles. West of the Delta Reservoir, Route 252 runs south then southwest through agricultural fields and crosses US-20A. The route then runs west along the north side of North Star BlueScope Steel's facility before turning south and paralleling the existing Fulton-NorthStar 345 kV Transmission Line into the Melbourne Substation.

Route 392 begins near the existing Fulton Substation and runs west, paralleling the existing Fulton-NorthStar 345 kV Transmission Line and I-80/I-90 for approximately 7.9 miles. West of County Road 10, the route runs south, crossing I-80/I-90 and running through agricultural fields for approximately 1.9 miles until it connects into the Melbourne Substation.

Route 266 begins along the existing Dowling-Fulton 345 kV Transmission Line just south of I-80/I-90 and runs west, paralleling the south side of I-80/I-90 for approximately 6.3 miles then parallels the existing Fulton-NorthStar 345 kV Transmission Line for another 1.3 miles. Just before County Road 10, the route turns south and continues to parallel the existing Fulton-NorthStar 345 kV Transmission Line until it connects into the Melbourne Substation.

Route 394 begins near the existing Fulton Substation and runs west, paralleling the existing Fulton-NorthStar 345 kV Transmission Line for approximately 3.6 miles. Between County Road 5-2 and County Road 6-2, the route angles northwest, cutting across the middle of agricultural fields between I-80/I-90 and County Road J for approximately 3.4 miles. Route 394 then runs southwest, crossing I-80/I-90 west of County Road 10, then runs south through agricultural fields for approximately 1.9 miles until it connects into the Melbourne Substation.

3.4.3.2 Central Corridor Route Evaluation

Table 3-2 presents the top 12 alternative routes by overall score for the central corridor. Similar to the northern corridor, many of the top ranked alternatives were very similar, with only one or two segments different. The siting team chose to keep the top ranked alternatives and eliminate lower ranked route variations. Route 18 (ranked 12) is completely different from any of the other top ranked alternatives in the central corridor and is further south within the study area. Therefore, the siting team chose to keep this route to continue to consider routes throughout the study area.

One opportunity for routes in the central corridor is to rebuild the existing Delta-Fulton 138 kV Transmission Line and Delta-Wauseon 138 kV Transmission Line as a double circuit 138/345 kV transmission line, thereby reducing land use impacts in the study area. The second ranked route (Route 149) includes a double circuit for approximately 64 percent of the route compared to only 46 percent on the top ranked route (Route 442). Therefore, the siting team chose to keep this route option for further evaluation. Based on this, three alternative routes were identified: Route 442, Route 149, and Route 18 (Figure 8).

Table 3-2. Central Corridor Alternative Route Evaluation Scores

Route	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Overall Rank
442	79,81,11,16,23,25,31,33, 45,47,48,52,65,67	25.1	69.0	20.5	24.2	27.5	1
149	3,11,16,23,25,31,33,45, 47,48,52,65,67	23.8	69.0	26.7	16.4	28.0	2
443	79,81,11,16,23,25,31,33, 45,47,48,52,84,76,70,67	25.5	54.0	22.1	31.6	28.2	3
150	3,11,16,23,25,31,33,45, 47,48,52,84,76,70,67	24.1	54.0	27.6	23.8	28.4	4
48	2,8,81,11,16,23,25,31,33, 45,47,48,52,65,67	31.8	30.0	25.0	34.6	29.4	5
49	2,8,81,11,16,23,25,31,33, 45,47,48,52,84,76,70,67	32.1	15.0	26.5	42.0	30.1	6
500	79,78,14,20,29,43,44,55, 76,70,67	37.9	39.0	19.2	46.1	32.2	7
450	79,78,77,82,23,25,31,33, 45,47,48,52,65,67	28.7	69.0	26.6	30.4	32.2	8
446	79,81,11,83,77,82,23,25, 31,33,45,47,48,52,65,67	29.5	69.0	25.7	31.7	32.4	9

Route	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Overall Rank
497	79,81,11,83,14,20,29,43, 44,55,76,70,67	38.7	39.0	19.0	47.3	32.5	10
441	79,81,11,16,23,25,31,33, 45,47,52,53,69,80	41.2	70.0	21.6	23.0	32.6	11
18	2,7,13,28,43,44,55,76,70, 67	45.7	0.0	19.9	55.9	32.8	12

Note:
Routes grayed out were eliminated by the siting team as they are lower ranked variations of the top ranked routes.

Route 442 begins along the existing Dowling-Fulton 345 kV Transmission Line just south of the Norfolk Southern Company railroad. From here, the route runs west, paralleling the south side of the railroad for approximately 2.0 miles. The route then jumps to the north side of the railroad and continues west for another 1.6 miles. Just before the Village of Delta, Route 442 runs southwest, crossing the railroad and US-20A and runs through agricultural fields before continuing west and crossing South Madison Street. West of South Madison Street, the route runs northwest, crosses the railroad again, then continues west along the north side of the railroad until it connects into the Melbourne Substation.

Route 149 is almost identical to Route 442, the only difference being Route 149 begins along the existing Dowling-Fulton 345 kV Transmission Line just north of the Norfolk Southern Company railroad. From here, the route runs west, paralleling the north side of the railroad for approximately 3.7 miles, rebuilding the Delta-Fulton 138 kV Transmission Line as a double circuit 138/345 kV transmission line. Like Route 442, just before the Village of Delta, Route 149 runs southwest, crossing the railroad and US-20A and runs through agricultural fields before continuing west and crossing South Madison Street. West of South Madison Street, the route runs northwest, crosses the railroad again, then continues west along the north side of the railroad until it connects into the Melbourne Substation.

Route 18 begins the furthest south along the existing Dowling-Fulton 345 kV Transmission Line, south of US-20A. From here, the route runs west across agricultural fields for approximately 2.0 miles before turning south for another 1.1 miles, crossing the Wabash Cannonball Trail. Route 18 then runs west through agricultural fields for another 4.3 miles until it crosses the Indiana & Ohio Railway elevated railroad. The route then runs north paralleling the railroad for 0.8 mile before running west for 1.1 miles south of the Norfolk Southern railroad before turning north, crossing the railroad and connecting to the Melbourne Substation.

3.4.4 Alternative Routes Discussion

The siting team met to discuss the five alternative routes from the northern corridor and three alternative routes from the southern corridor and select the routes to advance to public and stakeholder meetings.

3.4.4.1 Northern Corridor Routes

For the northern corridor routes, qualitative factors were a key part of selecting the routes to proceed with because the quantitative scores between the five alternative routes were so similar. Qualitative factors considered included crossing the existing Fulton-NorthStar 345 kV Transmission Line and I-80/I-90,

impacts to future development opportunities west of Delta and on Worthington Steel property and impacts to the existing 138 kV transmission lines in the project area.

Routes 382, 392 and 394 all cross the existing Fulton-North Star 345 kV Transmission Line adjacent to the Fulton Substation and Route 382 crosses the transmission line again, as well as I-80/I-90, halfway along the route. Due to the number of transmission lines in and around the Fulton Substation and the voltage of these lines, an outage would need to be taken on the existing Fulton-North Star 345 kV Transmission Line during construction of any of these routes for safety reasons. Along Route 382, where it crosses the existing 345 kV transmission line and I-80/I-90, another outage on the Fulton-NorthStar 345 kV Transmission Line would be needed to complete this crossing. North Star Steel will have to take an outage and stop production during any construction that requires the Fulton-North Star Steel 345 kV Line to be outaged, and therefore the extent and number of outages required to complete the construction should be minimized.

In addition to requiring an outage on the existing 345 kV transmission line, the siting team discussed engineering challenges where Route 382 crosses the existing 345 kV transmission line and I-80/I-90. Due to the height of the existing 345 kV transmission line (125 feet) as well as the span length needed to cross both the transmission line and the I-80/I-90 ROW (approximately 660 feet), two very tall transmission structures would be needed to complete the crossing. Although the existing transmission line is along the north side of I-80/I-90, these tall structures would have a visual impact to the area, especially to residences along County Road H and County Road J near the crossing.

The area west of Delta has undergone rapid commercial and industrial development over the past eight years with construction of NatureFresh Farms greenhouse, BlueScope Recycling and Materials, and Fulton County Processing. Proposed/current developments include Nova Tube & Steel, LLC's two new electric resistance welding tube mills, and Tricounty Rural Electric Cooperative, Inc. Winameg Area Substation. Routes 382 and 252 both run south then southwest bisecting five large open agricultural parcels adjacent to these developments. As the proposed Project requires a ROW of 150 feet, a 345 kV transmission line through this area would impact any future commercial/ industrial developments on these parcels. The agricultural parcels are surrounded on three sides by the Village of Delta's incorporated area, and a former agricultural parcel was included in the site where the Nova Tube Structural Steel facility was constructed.

During discussions with Worthington Steel as part of Melbourne Substation's site evaluation, the company indicated it has plans for future development directly north of the current facility. A new business has recently been constructed in the northeast corner of Worthington Steel's property. Routes 392 and 394 bisect Worthington Steel's property which would impact potential future developments in this area by Worthington Steel. The siting team considered shifting the routes to reduce impacts on Worthington Steel's property but due to the development in the northeast corner of the parcel, residential developments along County Road 10, and the Village of Delta water tower along County Road 10, shifting Routes 392 and 394 would require either crossing the existing 345 kV transmission line or take of some residences along County Road 10.

Lastly, in the northwest corner of North Star BlueScope Steel's property, the Delta-Wauseon 138 kV Transmission Line runs east to west along the south side of US-20A before running north along SR-109, providing power to commercial and industrial businesses in the area. As Routes 382 and 252 also run along the south side of US-20A, the siting team considered rebuilding the Delta-Wauseon 138 kV Transmission Line in this area as a double circuit 138/345 kV transmission line for approximately 0.2 mile. These routes would require an outage to be taken on the Delta-Wauseon 138 kV Transmission Line,

impacting the commercial and industrial businesses. Even if the Delta-Wauseon 138 kV Transmission Line was not rebuilt as a double circuit and was just crossed by Routes 382 and 252, an outage would still be required.

Based on the qualitative and quantitative factors discussed and considered, the siting team selected Route 266 as the best route from the northern corridor to proceed with in the siting study and dismissed the other alternative routes. Route 266 does not cross the existing Fulton-North Star 345 kV Transmission Line; therefore, an outage would not be required to construct this route. Route 266 also avoids the area west of Delta and the northwest corner of North Star BlueScope Steel's property, so it will not impact future commercial/industrial development in this area. It also will not impact existing commercial/industrial businesses in the area because it would not require an outage along the Delta-Wauseon 138 kV Transmission Line. Lastly, where Route 266 parallels the existing Fulton-North Star 345 kV Transmission Line, the ROW can be reduced, thereby further reducing impacts to future land use in the area between North Star BlueScope Steel's property and I-80/I-90. Route 266 was selected and advanced to the public information meeting to seek input from property owners and other stakeholders.

3.4.4.2 Central Corridor Routes

For the central corridor routes, qualitative factors were considered when selecting between Route 442 and Route 149 as the routes are identical except for a short segment at the eastern end of the routes. Route 442 begins south of the Norfolk Southern Company railroad to avoid a residence north of the railroad along County Road 4, then crosses to the north side of the railroad. Route 149 runs along the north side of the railroad and has a slight deviation to avoid impacting the residence. In reviewing Route 442, crossing the railroad then immediately turning west and double circuiting the 138 kV transmission line would be challenging from an engineering design and construction perspective. Route 442 would also impact landowners not already crossed by a transmission line whereas Route 149 would use an existing utility corridor. To reduce land use impacts in the area, the siting team selected Route 149 to proceed with and removed Route 442 from consideration.

For Route 18, the siting team considered both qualitative and quantitative factors. Compared to Route 149, Route 18 has fewer residences within 1,000 feet of centerline and less woodlots within the ROW. However, the route is longer and does not parallel existing linear infrastructure. Qualitatively, Route 18 is a true greenfield route that crosses agricultural land and avoids the railroad corridor, double circuiting the 138 kV transmission line and crossing North Star BlueScope Steel's property. New landowners would be impacted by the transmission line and new access roads would be required for construction, but due to limited constraints and turn angles, there is potential for longer spans between transmission line structures. The siting team agreed to proceed with Route 18 because the route provides an option of routing the transmission line further away from Delta and residences within the study area. Both Route 149 (with the modification discussed in Section 3.5.1 below) and Route 18 were selected and advanced to the first public information meeting.

3.5 Public and Stakeholder Engagement

Following selection of the northern corridor route (Route 266) and two central corridor routes (Route 149 and Route 18), ATSI held a stakeholder meeting and a public information meeting to present the Project and alternative routes and solicit comments from stakeholders and the public to incorporate in the siting considerations. For the public and stakeholder meetings, Route 266 was labeled the Northern Route

Alternative, Route 149 was labeled the Central Route Alternative, and Route 18 was labeled the Southern Route Alternative.

3.5.1 Stakeholder Engagement

ATSI held a stakeholder meeting on January 26, 2022, with North Star BlueScope Steel, Worthington Steel, and economic development groups (Jobs Ohio, Fulton County Economic Development, Regional Planning) within the study area. Prior to the meeting, minor engineering adjustments were made to the three routes to ensure ATSI was presenting the most accurate alignments at this stage in the siting process.

The feedback received included information on future industrial development areas around Delta and the potential for development or expansions on the north side of North Star BlueScope Steel property. Based on the feedback received from stakeholders, the siting team adjusted Route 149 to avoid crossing a possible future industrial development area south of US-20A and reduce impacts to a possible future industrial development area west of the Village of Delta.

3.5.2 Public Information Meeting

In early August 2022, ATSI mailed notification letters to property owners to inform them of the public information meeting. The notifications were mailed to property owners that were either crossed by one of the three proposed alternative routes, or owned land parcels that adjoined the crossed parcels. Other information that accompanied the notification letters included a fact sheet summarizing the Project, a map illustrating the proposed routes, and information about accessing a web-based interactive map where property owners could view the routes in more detail and submit written comments. Additionally, a virtual open house website was established by ATSI which provided stakeholders with a summary of the Project need and purpose, transmission line pole types, vegetation management, environmental permitting, real estate negotiations, and a map of alternative routes. ATSI also included other local stakeholders such as municipal officials and elected officials in the notification mailings.

The public information meeting was held on August 24, 2022, from 6:00 pm to 8:00 pm at the American Legion Hall in Delta, Ohio (5939 State Route 109, Delta, OH 43515). The siting team set up stations at the meeting and provided information related to engineering and design of the structures, Project need, real estate and right-of-way information, vegetation management, and the siting process. Detailed maps of the three alternative routes (Northern Route Alternative, Central Route Alternative, and Southern Route Alternative) were available for viewing and Project staff members were present for questions and to listen to public comments. Figure 9 shows the route alternatives presented at the public information meeting.

In addition to the siting team interacting with attendees and listening to comments, comment sheets were distributed to attendees, who were asked to fill out the sheet including contact information. Approximately 72 members of the public attended the meeting, and 20 written comments were collected including two comments received via e-mail and one comment via the website subsequent to the meeting. Additionally, three comments from owners were transcribed by ATSI's real estate staff during discussions. The majority of the commentors (11) own properties that coincide with the southern alternative route while the next highest number of comments (8) were provided by property owners associated with the northern alternative route.

Of the commentors that voiced opposition to a particular route, the majority of the disapproval was directed toward the southern alternative route. Many of the same commentors expressed favor for the northern route based on the corridor having existing and similar infrastructure (i.e., the Fulton-North Star 345 kV Transmission Line and I-80/I-90). A smaller number of commentors, owning land on the northern route, opposed the route for reasons including: agricultural crop operations, proximity to one residence, and visual aesthetics. Representatives of North Star BlueScope Steel expressed disapproval of the central route due to its interference with current operations in the southern portion of their facility grounds including processing of materials using cranes or similar height equipment for stockpiles. Written comments from the first public information meeting were reviewed and recorded in the Project database as a record of meeting attendance and property owners' comments.

Based on the input provided by stakeholders and property owners, the siting team made adjustments to the Central and Northern Route Alternatives. Further details of the route adjustments are discussed in Section 3.6.

3.6 Route Adjustments and Second Scoring of Routes

3.6.1 Route Adjustments

As mentioned, input from stakeholders resulted in the siting team making minor and major adjustments to various alternative routes under consideration. The input and new information were received from local officials and stakeholders during the January 26, 2022, meeting, property owner comments from the public information meeting (August 24, 2022), and new information gathered by the siting team on land use and newly developed properties or development plans.

Given the adjustments that were made to various routes throughout the public engagement, information gathering, and exploration phase of the study, the siting team reevaluated and rescored 212 routes. The purpose of rescoring was to determine whether route adjustments changed the route rankings.

The following segments from the refined study segment network were removed from the second round of route analysis, scoring, and ranking of the alternatives for the reasons noted (Figure 10):

- Segments 5, 35, 36, 38, 49, 60, 61, 62, 64, 71, 72, 73 were eliminated because they comprise routes that are north of I-80/I-90 or are located west of County Road 10 and the North Star BlueScope Steel facility. Route segments west of County Road 10 would encroach on Worthington Steel's property where there is potential for future expansion or other development and could constrain future development opportunities in the agricultural land between I-80/I-90 and Worthington Steel. Route segments north of I-80/I-90 were eliminated due to crossing the existing Fulton-North Star 345 kV Transmission Line which would require an extensive outage of this line and construction of at least two large angle structures. Other segments north of I-80/I-90 would impact many of the same agricultural land parcels and property owners that are crossed by the Fulton-North Star 345 kV Transmission Line and right-of-way for 6.2 miles. These routes were eliminated due to other northern alternative routes having fewer constraints and a higher rank in scoring.
- Segments 50, 53, and 69 were eliminated because segment 50 passes diagonally through a potential commercial development area northwest of the Village of Delta, in the same vicinity as a manufacturing or industrial site under development. Based on the potential for land use conflicts and constrained future development, segment 50 and the linked segments 53 and 69 near the North Star BlueScope Steel facility were eliminated.

- Segments 24, 31 and 34 were eliminated based on information received from local county and township officials during the January 26, 2022, meeting. Segment 34 crosses through agricultural lots that are on the southern border of the Village of Delta and surrounded by small commercial businesses. The officials indicated that this area offers benefits as future commercial development sites and requested the area be avoided. Segment 24 travels north to south in the area northeast of the Village of Delta. The segment bisects through 1.7 miles of agricultural land as compared to numerous other segments that can be located along the perimeter of agricultural parcels, thus lessening impacts to agricultural operations.
- Segments 6, 12, 26, 27, 39, 40, 41, 42, 56, 57, and 58 were previously eliminated from the southern part of the study area because all southern routes were at the bottom of the route rankings resulting from the initial scoring and ranking of 526 alternative routes.

In addition to removing study segments from the second scoring process, the siting team also adjusted specific segments associated with the routes presented at the January 26, 2022, meeting with local officials and the public information meeting. The adjustments are illustrated in (Figure 11) and the rationale for each adjustment is provided below.

3.6.1.1 Northern Alternative (Route 266) Adjustment (Study Segment 75)

Prior to the OPSB jurisdictional public meeting and the second scoring of the alternative routes, the siting team identified the need to modify study segment 75 to minimize impacts to the Delta Raceway's racetrack and business operations. Figure 11 illustrates the route adjustments compared to the original Route 266. The team shifted the route segment on this property from the northern property line, which adjoins I-80/I-90, to the southern and eastern property boundary. This adjustment will result in the addition of two turn angles and additional tree removal but is expected to minimize impacts to racing operations (e.g., grandstand area and vending or restroom facility) to the extent possible.

3.6.1.2 Central Route Alternative (Route 149) Adjustment (Multiple Study Segments)

Several modifications were made to the Central Route Alternative (Route 149) after the first public information meeting based on input received from property owners and stakeholders as shown in Figure 11. Several of the study segments that make up the western part of Route 149 were modified or removed, and a new segment was created. There were two primary drivers for the route modification. The North Star BlueScope Steel facility representatives commented that the Central Route Alternative (segment 65) crosses the southern portion of their facility for 1.4 miles. A portion of this route coincides with locations of stockpile storage of raw materials, as well as a railroad spur, which involves large handling equipment (tall and long reach). A transmission line would negatively impact their operations and movement of these materials. Additionally, the eastern end of the facility contains retention ponds and wet areas the transmission line would need to span. The company representatives expressed their opposition to the Central Route Alternative for these reasons.

Secondly, the siting team identified an opportunity to improve the Central Route Alternative in the vicinity of Road FG located southeast of the North Star BlueScope Steel facility property. The team decided to use a portion of segment 76 (modified to parallel more along the south side of the railroad) and to create a new segment to extend further eastward across Road FG then further east to County Road 109 as a crossing point. This alignment provides a slightly shorter route across 1.1 miles of agricultural land and between two residences (maintaining sufficient distance of 210 feet between the route centerline to each residence). Additionally, the team identified an opportunity to reduce impacts and avoid crossing through

the middle of agricultural land (for 0.9 mile) east of County Road 5-2. Instead, segment 18 was incorporated into Route 149. Segment 18 parallels County Road 5-2 north to the railroad where the route then turns to the east to parallel the railroad. The adjustment also results in paralleling more of the Norfolk Southern railroad and double circuiting the existing Delta-Wauseon 138 kV transmission line.

3.6.2 Second Scoring and Ranking of Alternative Routes

With the adjustments to Route 266 (Northern Route Alternative) and Route 149 (Central Route Alternative) complete, as well as minor modifications to other individual route segments, the siting team performed a second quantitative scoring and ranking of the alternative routes (Appendix F). The same siting criteria and methodology was followed, as described in Section 3.4. The primary objective of rescoring the routes was to confirm that the previous route rankings had not significantly changed after the route adjustments discussed in the preceding sections. This step assisted the siting team in narrowing the options to two optimal alternative routes to be presented for feedback at the OPSB jurisdictional public meeting held on December 7, 2022.

For purposes of selecting two alternative routes for the Project, 212 alternative routes were analyzed and scored, as opposed to the first scoring and ranking of routes (discussed in Section 3.4.3) where it was necessary to group the routes into two general corridors (northern corridor and central corridor).

Based on the written comments from the August 24th public information meeting, the majority of property owners' comments were in opposition to the Southern Route Alternative (Route 18 with adjustments) compared to the Northern Route Alternative. Given the relative level of opposition, the siting team had come to the decision following the public meeting that Route 18 (and all central corridor routes where there is extensive length crossing or bisecting agricultural cropland) would not be advanced as a routing option. Nonetheless, the central corridor routes were included in the second scoring and ranked for comparison to other alternative routes after the route adjustments discussed above.

Table 3-3 presents the top 39 alternative routes by overall score, individual criteria scores, and overall rank. The top three ranked routes include northern routes, one of which was presented at the first public meeting (Route 266).

Table 3-3. Alternative Route Ranking Results (Second Scoring of 212 Alternative Routes)

Route	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Overall Rank
266	4,17,32,37,63,74,75,80	20.9	27.0	16.3	44.9	24.5	1
306	4,9,11,14,20,29,43,44,55, 67,70,76,83	32.6	0.0	23.6	55.2	30.3	2
266 Mod	4,17,32,37,63,74,75,80 (with modifications)	40.2	12.0	17.9	50.9	30.6	3
307	4,9,11,14,20,29,43,44,59, 66,67,70,83	30.1	0.0	28.2	53.1	30.9	4
500	14,20,29,43,44,55,67,70, 76,78,79	32.2	39.0	16.9	53.7	31.1	5
354	4,9,14,20,29,43,44,55,67, 70,76,78,81	31.9	0.0	23.9	59.8	31.1	6

Route	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Overall Rank
133	3,11,14,20,22,28,43,44,55,67,70,76,83	31.4	39.0	25.0	39.8	31.3	7
149	3,11,16,23,25,31,33,45,47,48,52,65,67	33.4	69.0	29.9	15.7	32.0	8
Routes ranked 9th through 38th were eliminated (all utilize southern segments of central corridor or circuitous routing)		N/A	N/A	N/A	N/A	N/A	9-38
149 Mod	3,11,16,23,25,31,33,45,47,48,52,65,67 (with modifications)	31.0	39.0	42.0	27.3	35.5	39

Note:
Routes grayed out were eliminated by the siting team as explained within this section.

As noted above, the siting team decided to not advance the southern-most routes within the central corridor (including Route 18 with adjustments) which largely bisected agricultural cropland and were opposed by many property owners. Of the top 50 alternative routes (out of a total of 212 routes), 44 of them consisted of the southern-most study segments which are part of the original central corridor. The siting criteria used in the quantitative scoring favor these routes, however, property owner and stakeholder opinions were weighed foremost by the siting team in deciding to not advance these alternative routes.

The 2nd ranked route, as well as the 13th and 29th ranked routes, consisted of longer circuitous routes that are a combination of central corridor and northern corridor segments. Although the extensive crossing of agricultural land and co-location with other linear infrastructure (including the railroad, the 138 kV line and I-80/I-90) resulting in high rankings, the routes involve up to an additional 2 miles of route length and additional parcels being crossed. Therefore, these three route alternatives were not advanced by the siting team.

Route 266 and Route 266 Modified ranked 1st and 3rd, respectively. Based on the scoring and modifications to Route 266 to reduce impacts to the Delta Raceway's racetrack and business operations, Route 266 Modified was selected to be advanced and included for presentation during the OPSB jurisdictional public meeting

The alternative route that ranked 8th is the original Route 149 which impacts the material handling operations within the grounds of the North Star BlueScope Steel Facility. For this reason, Route 149 was eliminated from further consideration.

The modified Route 149 (using segments entirely south of the railroad on the western end of the route and avoiding conflicts with North Star BlueScope Steel's stockpile operations) is the 39th ranked route. Based on the adjustments to create this alternative route (Route 149 Modified), public comments and the siting team's effort to optimize this central route, this route was selected to be advanced and included for presentation during the OPSB jurisdictional public meeting.

In summary, the siting team selected the Route 266 Modified and Route 149 Modified as the two alternatives to advance for this Project, including presentation to property owners and stakeholders for comment at the OPSB jurisdictional public meeting held on December 7, 2022.

3.7 OPSB Jurisdictional Public Information Meeting

An OPSB jurisdictional public information meeting was conducted on December 7, 2022, from 6:00 pm to 8:00 pm at the American Legion Hall in Delta, Ohio (5939 State Route 109, Delta, OH 43515), which is in the middle of the study area. This location was selected because, pursuant to OAC Rule 4906-3-03, the meeting must be held in the area in which the Project is located so that landowners within the Project area can attend. The community was notified about the time and location of the meeting through the following means:

- All property owners having land crossed by the two proposed alternative routes, as well as immediately adjacent landowners were sent letters on November 18, 2022, notifying them of the public information meeting and ATSI's website containing Project details.
- A public notice was also posted in local newspapers, including the Swanton Enterprise, the Fulton County Expositor, and the Toledo Blade on November 22 and 24, 2022, in compliance with OPSB specifications.

The siting team set up stations at the meeting and provided information related to engineering and design of the structures, purpose of and need for the Project, real estate and right-of-way information, and the siting process. Detailed maps of the alternative routes were available for viewing and the Project staff members were present to answer questions and listen to public comments. Property boundaries were also indicated on the mapping with the unique parcel identification numbers referenced to each property owner.

Two alternative routes were presented in the meeting, the selected northern route (Route 266 Modified) and the central route (Route 149 Modified). Comment sheets were distributed, and attendees were asked to complete the form, including contact information. Approximately 30 members attended the meeting, and 13 comments were received. Of the 13 comments submitted, seven (7) were in favor of the northern alternative route. Also, two (2) comments received from property owners on the northern route expressed concerns with the transmission poles causing more difficult agricultural crop and equipment operations, as well as concerns about the total number of easements from all utilities that cross a single land parcel. One of the northern route property owners commented that the southern route alternative should be selected.

Four (4) comments were received from property owners on the southern route. Some of the four (4) commentors expressed interest in selling their property for purposes of constructing the transmission line and also mentioned concerns about perceived health effects from living adjacent to a high voltage transmission line. Written comments from the public information meeting were reviewed and recorded in the Project database as a record of meeting attendance and property owners' comments.

Based on the input provided by property owners, the siting team determined that no further adjustments to the northern or southern alternative routes were necessary.

3.8 Selection of the Preferred and Alternate Route

Following the OPSB public information meeting, the siting team selected Route 266 Modified and Route 149 Modified as the two alternatives to advance into the certificate application filing to the OPSB (Figure 12). The siting team established Route 266 Modified as the Preferred Route on the basis of the quantitative score/ranking results (3rd overall ranked route) coupled with qualitative considerations, most notably the input received from property owners and various stakeholders. The Preferred Route crosses or parallels the perimeter of several agricultural land parcels and/or parallels the existing Fulton-North Star 345 kV Transmission Line for nearly its entire length.

Route 149 Modified, which was ranked 39th out of the 212 total routes during the second scoring process, was selected as the Alternate Route. Nearly all higher ranked routes (rank 4th through 38th) were not considered viable alternatives based on the relative level of opposition from property owners because of impacts from bisecting numerous agricultural crop lands where no other linear infrastructure currently exists (greenfield), or adversely impacted the North Star BlueScope Steel Facility's material handling operations. The scoring of the alternative routes, including the Alternate Route, was completed assuming the new 345 kV pole structures for the selected route would incorporate, as an under-build configuration, certain sections of the existing Delta-Wauseon 138 kV line where the two lines run in parallel. FE engineers later determined that the Alternate Route, if selected, would be built as a stand-alone line corridor running parallel to the existing 138 kV line, where applicable. The siting team determined that this change will not affect the decision on the Preferred and Alternate Routes.

Several qualitative factors were taken into consideration, along with the quantitative scoring when selecting the Preferred and Alternate Route. The qualitative factors include:

- Comments received from property owners who own property on one (or more) of the alternative routes presented at the public information meetings. Additionally, input received from community officials on the preliminary alternative routes and possible conflicts with future land development.
- Viewshed and visual impact from the new transmission structures based on the number and location of residents, in particular along the Preferred Route (Route 266 Modified).
- The low feasibility of the new 345 kV transmission line crossing over the existing Fulton-North Star 345 kV transmission line, and I-80/90, presented extensive construction challenges and outages to customers.

Following selection of the Preferred Route, ATSI staff extensively evaluated the co-location of the northern Route 266 Modified with the existing Fulton-North Star 345 kV Transmission Line for purposes of meeting the company's policy for electrical reliability and redundancy. The Preferred Route is co-located (offset 100 feet) with the existing transmission line for 3.0 miles of the total 9.5-mile route. ATSI concluded that this co-location was acceptable and complies with the company's specifications.

4. Conclusions

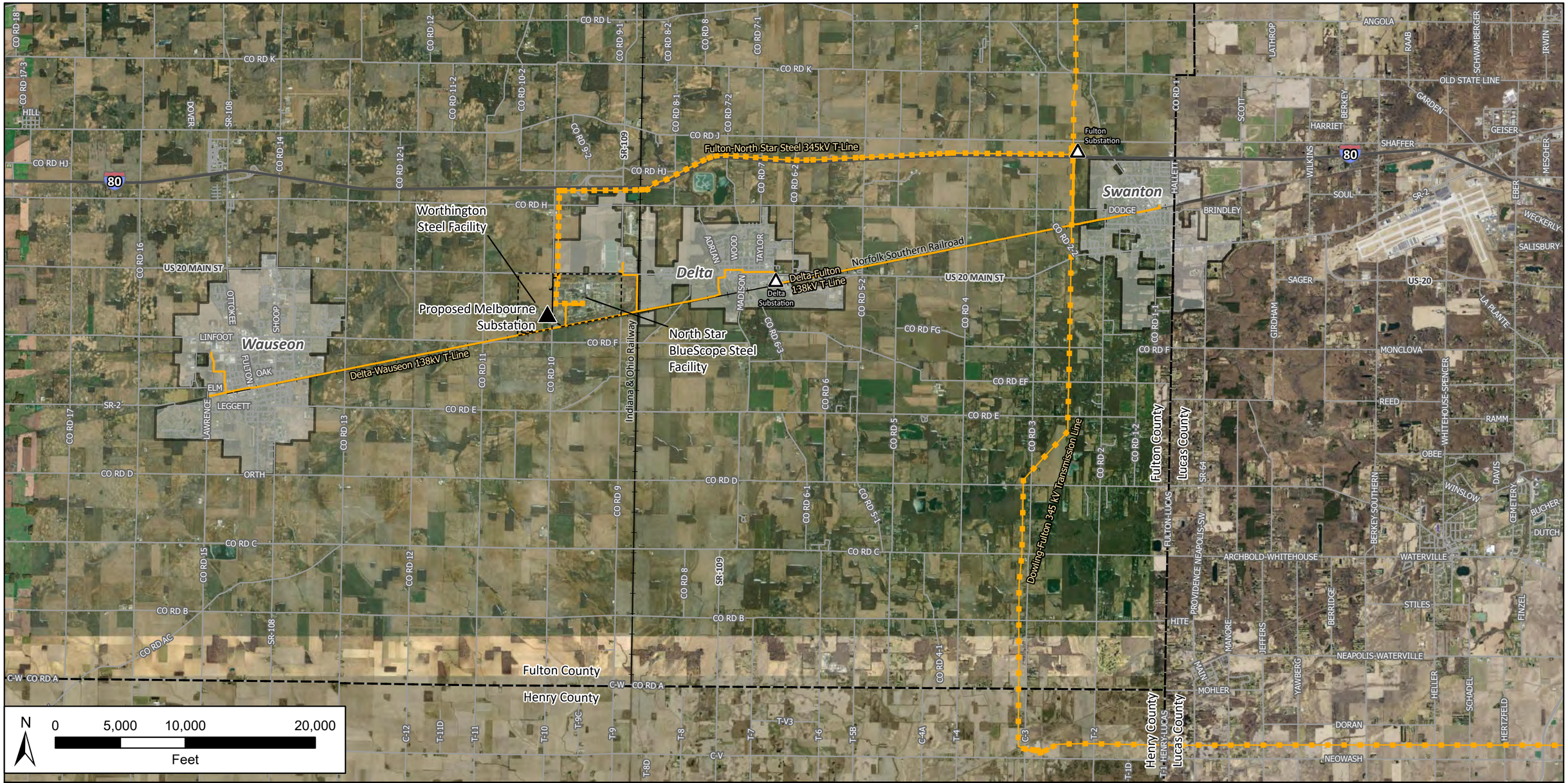
The siting team conducted a detailed Route Selection Study to identify and evaluate practical transmission alternatives for the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project. Using detailed constraint and opportunity data and through an iterative process, the siting team developed and initially evaluated 526 alternative routes. Based on the initial scoring and ranking results, alternative routes were grouped into three general corridors (the northern corridor, central corridor, and southern corridor), and from the scoring and ranking of these groups, three alternative routes (Northern Route Alternative, Central Route Alternative, Southern Route Alternative) were selected and presented at a public information meeting on August 24, 2022.

Following the public information meeting, the siting team made modifications to study segments and routes based on landowner feedback, then re-evaluated routes. Given the numerous route modifications necessitated by input from stakeholders and other opportunities to reduce impacts, a group of alternative routes (a total of 212) were re-evaluated through a second scoring and ranking. The northern Route 266 Modified ranked 3rd followed by numerous alternative routes (rank 4th through 38th) which used several common segments that were not viable based on earlier comments received from property owners. Among the route rankings, Route 149 Modified held the next best score and rank (39th), based on the rank and qualitative considerations (i.e., after the eliminating the aforementioned alternative routes due to public comments and potential conflicts with land use).

An OPSB-jurisdictional public information meeting was held on December 6, 2022, to present the two refined alternative routes from the second round of scoring and ranking. Based on comments received from property owners in attendance coupled with the route ranking and qualitative considerations, the siting team selected Route 266 Modified as the Preferred Route and Route 149 Modified as the Alternate Route to advance into the certificate application filing to the OPSB.

Appendix G
Second Round Scoring Results

Figures



Legend

- Proposed Melbourne Substation
- Existing Substations
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- Roads
- Interstates
- Railroad
- Corporation Limits
- County Boundary

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

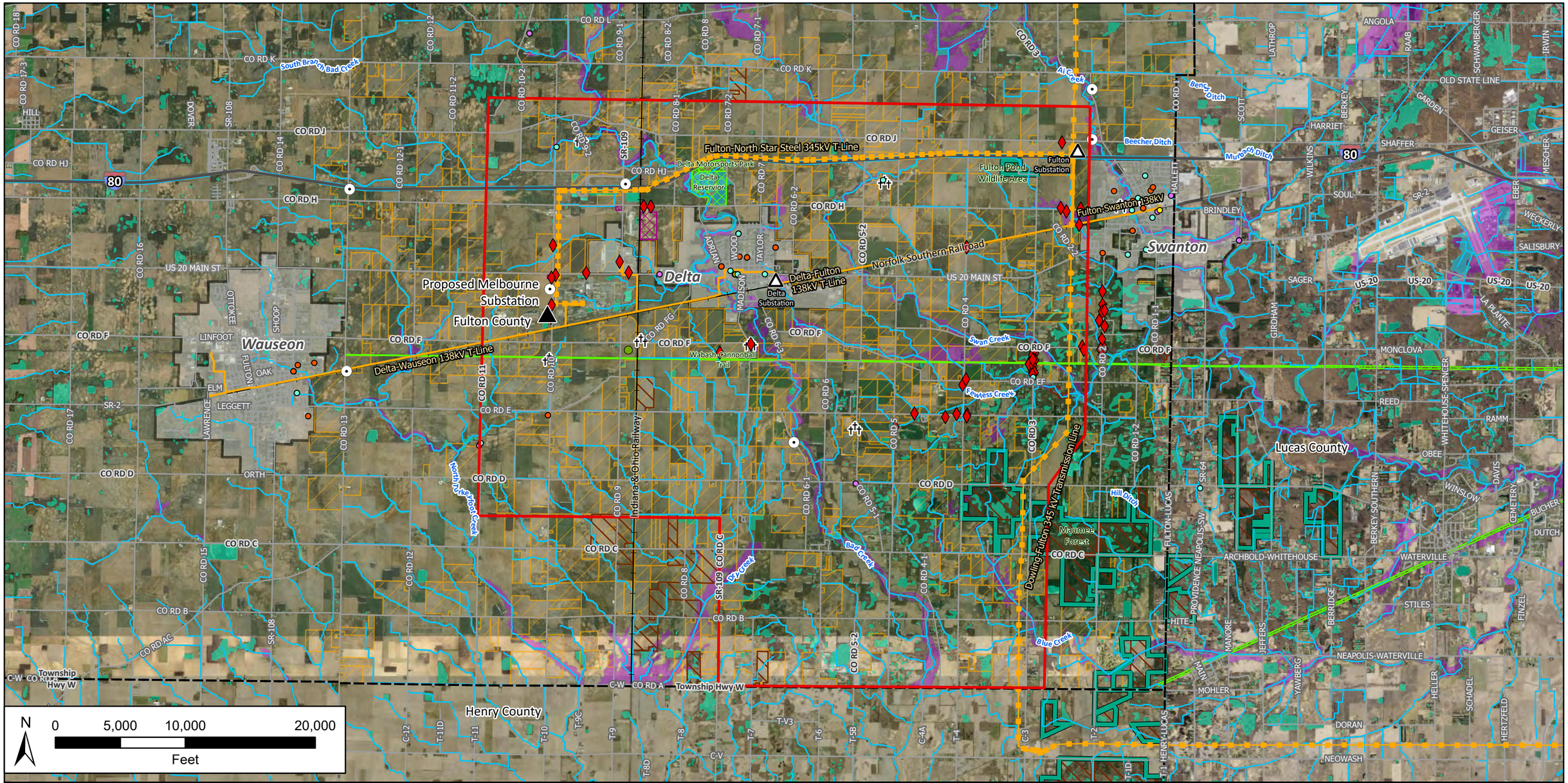
Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 1
Project Overview

1/31/2023

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



Legend

- Proposed Melbourne Substation
- Study Area
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- National Register of Historic Places (NRHP)-eligible resources
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- OGS Cemeteries
- Government Office
- Library
- Place of Worship
- School
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Agricultural Districts
- Roads
- Interstates
- Railroad
- County Boundary
- Corporation Limits

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

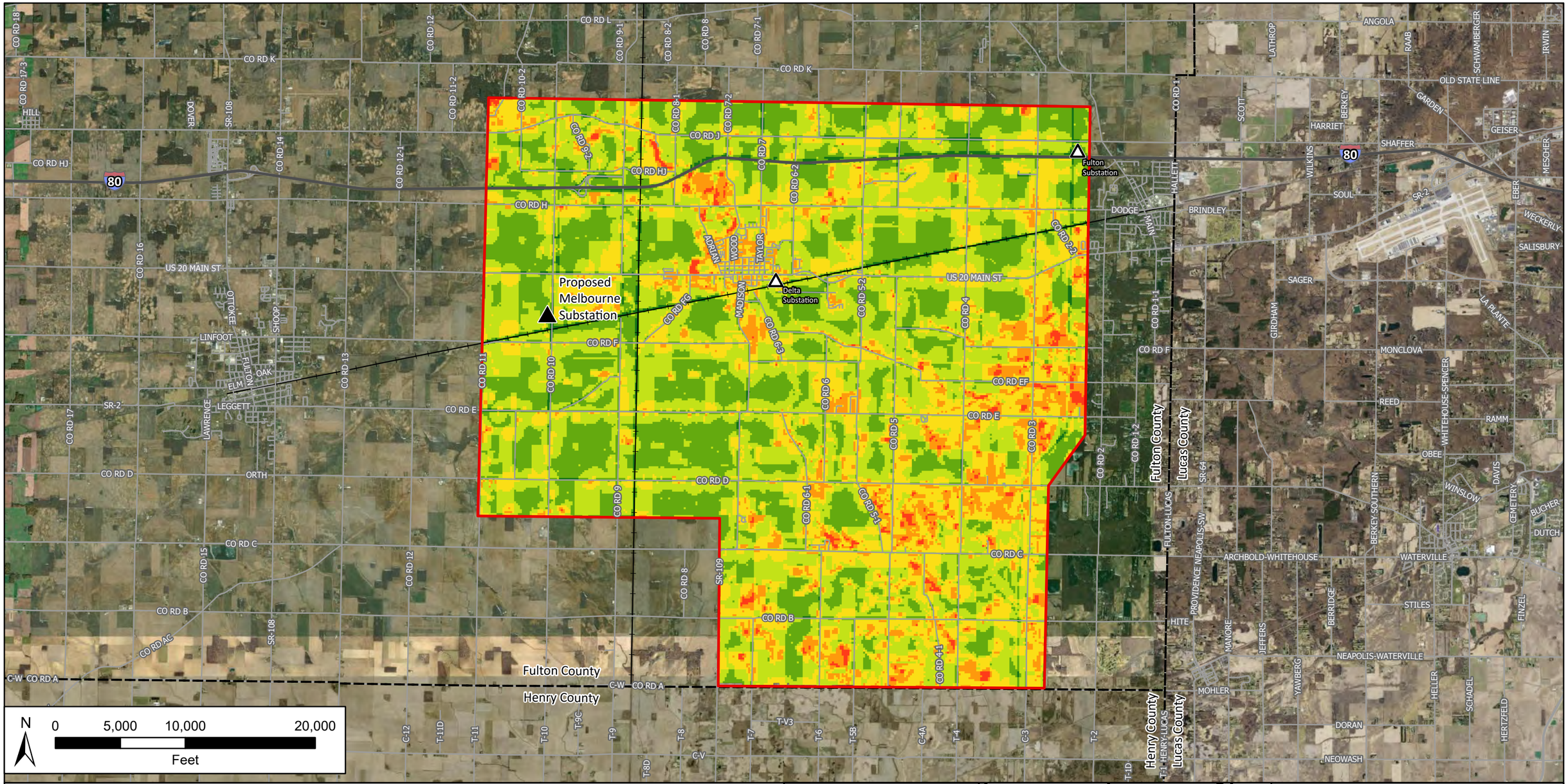
Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 2
Study Area and Constraints

1/31/2023

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



Legend

- Proposed Melbourne Substation
- Study Area
- Existing Substations
- Roads
- Interstates
- Railroad
- County Boundary

Suitability Model

- Least Suitable
- Most Suitable

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

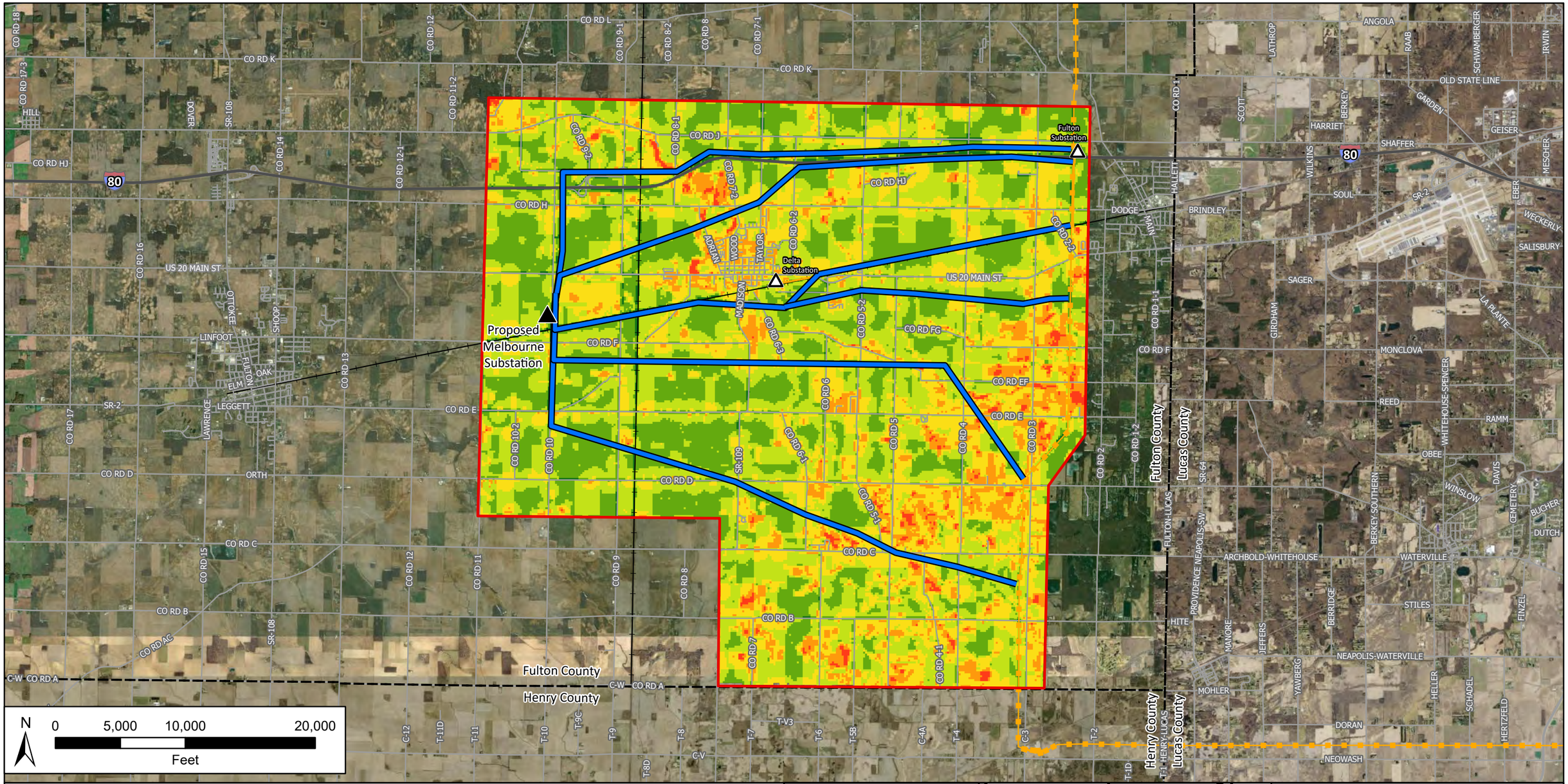
Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 3
Suitability Model

1/31/2023

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



Legend

- Proposed Melbourne Substation
- Conceptual Route Corridors
- Study Area
- Existing Substations
- Existing 345 kV Transmission Line
- Roads
- Interstates
- Railroad
- County Boundary

Suitability Model

- Least Suitable
- Most Suitable

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 4
Conceptual Route Corridors

1/31/2023

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Proposed Melbourne Substation

US 20 MAIN ST
CO RD J
CO RD H
CO RD F
CO RD EF
CO RD E
CO RD D
CO RD C
CO RD B
CO RD A
SR-2
CO RD 11
CO RD 13
CO RD 9
CO RD 10
CO RD 8
CO RD 6
CO RD 5
CO RD 4
CO RD 3
CO RD 2
CO RD 1
CO RD 22
CO RD 6-2
CO RD 5-2
CO RD 6-3
CO RD 7
CO RD 8-1
CO RD 7-2
CO RD 10-2
CO RD 12
CO RD 11-2
CO RD 14
CO RD 12-1
CO RD 15
SR-108
CO RD 1-2
CO RD 1-1
CO RD 4-1
CO RD 5-1
CO RD 6-1
SR-109
SR-64
LINFOOT
OTTOKEE
SHOOP
FULTON
OAK
ELM
LEGGETT
LAWRENCE
ORTH
DOVER
DODGE
WINDING
BRINDLEY
SHAFFER
HARRIET
SOUL
SAGER
MONCLOVA
REED
OBEE
ARCHBOLD-WHITEHOUSE
STILES
NEAPOLIS-WATERVILLE
MOHLER
HITE
BRIAR
Fulton County
Lucas County
Bad Creek
Swan Creek
Fewless Creek
Dry Creek
Blue Creek
North Turkeyfoot Creek
Beecher Ditch
Murbach Ditch
Hill Ditch
Al Creek
FULTON-LUCAS
PROVIDENCE-NEAPOLIS-SW
BERKEY SOUTHERN
MADISON
TAYLOR
WOOD
ADRIAN
MUNSON
HALLETT
MAIN
SCOTT
LATHROP
WILKINS
BERKEY
GIRDHAM
JEFFERS
YAWBERG
BERRIDGE

N
0 5,000 10,000 20,000
Feet

Legend

- Proposed Melbourne Substation
- Study Segments
- Study Area
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- NWI Wetlands
- FEMA Floodplain
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- National Register of Historic Places (NRHP)-eligible resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad
- County Boundary

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 5
Initial Study Segments

1/31/2023

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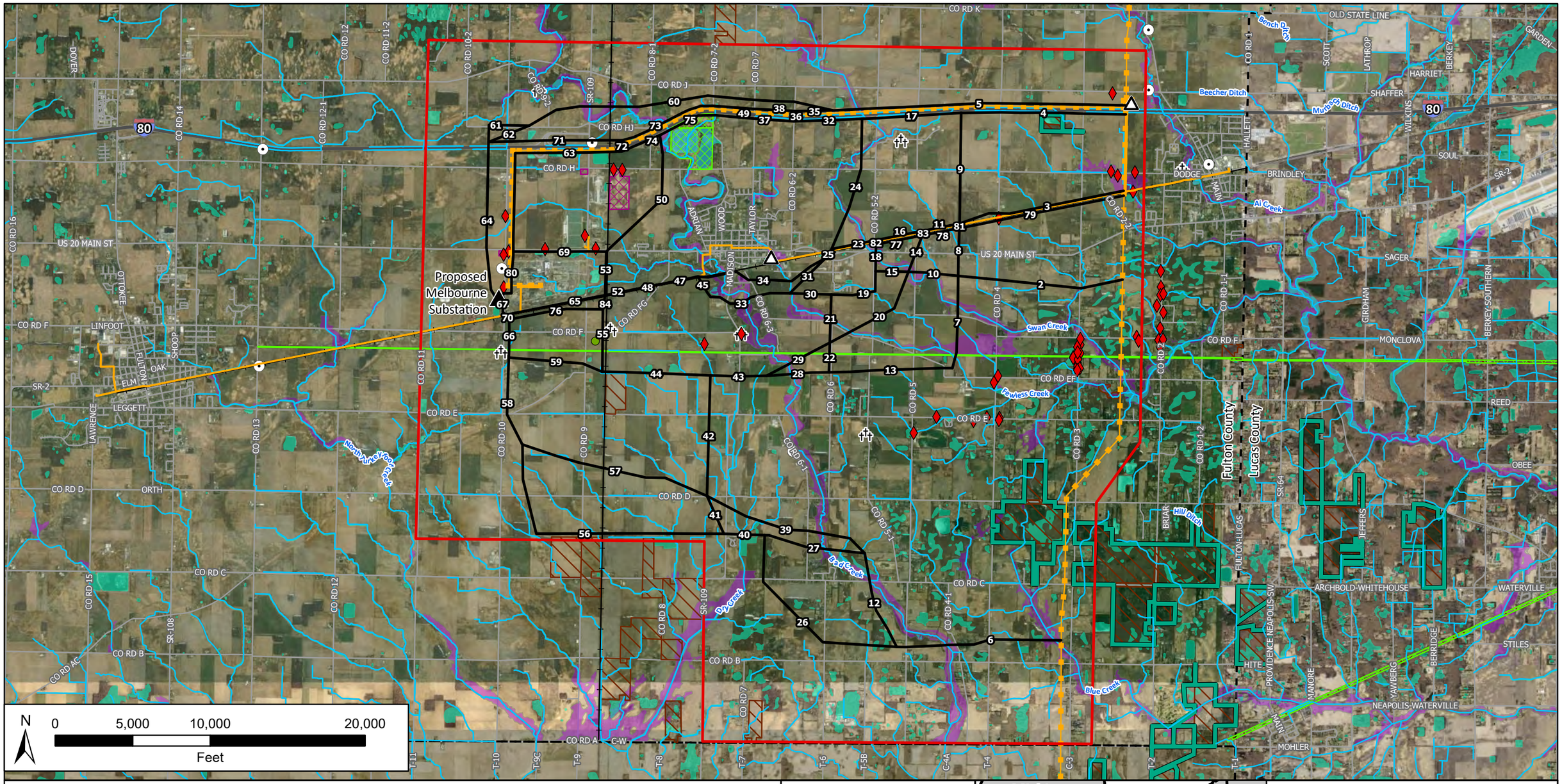

Legend

- Proposed Melbourne Substation
- Refined Study Segment Network
- Study Area
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- National Register of Historic Places (NRHP)-eligible resources
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad
- County Boundary

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 6
Refined Study Segment Network

1/31/2023

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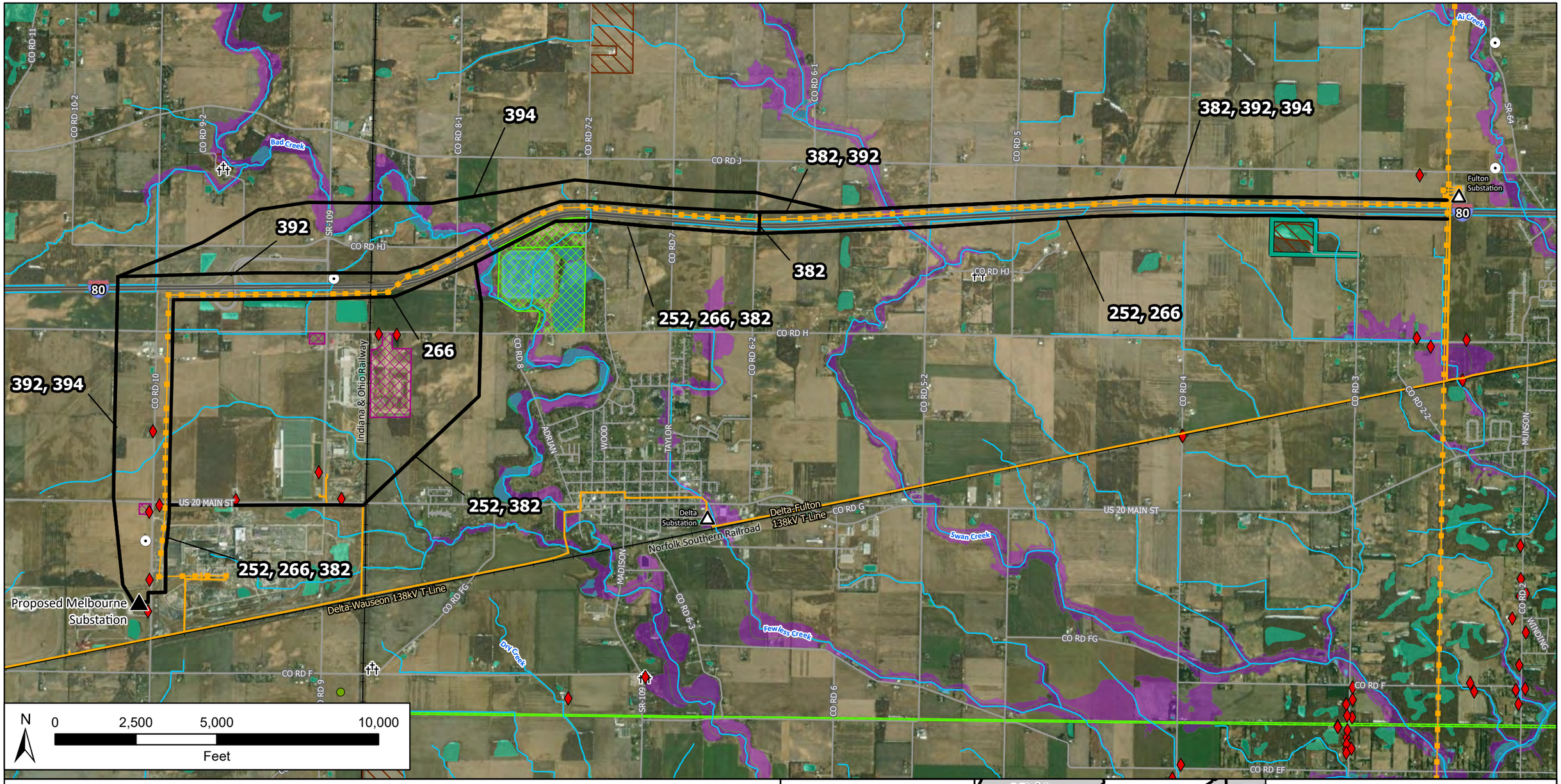

Legend

- Proposed Melbourne Substation
- Alternative Routes
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- National Register of Historic Places (NRHP)-eligible resources
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad

Base Map Source:
ESRI Topographic

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 7
Top Ranked Northern Corridor Alternative Routes

1/31/2023

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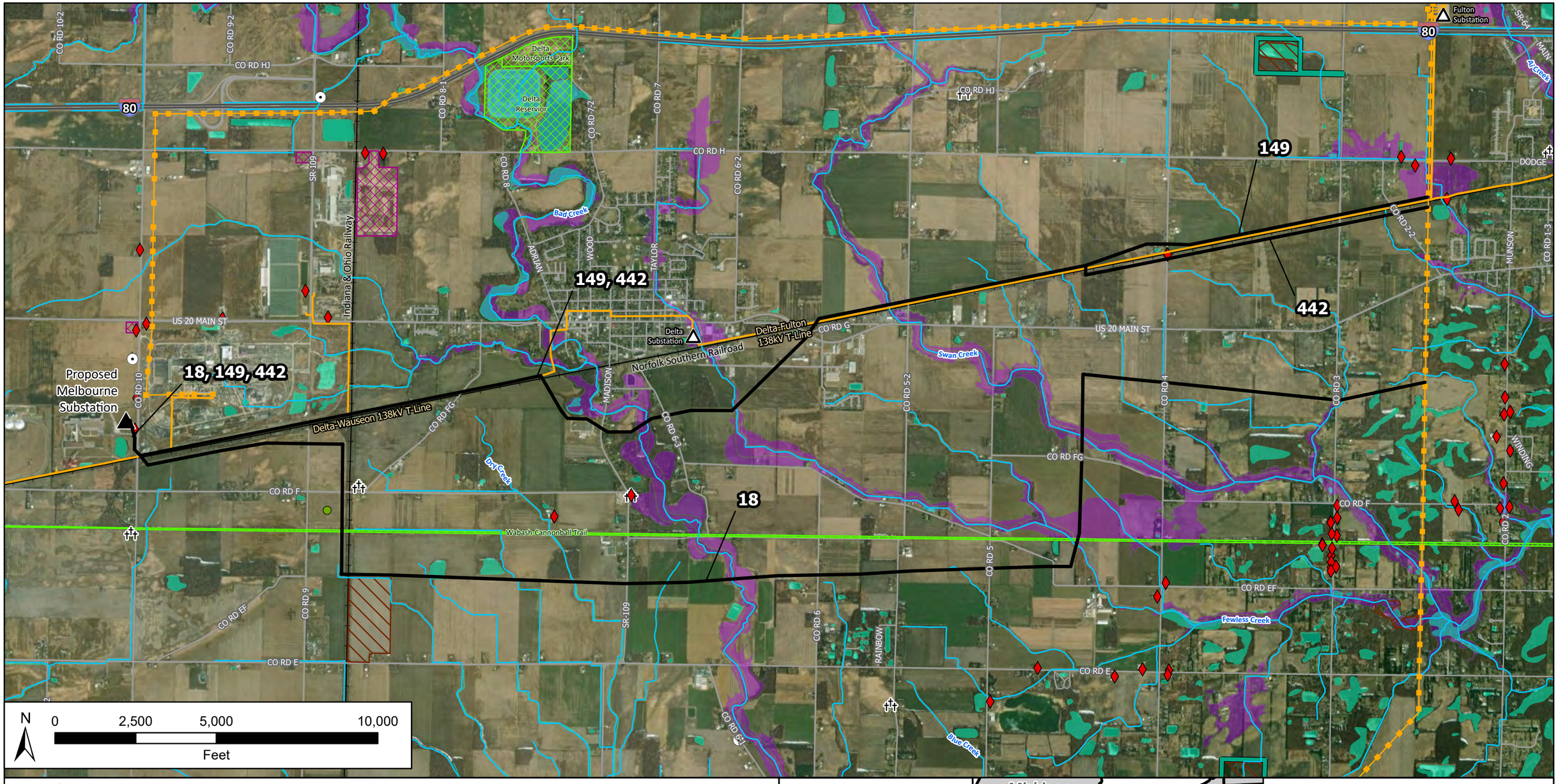

Legend

- Proposed Melbourne Substation
- Alternative Routes
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- National Register of Historic Places (NRHP)-eligible resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 8
Top Ranked Central Corridor Alternative Routes

1/31/2023

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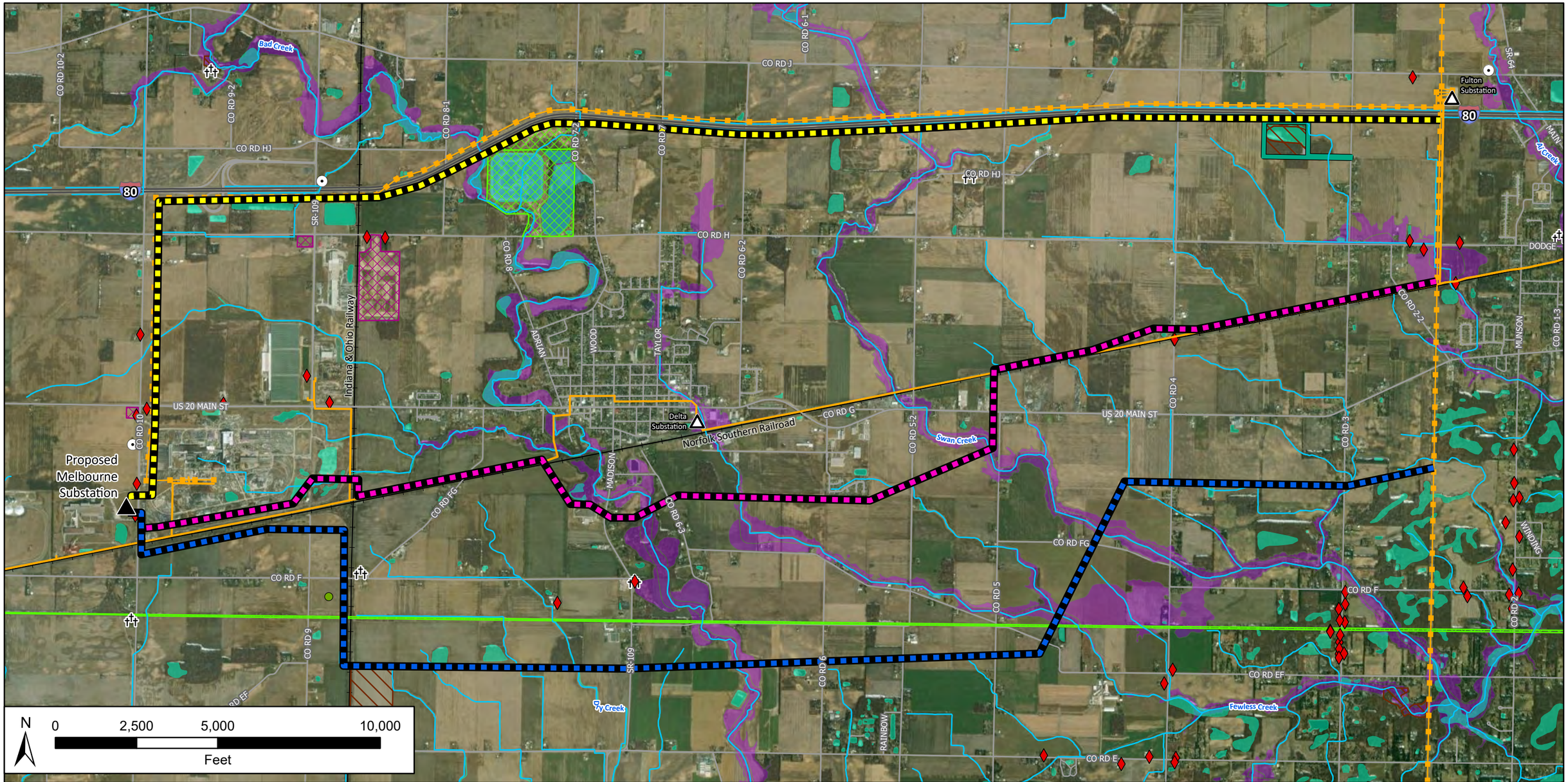

Legend

- Proposed Melbourne Substation
- Northern Alternative Route (266)
- Central Alternative Route (149)
- Southern Route Alternative (18)
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- National Register of Historic Places (NRHP)-eligible resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 9
Alternative Routes
Initial Public Information Meeting

1/31/2023

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Proposed Melbourne Substation

Delta-Wauseon 138kV T-Line

N

0 5,000 10,000 20,000

Feet

Legend

- Proposed Melbourne Substation
- Eliminated Study Segments
- Study Segments
- Study Area
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- National Register of Historic Places (NRHP)-eligible resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad
- County Boundary

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 10
Revised Study Segments for Second Scoring of Alternative Routes

1/31/2023

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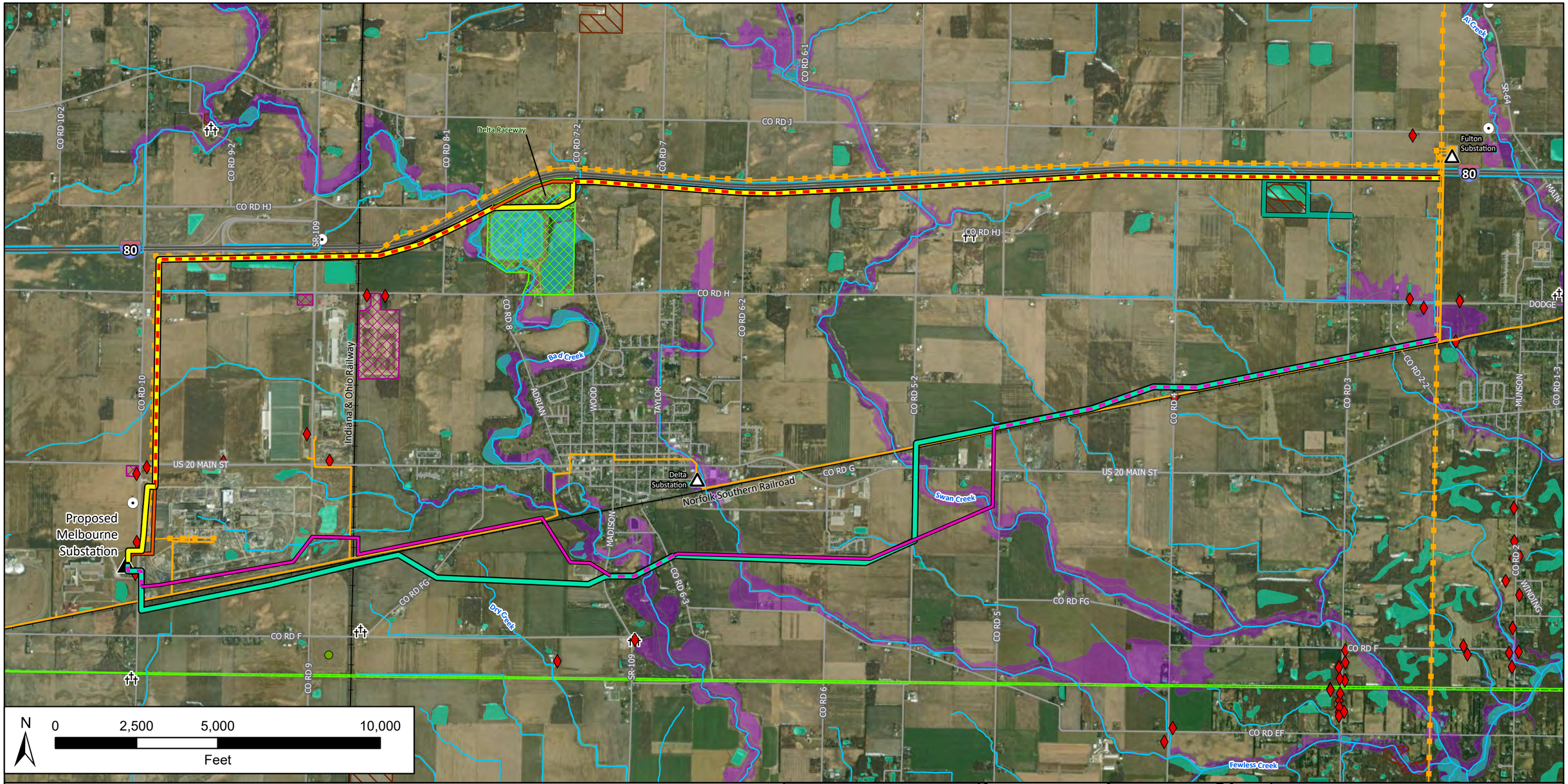

Legend

- Proposed Melbourne Substation
- Route 266
- Route 266 Modified
- Route 266 Common Alignment
- Route 149
- Route 149 Modified
- Route 149 Common Alignment
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- National Register of Historic Places (NRHP)-eligible resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 11
Alternative Routes 149 and 266 (Initial and Modified) Jurisdictional Public Information Meeting

1/31/2023

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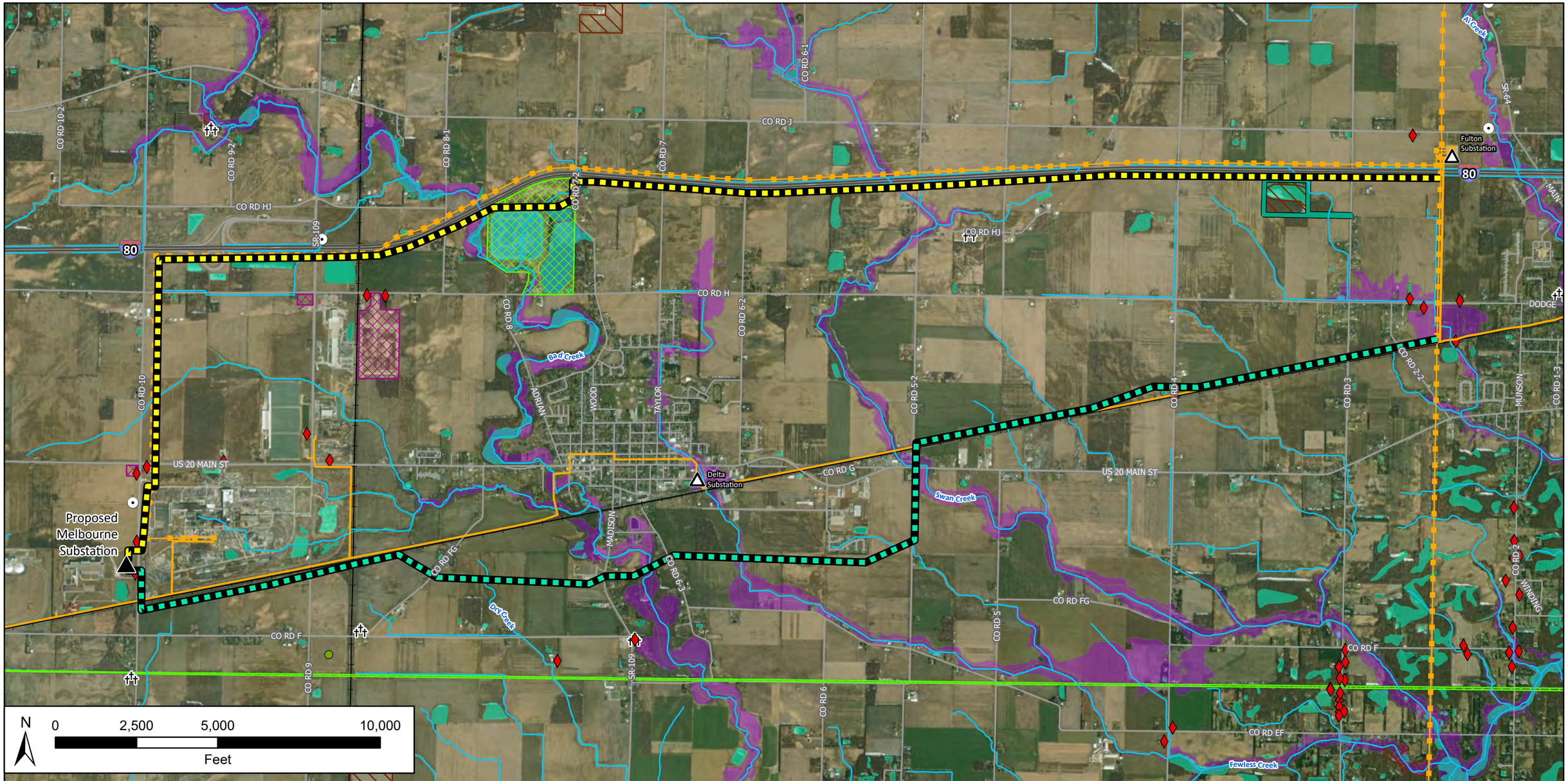

Legend

- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Existing Substations
- Cellular Towers
- Existing 345 kV Transmission Line
- Existing 138 kV Transmission Line
- NHD Stream
- FEMA Floodplain
- NWI Wetlands
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- National Register of Historic Places (NRHP)-eligible resources
- OGS Cemeteries
- Landfill
- ODNR Protected Lands
- PADUS Sites
- Recreation Areas
- Commercial Site Under Development
- Roads
- Interstates
- Railroad

Base Map Source:
ESRI Aerial Imagery

Roads:
ODOT Road Inventory 2022

Data sources included in text bibliography

Coordinate System:
StatePlane Ohio North
NAD 1983

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

Figure 12
Preferred and Alternate Routes

1/31/2023

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Appendix A. GIS Data

Appendix A. GIS Data Sources

Siting Criteria	Source	Description
Ecological Resources		
National Hydrography Dataset (NHD) stream and waterbodies	United States Geological Survey National Hydrography Dataset (2021)	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs, and wells.
National Wetlands Inventory (NWI) wetlands	United States Fish and Wildlife Services (2021)	NWI produces information on the characteristics, extent, and status of the nation's wetlands and deepwater habitats.
Floodplains	Federal Emergency Management Agency (2021)	100-year floodplain within the study area
Forested Areas		Forest within the study area.
Cultural Resources		
Cemeteries		
Archeological resources	Ohio Historic Preservation Office (OHPO)	Previously identified archeological resources, including those listed or eligible on the NRHP.
Architectural resources	Ohio Historic Preservation Office (OHPO)	Previously identified historic architectural resource sites and districts, including those listed or eligible on the NRHP.
Land Use		
Parcels		Land use determination
Residences		Residences within the study area
Commercial/Industrial developments		Commercial buildings within the study area.
Land use	National Land Cover Database (2013-2016)	The NLCD (2013-2016) compiled by the Multi-Resolution Land Characteristics Consortium includes 15 classes of land cover from Landsat satellite imagery.
Institutional uses (e.g., schools, places of worship, and cemeteries)		Places of worship, schools, and cemeteries within the study area.

Conservation easements	National Conservation Easement Database (2021)	Private conservation in study areas from the National Conservation Easement Database, which is composed of voluntarily reported conservation easement information from land trusts and public agencies.
Public lands	The Protected Areas Database of the United States (2021)	Federal, state, and local lands in the study area
Airfield and heliports	https://www.faa.gov/ (2021)	Airfields and heliports within study areas
Landfills		

Technical Resources		
Roads		
Railroads		
Existing electric transmission lines	FirstEnergy/ Burns and McDonnell Replica	Existing transmission lines within the study area.
Existing pipelines	U.S. Department of Transportation National Pipeline Mapping System	Existing pipelines within the study area.

Appendix B. Alternative Routes

Appendix B: Alternative Routes

Routes	Study Segments
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70
2	2,10,15,19,21,22,28,43,44,55,67,70,76
3	2,10,15,19,21,22,28,43,44,59,66,67,70
4	2,10,15,19,21,29,42,43,57,58,66,67,70
5	2,10,15,19,21,29,43,44,55,67,70,76
6	2,10,15,19,21,29,43,44,59,66,67,70
7	2,10,15,19,30,33,45,47,48,52,53,69,80
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84
9	2,10,15,19,30,33,45,47,48,52,65,67
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84
11	2,10,20,22,28,42,43,57,58,66,67,70
12	2,10,20,22,28,43,44,55,67,70,76
13	2,10,20,22,28,43,44,59,66,67,70
14	2,10,20,29,42,43,57,58,66,67,70
15	2,10,20,29,43,44,55,67,70,76
16	2,10,20,29,43,44,59,66,67,70
17	2,7,13,28,42,43,57,58,66,67,70
18	2,7,13,28,43,44,55,67,70,76
19	2,7,13,28,43,44,59,66,67,70
20	2,8,23,25,31,33,45,47,48,52,65,67,77,78,82
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82

Routes	Study Segments
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84
53	2,8,11,16,23,25,34,47,48,52,65,67,81
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78

Routes	Study Segments
77	2,8,14,20,22,28,43,44,55,67,70,76,78
78	2,8,14,20,22,28,43,44,59,66,67,70,78
79	2,8,14,20,29,42,43,57,58,66,67,70,78
80	2,8,14,20,29,43,44,55,67,70,76,78
81	2,8,14,20,29,43,44,59,66,67,70,78
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81
111	2,8,9,17,32,36,38,63,72,73,80,81
112	2,8,9,17,32,36,38,64,71,73,81
113	2,8,9,17,32,37,49,63,72,73,80,81
114	2,8,9,17,32,37,49,64,71,73,81
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84

Routes	Study Segments
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84
117	2,8,9,17,32,37,50,53,65,67,71,75,81
118	2,8,9,17,32,37,50,69,75,80,81
119	2,8,9,17,32,37,63,74,75,80,81
120	2,8,9,17,32,37,64,71,72,74,75,81
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83
133	3,11,14,20,22,28,43,44,55,67,70,76,83
134	3,11,14,20,22,28,43,44,59,66,67,70,83
135	3,11,14,20,29,42,43,57,58,66,67,70,83
136	3,11,14,20,29,43,44,55,67,70,76,83
137	3,11,14,20,29,43,44,59,66,67,70,83
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84
149	3,11,16,23,25,31,33,45,47,48,52,65,67
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84
151	3,11,16,23,25,31,33,45,47,52,53,69,80
152	3,11,16,23,25,34,47,48,52,53,69,80
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84
154	3,11,16,23,25,34,47,48,52,65,67

Routes	Study Segments
155	3,11,16,23,25,34,47,48,52,67,70,76,84
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84
172	3,11,23,25,34,47,48,52,65,67,77,82,83
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81
178	3,14,20,22,28,43,44,55,67,70,76,78,81
179	3,14,20,22,28,43,44,59,66,67,70,78,81
180	3,14,20,29,42,43,57,58,66,67,70,78,81
181	3,14,20,29,43,44,55,67,70,76,78,81
182	3,14,20,29,43,44,59,66,67,70,78,81
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82

Routes	Study Segments
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84
199	3,23,25,34,47,48,52,65,67,78,81,82
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84
202	3,7,8,13,28,42,43,57,58,66,67,70,81
203	3,7,8,13,28,43,44,55,67,70,76,81
204	3,7,8,13,28,43,44,59,66,67,70,81
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81
216	3,8,10,20,22,28,43,44,55,67,70,76,81
217	3,8,10,20,22,28,43,44,59,66,67,70,81
218	3,8,10,20,29,42,43,57,58,66,67,70,81
219	3,8,10,20,29,43,44,55,67,70,76,81
220	3,8,10,20,29,43,44,59,66,67,70,81
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84
224	3,9,17,24,25,31,33,45,47,48,52,65,67
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84
226	3,9,17,24,25,34,47,48,52,53,69,80
227	3,9,17,24,25,34,47,48,52,65,67
228	3,9,17,24,25,34,47,48,52,67,70,76,84
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84
230	3,9,17,32,36,38,49,50,53,65,67,75
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84
232	3,9,17,32,36,38,49,50,69,75,80

Routes	Study Segments
233	3,9,17,32,36,38,49,64,71,72,74,75
234	3,9,17,32,36,38,63,72,73,80
235	3,9,17,32,36,38,64,71,73
236	3,9,17,32,37,49,63,72,73,80
237	3,9,17,32,37,49,64,71,73
238	3,9,17,32,37,50,35,67,70,75,76,84
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84
240	3,9,17,32,37,50,53,65,67,75
241	3,9,17,32,37,50,69,75,80
242	3,9,17,32,37,63,74,75,80
243	3,9,17,32,37,64,71,72,74,75
244	4,17,24,25,31,33,45,47,48,52,53,69,80
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84
246	4,17,24,25,31,33,45,47,48,52,65,67
247	4,17,24,25,31,33,47,48,52,67,70,76,84
248	4,17,24,25,34,47,48,52,53,69,80
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84
250	4,17,24,25,34,47,48,52,65,67
251	4,17,24,25,34,47,48,52,67,70,76,84
252	4,17,32,37,50,69,75,80
253	4,17,32,36,38,36,34,72,73,80
254	4,17,32,36,38,49,50,53,65,67,75
255	4,17,32,36,38,49,50,53,67,70,75,76,84
256	4,17,32,36,38,49,50,69,75,80
257	4,17,32,36,38,49,63,34,74,75,80
258	4,17,32,36,38,49,64,71,72,74,75
259	4,17,32,36,38,64,71,73
260	4,17,32,37,49,63,72,73,80
261	4,17,32,37,49,64,71,73
262	4,17,32,37,50,53,55,59,66,67,70,75,84
263	4,17,32,37,50,53,65,67,75
264	4,17,32,37,50,53,67,70,75,76,84
266	4,17,32,37,63,74,75,80
267	4,17,32,37,64,71,72,74,75
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81

Routes	Study Segments
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81
276	4,7,8,9,13,28,43,44,55,67,70,76,81
277	4,7,8,9,13,28,43,44,59,66,67,70,81
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84
279	4,8,9,10,15,18,23,25,34,47,48,52,55,59,66,67,70,81,82,84
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83
306	4,9,11,14,20,29,43,44,55,67,70,76,83
307	4,9,11,14,20,29,43,44,59,66,67,70,83
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82

Routes	Study Segments
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84
321	4,9,11,16,23,25,34,47,48,52,53,69,80
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84
323	4,9,11,16,23,25,34,47,48,52,65,67
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81

Routes	Study Segments
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81
354	4,9,14,20,29,43,44,55,67,70,76,78,81
355	4,9,14,20,29,43,44,59,66,67,70,78,81
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84
377	5,35,36,37,49,63,72,73,80
378	5,35,36,37,49,64,71,73
379	5,35,36,37,50,53,55,59,66,67,70,75,84
380	5,35,36,37,50,53,65,67,75
381	5,35,36,37,50,53,67,70,75,76,84
382	5,35,36,37,50,69,75,80
383	5,35,36,37,63,74,75,80
384	5,35,36,37,64,71,72,74,75
385	5,35,38,49,50,53,55,59,66,67,70,75,84
386	5,35,38,49,50,53,65,67,75
387	5,35,38,49,50,53,67,70,75,76,84
388	5,35,38,49,50,69,75,80
389	5,35,38,49,63,74,75,80

Routes	Study Segments
390	5,35,38,49,64,71,72,74,75
391	5,35,38,63,72,73,80
392	5,35,38,64,71,73
393	5,60,61,64
394	5,60,62,64
395	6,12,27,40,41,42,44,55,67,70,76
396	6,12,27,40,41,42,44,59,66,67,70
397	6,12,27,40,41,57,58,66,67,70
398	6,12,27,40,56,58,66,67,70
399	6,12,39,42,44,55,67,70,76
400	6,12,39,42,44,59,66,67,70
401	6,12,39,57,58,66,67,70
402	6,26,40,41,42,44,55,67,70,76
403	6,26,40,41,42,59,66,67,70
404	6,26,40,41,57,58,66,67,70
405	6,26,40,56,58,66,67,70
406	9,17,32,36,38,64,71,73,79,81
407	9,17,32,37,49,64,71,73,79,81
408	9,17,32,37,64,71,72,74,75,79,81
409	9,17,32,36,38,49,64,71,72,74,75,79,81
410	9,17,32,37,63,74,75,79,80,81
411	9,17,32,36,38,63,72,73,79,80,81
412	9,17,32,37,49,63,72,73,79,80,81
413	9,17,32,37,50,69,75,79,80,81
414	9,17,32,36,38,49,50,69,75,71,79,80,81
415	9,17,32,37,50,53,65,67,71,75,79,81
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84
425	9,17,24,25,34,47,48,52,65,67,71,79,81
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84

Routes	Study Segments
429	11,16,23,25,34,47,48,52,53,69,79,80,81
430	11,16,23,25,34,47,48,52,65,67,79,81
431	11,16,23,25,34,47,48,52,67,70,76,84
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84
437	23,25,34,47,48,52,53,69,77,78,79,80,82
438	23,25,34,47,48,52,65,67,78,79,82
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82
450	23,25,31,33,45,47,48,52,65,67,77,78,82
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83
458	11,18,19,30,33,45,47,48,52,65,67,77,83
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80
462	18,19,30,33,45,47,48,52,65,67,77,78,79
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84

Routes	Study Segments
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80
470	14,15,19,30,33,45,47,48,52,65,67,78,79
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83
482	18,19,21,29,43,44,55,67,70,76,77,78,79
483	18,19,21,29,43,44,59,66,67,70,77,78,79
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79
497	11,14,20,29,43,44,55,67,70,76,79,81,83
498	11,14,20,29,43,44,59,66,67,70,79,81,83
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83
500	14,20,29,43,44,55,67,70,76,78,79
501	14,20,29,43,44,59,66,67,70,78,79
502	14,20,29,42,43,57,58,66,67,70,78,79
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83
506	14,20,22,28,43,44,55,67,70,76,78,79

Routes	Study Segments
507	14,20,22,28,43,44,59,66,67,70,78,79
508	14,20,22,28,42,43,57,58,66,67,70,78,79
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80
510	8,10,15,19,30,33,45,47,48,52,65,67,79
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84
513	8,10,15,19,21,29,43,44,55,67,70,76,79
514	8,10,15,19,21,29,43,44,59,66,67,70,79
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79
519	8,10,20,29,43,44,55,67,70,76,79
520	8,10,20,29,43,44,59,66,67,70,79
521	8,10,20,29,42,43,57,58,66,67,70,79
522	8,10,20,22,28,43,44,55,67,70,76,79
523	8,10,20,22,28,43,44,59,66,67,70,79
524	8,10,20,22,28,42,43,57,58,66,67,70,79
525	7,8,13,28,43,44,55,67,70,76,79
526	7,8,13,28,43,44,59,66,67,70,79
527	7,8,13,28,42,43,57,58,66,67,70,79

Appendix C. Evaluation Criteria

Appendix C: Evaluation Criteria

Category	Criteria		Criteria Weight	Category Weight	Influence
Ecological	Area of Woodlots within ROW (in acres)		50%	30%	15
	Area of NWI within ROW (in acres)		30%		9
	Named NHD/Mussel Stream Crossing		20%		6
Cultural	NRHP-listed and eligible resources within 1,000-ft of centerline		35%	10%	3.5
	Known Archaeology Sites within 75-ft of centerline		30%		3
	OHI Historic Structures within 1,000-ft of centerline		20%		2
	Cemeteries within 75-ft of centerline		15%		1.5
Land Use	Residences	Residences within 250-ft of centerline (weighted 50%)	60%	40%	12
		Residences between 250-500 ft of centerline (weighted 30%)			7.2
		Residences between 500-750 ft of centerline (weighted 15%)			3.6
		Residences between 750-1,000 ft of centerline (weighted 5%)			1.2
	Number of Property Owners within ROW		15%		6
	Ag. District Lands Crossed		5%		2
	Other Sensitive Land Uses within 1,000-ft**		10%		4
	Number of Institutional Land Uses within 1,000-ft of centerline*		10%		4
Technical	Interstate Highway Crossings		15%	20%	3
	Turn Angles Greater than or Equal to 45 Degrees		15%		3
	Paralleling Linear Features	Length Paralleling limited Access Highway (weighted 30%)	25%		1.5
		Length Paralleling Railroad Corridor (weighted 30%)			1.5
		Length Paralleling Existing Transmission Line (weighted 40%)			2
	Rebuild existing transmission line		25%		5
	Length of Route		15%		3
	Endpoint Distance from FE Fulton Substation		5%		1

*Institutional Land Uses include churches, hospitals, and schools.

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Appendix D. Route Scoring Results

Appendix D: Route Scoring

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
392	5,35,38,64,71,73	2.76	9	0.57	10	2	0	0	0	0	0	2	0	0	0
252	4,17,32,37,50,69,75,80	1.49	4	0.63	11	2	0	0	0	0	0	6	80	0	0
382	5,35,36,37,50,69,75,80	1.18	3	0.12	0	2	0	0	0	0	0	6	80	0	0
394	5,60,62,64	6.65	24	0.29	4	2	0	0	0	0	0	2	0	0	0
393	5,60,61,64	6.65	24	0.28	3	2	0	0	0	0	0	2	0	0	0
267	4,17,32,37,64,71,72,74,75	3.07	10	0.92	17	2	0	0	0	0	0	2	0	0	0
261	4,17,32,37,49,64,71,73	3.07	10	1.03	20	2	0	0	0	0	0	2	0	0	0
384	5,35,36,37,64,71,72,74,75	2.76	9	0.42	6	2	0	0	0	0	0	2	0	0	0
388	5,35,38,49,50,69,75,80	1.18	3	0.16	1	2	0	0	0	0	0	6	80	0	0
378	5,35,36,37,49,64,71,73	2.76	9	0.53	9	2	0	0	0	0	0	2	0	0	0
263	4,17,32,37,50,53,65,67,75	8.03	29	0.65	11	2	0	0	0	1	50	3	20	0	0
259	4,17,32,36,38,64,71,73	3.07	10	1.08	21	2	0	0	0	0	0	2	0	0	0
380	5,35,36,37,50,53,65,67,75	7.72	28	0.14	0	2	0	0	0	1	50	3	20	0	0
264	4,17,32,37,50,53,67,70,75,76,84	8.14	29	0.65	11	2	0	0	0	0	0	3	20	0	0
390	5,35,38,49,64,71,72,74,75	2.76	9	0.46	7	2	0	0	0	0	0	2	0	0	0
381	5,35,36,37,50,53,67,70,75,76,84	7.83	28	0.14	0	2	0	0	0	0	0	3	20	0	0
266	4,17,32,37,63,74,75,80	1.00	2	1.33	26	2	0	0	0	1	50	5	60	0	0
383	5,35,36,37,63,74,75,80	0.69	1	0.82	15	2	0	0	0	1	50	5	60	0	0
386	5,35,38,49,50,53,65,67,75	7.72	28	0.18	1	2	0	0	0	1	50	3	20	0	0
387	5,35,38,49,50,53,67,70,75,76,84	7.83	28	0.18	1	2	0	0	0	0	0	3	20	0	0
256	4,17,32,36,38,49,50,69,75,80	1.49	4	0.67	12	2	0	0	0	0	0	6	80	0	0
389	5,35,38,49,63,74,75,80	0.69	1	0.86	16	2	0	0	0	1	50	5	60	0	0
391	5,35,38,63,72,73,80	0.69	1	0.97	19	2	0	0	0	1	50	5	60	0	0
258	4,17,32,36,38,49,64,71,72,74,75	3.07	10	0.96	18	2	0	0	0	0	0	2	0	0	0
118	2,8,9,17,32,37,50,69,75,80,81	2.98	9	0.80	15	2	0	0	0	0	0	6	80	0	0
241	3,9,17,32,37,50,69,75,80	1.49	4	0.64	11	2	0	1	100	0	0	7	100	0	0
413	9,17,32,37,50,69,75,79,80,81	1.81	5	0.64	11	2	0	1	100	0	0	7	100	0	0
254	4,17,32,36,38,49,50,53,65,67,75	8.03	29	0.69	12	2	0	0	0	1	50	3	20	0	0
260	4,17,32,37,49,63,72,73,80	1.00	2	1.44	29	2	0	0	0	1	50	5	60	0	0
255	4,17,32,36,38,49,50,53,67,70,75,76,84	8.14	29	0.69	12	2	0	0	0	0	0	3	20	0	0
120	2,8,9,17,32,37,64,71,72,74,75,81	4.56	16	1.10	21	2	0	0	0	0	0	2	0	0	0
377	5,35,36,37,49,63,72,73,80	0.69	1	0.93	18	2	0	0	0	1	50	5	60	0	0
114	2,8,9,17,32,37,49,64,71,73,81	4.56	16	1.21	24	2	0	0	0	0	0	2	0	0	0
243	3,9,17,32,37,64,71,72,74,75	3.07	10	0.94	18	2	0	1	100	0	0	3	20	0	0
408	9,17,32,37,64,71,72,74,75,79,81	3.40	11	0.93	18	2	0	1	100	0	0	3	20	0	0
257	4,17,32,36,38,49,63,34,74,75,80	1.00	2	1.37	27	2	0	0	0	1	50	5	60	0	0
237	3,9,17,32,37,49,64,71,73	3.07	10	1.05	20	2	0	1	100	0	0	3	20	0	0
407	9,17,32,37,49,64,71,73,79,81	3.40	11	1.05	20	2	0	1	100	0	0	3	20	0	0
253	4,17,32,36,38,36,34,72,73,80	1.00	2	1.48	30	2	0	0	0	1	50	5	60	0	0
117	2,8,9,17,32,37,50,53,65,67,71,75,81	9.53	35	0.82	15	2	0	0	0	1	50	3	20	0	0
415	9,17,32,37,50,53,65,67,71,75,79,81	8.36	30	0.66	12	2	0	1	100	1	50	4	40	0	0
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	9.63	35	0.82	15	2	0	0	0	0	0	3	20	0	0
262	4,17,32,37,50,53,55,59,66,67,70,75,84	8.14	29	1.16	23	2	0	0	0	0	0	3	20	0	0
112	2,8,9,17,32,36,38,64,71,73,81	4.56	16	1.25	25	2	0	0	0	0	0	2	0	0	0
240	3,9,17,32,37,50,53,65,67,75	8.03	29	0.66	12	2	0	1	100	1	50	4	40	0	0
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	8.46	30	0.66	12	2	0	1	100	0	0	4	40	0	0
235	3,9,17,32,36,38,64,71,73	3.07	10	1.09	21	2	0	1	100	0	0	3	20	0	0
406	9,17,32,36,38,64,71,73,79,81	3.40	11	1.09	21	2	0	1	100	0	0	3	20	0	0
379	5,35,36,37,50,53,55,59,66,67,70,75,84	7.83	28	0.66	12	2	0	0	0	0	0	3	20	0	0
238	3,9,17,32,37,50,35,67,70,75,76,84	8.14	29	0.66	12	2	0	1	100	0	0	4	40	0	0
119	2,8,9,17,32,37,63,74,75,80,81	2.50	8	1.50	30	2	0	0	0	1	50	5	60	0	0
242	3,9,17,32,37,63,74,75,80	1.00	2	1.34	27	2	0	1	100	1	50	6	80	0	0
410	9,17,32,37,63,74,75,79,80,81	1.33	3	1.34	26	2	0	1	100	1	50	6	80	0	0
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	5.98	21	0.46	7	3	25	0	0	2	100	2	0	0	0
385	5,35,38,49,50,53,55,59,66,67,70,75,84	7.83	28	0.70	13	2	0	0	0	0	0	3	20	0	0
246	4,17,24,25,31,33,45,47,48,52,65,67	7.50	27	0.60	10	4	50	0	0	2	100	2	0	0	0
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	2.98	9	0.84	16	2	0	0	0	0	0	6	80	0	0
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	6.07	21	0.46	7	3	25	0	0	1	50	2	0	0	0
232	3,9,17,32,36,38,49,50,69,75,80	1.49	4	0.68	12	2	0	1	100	0	0	7	100	0	0
414	9,17,32,36,38,49,50,69,75,71,79,80,81	1.81	5	0.68	12	2	0	1	100	0	0	7	100	0	0
247	4,17,24,25,31,33,47,48,52,67,70,76,84	7.59	27	0.60	10	4	50	0	0	1	50	2	0	0	0
306	4,9,11,14,20,29,43,44,55,67,70,76,83	2.37	7	2.45	51	4	50	0	0	0	0	2	0	0	0
18	2,7,13,28,43,44,55,67,70,76	4.54	15	2.23	46	4	50	0	0	0	0	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	7.47	27	0.49	8	3	25	0	0	2	100	2	0	0	0
354	4,9,14,20,29,43,44,55,67,70,76,78,81	2.37	7	2.37	49	4	50	0	0	0	0	2	0	0	0
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	4.56	16	1.14	22	2	0	0	0	0	0	2	0	0	0
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	6.31	22	0.33	5	3	25	1	100	2	100	3	20	0	0
233	3,9,17,32,36,38,49,64,71,72,74,75	3.07	10	0.98	19	2	0	1	100	0	0	3	20	0	0
409	9,17,32,36,38,49,64,71,72,74,75,79,81	3.40	11	0.97	19	2	0	1	100	0	0	3	20	0	0
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	7.56	27	0.49	8	3	25	0	0	1	50	2	0	0	0
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	2.37	7	2.45	51	4	50	0	0	0	0	2	0	0	0
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	6.39	23	0.33	5	3	25	1	100	1	50	3	20	0	0
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	2.37	7	2.37	49	4	50	0	0	0	0	2	0	0	0
149	3,11,16,23,25,31,33,45,47,48,52,65,67	5.98	21	0.33	5	3	25	1	100	2	100	3	20	0	0
276	4,7,8,9,13,28,43,44,55,67,70,76,81	3.05	10	2.33	48	4	50	0	0	0	0	2	0	0	0
15	2,10,20,29,43,44,55,67,70,76	3.86	13	2.16	44	5	75	0	0	0	0	2	0	0	0
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	9.53	35	0.86	16	2	0	0	0	1	50	3	20	0	0
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	6.07	21	0.33	5	3	25	1	100	1	50	3	20	0	0
80	2,8,14,20,29,43,44,55,67,70,76,78	3.86	13	2.41	50	4	50	0	0	0	0	2	0	0	0
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	8.36	30	0.70	13	2	0	1	100	1	50	4	40	0	0
113	2,8,9,17,32,37,49,63,72,73,80,81	2.50	8	1.61	32	2	0	0	0	1	50	5	60	0	0
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	9.63	35	0.86	16	2	0	0	0	0	0	3	20	0	0
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	3.86	13	2.49	52	4	50	0	0	0	0	2	0	0	0
500	14,20,29,43,44,55,67,70,76,78,79	2.70	8	2.25	46	4	50	1	100	0	0	3	20	0	0
230	3,9,17,32,36,38,49,50,53,65,67,75	8.03	29	0.70	13	2	0	1	100	1	50	4	40	0	0
236	3,9,17,32,37,49,63,72,73,80	1.00	2	1.45	29	2	0	1	100	1	50	6	80	0	0
412	9,17,32,37,49,63,72,73,79,80,81	1.33	3	1.45	29	2	0	1	100	1	50	6	80	0	0
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	8.46	30	0.70	13	2	0	1	100	0	0	4	40	0	0
497	11,14,20,29,43,44,55,67,70,76,79,81,83	2.70	8	2.33	48	4	50	1	100	0	0	3	20	0	0
12	2,10,20,22,28,43,44,55,67,70,76	3.86	13	2.16	44	5	75	0	0	0	0	2	0	0	0
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	8.14	29	0.70	13	2	0	1	100	0	0	4	40	0	0
307	4,9,11,14,20,29,43,44,59,66,67,70,83	2.37	7	2.97	62	4	50	0	0	0	0	2	0	0	0
77	2,8,14,20,22,28,43,44,55,67,70,76,78	3.86	13	2.41	50	4	50	0	0	0	0	2	0	0	0
19	2,7,13,28,43,44,59,66,67,70	4.54	15	2.75	57	4	50	0	0	0	0	2	0	0	0
355	4,9,14,20,29,43,44,59,66,67,70,78,81	2.37	7	2.89	60	4	50	0	0	0	0	2	0	0	0
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	3.86	13	2.49	52	4	50	0	0	0	0	2	0	0	0
136	3,11,14,20,29,43,44,55,67,70,76,83	2.37	7	2.33	48	4	50	1	100	0	0	3	20	0	0
506	14,20,22,28,43,44,55,67,70,76,78,79	2.70	8	2.25	46	4	50	1	100	0	0	3	20	0	0
111	2,8,9,17,32,36,38,63,72,73,80,81	2.50	8	1.65	33	2	0	0	0	1	50	5	60	0	0
525	7,8,13,28,43,44,55,67,70,76,79	3.37	11	2.20	45	4	50	1	100	0	0	3	20	0	0
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	9.63	35	1.34	26	2	0	0	0	0	0	3	20	0	0
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	2.70	8	2.33	48	4	50	1	100	0	0	3	20	0	0
181	3,14,20,29,43,44,55,67,70,76,78,81	2.37	7	2.25	46	4	50	1	100	0	0	3	20	0	0
234	3,9,17,32,36,38,63,72,73,80	1.00	2	1.49	30	2	0	1	100	1	50	6	80	0	0
411	9,17,32,36,38,63,72,73,79,80,81	1.33	3	1.49	30	2	0	1	100	1	50	6	80	0	0
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	2.37	7	2.97	62	4	50	0	0	0	0	2	0	0	0
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	5.98	21	0.91	17	3	25	0	0	2	100	2	0	0	0
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	5.98	21	0.91	17	3	25	0	0	2	100	2	0	0	0
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	8.46	30	1.18	23	2	0	1	100	0	0	4	40	0	0
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	3.05	10	2.33	48	4	50	0	0	0	0	2	0	0	0
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	9.08	33	0.72	13	3	25	0	0	1	50	6	80	0	0
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	8.14	29	1.18	23	2	0	1	100	0	0	4	40	0	0
323	4,9,11,16,23,25,34,47,48,52,65,67	7.44	27	0.49	8	3	25	0	0	2	100	2	0	0	0
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	2.37	7	2.89	60	4	50	0	0	0	0	2	0	0	0
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	5.98	21	0.83	15	3	25	0	0	2	100	2	0	0	0
133	3,11,14,20,22,28,43,44,55,67,70,76,83	2.37	7	2.33	48	4	50	1	100	0	0	3	20	0	0
277	4,7,8,9,13,28,43,44,59,66,67,70,81	3.05	10	2.84	59	4	50	0	0	0	0	2	0	0	0
16	2,10,20,29,43,44,59,66,67,70	3.86	13	2.68	56	5	75	0	0	0	0	2	0	0	0
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	6.07	21	0.91	17	3	25	0	0	1	50	2	0	0	0
244	4,17,24,25,31,33,45,47,48,52,53,69,80	10.61	39	0.86	16	4	50	0	0	1	50	6	80	0	0
203	3,7,8,13,28,43,44,55,67,70,76,81	3.05	10	2.21	45	4	50	1	100	0	0	3	20	0	0
250	4,17,24,25,34,47,48,52,65,67	8.96	32	0.63	11	4	50	0	0	2	100	2	0	0	0
81	2,8,14,20,29,43,44,59,66,67,70,78	3.86	13	2.93	61	4	50	0	0	0	0	2	0	0	0
178	3,14,20,22,28,43,44,55,67,70,76,78,81	2.37	7	2.25	46	4	50	1	100	0	0	3	20	0	0
519	8,10,20,29,43,44,55,67,70,76,79	2.70	8	2.14	44	5	75	1	100	0	0	3	20	0	0
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	7.53	27	0.49	8	3	25	0	0	1	50	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	3.86	13	3.01	63	4	50	0	0	0	0	2	0	0	0
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	6.07	21	0.83	15	3	25	0	0	1	50	2	0	0	0
501	14,20,29,43,44,59,66,67,70,78,79	2.70	8	2.77	58	4	50	1	100	0	0	3	20	0	0
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	0.51	0	2.48	51	4	50	0	0	0	0	2	0	0	0
498	11,14,20,29,43,44,59,66,67,70,79,81,83	2.70	8	2.84	59	4	50	1	100	0	0	3	20	0	0
251	4,17,24,25,34,47,48,52,67,70,76,84	9.05	33	0.63	11	4	50	0	0	1	50	2	0	0	0
13	2,10,20,22,28,43,44,59,66,67,70	3.86	13	2.68	56	5	75	0	0	0	0	2	0	0	0
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	0.51	0	2.40	50	4	50	0	0	0	0	2	0	0	0
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	7.47	27	0.95	18	3	25	0	0	2	100	2	0	0	0
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	7.47	27	0.87	16	3	25	0	0	2	100	2	0	0	0
17	2,7,13,28,42,43,57,58,66,67,70	2.68	8	2.26	47	4	50	0	0	0	0	2	0	0	0
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	9.00	33	0.77	14	4	50	0	0	2	100	2	0	0	0
78	2,8,14,20,22,28,43,44,59,66,67,70,78	3.86	13	2.93	61	4	50	0	0	0	0	2	0	0	0
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	10.58	39	0.76	14	3	25	0	0	1	50	6	80	0	0
522	8,10,20,22,28,43,44,55,67,70,76,79	2.70	8	2.14	44	5	75	1	100	0	0	3	20	0	0
53	2,8,11,16,23,25,34,47,48,52,65,67,81	8.93	32	0.53	9	3	25	0	0	2	100	2	0	0	0
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	6.07	21	0.97	19	3	25	0	0	1	50	2	0	0	0
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	6.31	22	0.78	14	3	25	1	100	2	100	3	20	0	0
450	23,25,31,33,45,47,48,52,65,67,77,78,82	6.31	22	0.71	13	3	25	1	100	2	100	3	20	0	0
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	3.86	13	3.01	63	4	50	0	0	0	0	2	0	0	0
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	7.83	28	0.61	11	4	50	1	100	2	100	3	20	0	0
219	3,8,10,20,29,43,44,55,67,70,76,81	2.37	7	2.14	44	5	75	1	100	0	0	3	20	0	0
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	5.98	21	0.59	10	3	25	0	0	1	50	2	0	0	0
137	3,11,14,20,29,43,44,59,66,67,70,83	2.37	7	2.85	59	4	50	1	100	0	0	3	20	0	0
507	14,20,22,28,43,44,59,66,67,70,78,79	2.70	8	2.77	58	4	50	1	100	0	0	3	20	0	0
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	9.41	34	0.60	10	3	25	1	100	1	50	7	100	0	0
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	5.98	21	0.55	9	3	25	0	0	2	100	2	0	0	0
430	11,16,23,25,34,47,48,52,65,67,79,81	7.76	28	0.37	5	3	25	1	100	2	100	3	20	0	0
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	5.98	21	0.67	12	3	25	0	0	1	50	2	0	0	0
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	7.56	27	0.95	18	3	25	0	0	1	50	2	0	0	0
526	7,8,13,28,43,44,59,66,67,70,79	3.37	11	2.72	57	4	50	1	100	0	0	3	20	0	0
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	7.56	27	0.87	16	3	25	0	0	1	50	2	0	0	0
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	2.70	8	2.84	59	4	50	1	100	0	0	3	20	0	0
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	9.08	33	0.77	14	4	50	0	0	1	50	2	0	0	0
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	0.51	0	2.48	51	4	50	0	0	0	0	2	0	0	0
182	3,14,20,29,43,44,59,66,67,70,78,81	2.37	7	2.77	58	4	50	1	100	0	0	3	20	0	0
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	9.02	33	0.53	9	3	25	0	0	1	50	2	0	0	0
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	6.39	23	0.78	14	3	25	1	100	1	50	3	20	0	0
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	6.39	23	0.71	13	3	25	1	100	1	50	3	20	0	0
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	7.59	27	1.11	22	4	50	0	0	1	50	2	0	0	0
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	7.92	28	0.61	11	4	50	1	100	1	50	3	20	0	0
14	2,10,20,29,42,43,57,58,66,67,70	2.00	6	2.20	45	5	75	0	0	0	0	2	0	0	0
224	3,9,17,24,25,31,33,45,47,48,52,65,67	7.50	27	0.61	11	4	50	1	100	2	100	3	20	0	0
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	0.51	0	2.40	50	4	50	0	0	0	0	2	0	0	0
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	3.05	10	2.84	59	4	50	0	0	0	0	2	0	0	0
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	6.07	21	0.55	9	3	25	0	0	1	50	2	0	0	0
151	3,11,16,23,25,31,33,45,47,52,53,69,80	9.08	33	0.60	10	3	25	1	100	1	50	7	100	0	0
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	6.07	21	0.67	12	3	25	0	0	0	0	2	0	0	0
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	5.98	21	0.79	14	3	25	1	100	2	100	3	20	0	0
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	1.19	3	2.36	49	4	50	0	0	0	0	2	0	0	0
154	3,11,16,23,25,34,47,48,52,65,67	7.44	27	0.37	5	3	25	1	100	2	100	3	20	0	0
216	3,8,10,20,22,28,43,44,55,67,70,76,81	2.37	7	2.14	44	5	75	1	100	0	0	3	20	0	0
79	2,8,14,20,29,42,43,57,58,66,67,70,78	2.00	6	2.44	51	4	50	0	0	0	0	2	0	0	0
134	3,11,14,20,22,28,43,44,59,66,67,70,83	2.37	7	2.85	59	4	50	1	100	0	0	3	20	0	0
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	7.59	27	0.61	11	4	50	1	100	1	50	3	20	0	0
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	2.00	6	2.52	52	4	50	0	0	0	0	2	0	0	0
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	6.07	21	0.59	10	3	25	0	0	0	0	2	0	0	0
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	6.07	21	0.79	14	3	25	1	100	1	50	3	20	0	0
9	2,10,15,19,30,33,45,47,48,52,65,67	7.47	27	0.38	6	4	50	0	0	1	50	2	0	0	0
155	3,11,16,23,25,34,47,48,52,67,70,76,84	7.53	27	0.37	5	3	25	1	100	1	50	3	20	0	0
431	11,16,23,25,34,47,48,52,67,70,76,84	7.53	27	0.37	5	3	25	1	100	1	50	3	20	0	0
204	3,7,8,13,28,43,44,59,66,67,70,81	3.05	10	2.72	57	4	50	1	100	0	0	3	20	0	0
502	14,20,29,42,43,57,58,66,67,70,78,79	0.84	1	2.28	47	4	50	1	100	0	0	3	20	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
179	3,14,20,22,28,43,44,59,66,67,70,78,81	2.37	7	2.77	58	4	50	1	100	0	0	3	20	0	0
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	6.66	24	0.76	14	4	50	0	0	1	50	2	0	0	0
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	5.98	21	0.71	13	3	25	1	100	2	100	3	20	0	0
520	8,10,20,29,43,44,59,66,67,70,79	2.70	8	2.65	55	5	75	1	100	0	0	3	20	0	0
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	0.84	1	2.36	49	4	50	1	100	0	0	3	20	0	0
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	7.56	27	1.01	19	3	25	0	0	1	50	2	0	0	0
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	7.47	27	0.71	13	3	25	0	0	1	50	2	0	0	0
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	7.47	27	0.63	11	3	25	0	0	1	50	2	0	0	0
11	2,10,20,22,28,42,43,57,58,66,67,70	2.00	6	2.20	45	5	75	0	0	0	0	2	0	0	0
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	6.07	21	0.71	13	3	25	1	100	1	50	3	20	0	0
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	7.56	27	0.38	6	4	50	0	0	0	0	2	0	0	0
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	6.39	23	0.85	16	3	25	1	100	1	50	3	20	0	0
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	6.31	22	0.54	9	3	25	1	100	1	50	3	20	0	0
470	14,15,19,30,33,45,47,48,52,65,67,78,79	6.31	22	0.47	7	3	25	1	100	1	50	3	20	0	0
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	2.00	6	2.44	51	4	50	0	0	0	0	2	0	0	0
135	3,11,14,20,29,42,43,57,58,66,67,70,83	0.51	0	2.36	49	4	50	1	100	0	0	3	20	0	0
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	2.00	6	2.52	52	4	50	0	0	0	0	2	0	0	0
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	6.75	24	0.76	14	4	50	0	0	0	0	2	0	0	0
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	7.56	27	0.71	13	3	25	0	0	0	0	2	0	0	0
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	7.56	27	0.63	11	3	25	0	0	0	0	2	0	0	0
523	8,10,20,22,28,43,44,59,66,67,70,79	2.70	8	2.65	55	5	75	1	100	0	0	3	20	0	0
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	6.07	21	0.85	16	3	25	1	100	1	50	3	20	0	0
508	14,20,22,28,42,43,57,58,66,67,70,78,79	0.84	1	2.28	47	4	50	1	100	0	0	3	20	0	0
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	9.63	35	1.38	27	2	0	0	0	0	0	3	20	0	0
220	3,8,10,20,29,43,44,59,66,67,70,81	2.37	7	2.66	55	5	75	1	100	0	0	3	20	0	0
527	7,8,13,28,42,43,57,58,66,67,70,79	1.51	4	2.24	46	4	50	1	100	0	0	3	20	0	0
180	3,14,20,29,42,43,57,58,66,67,70,78,81	0.51	0	2.28	47	4	50	1	100	0	0	3	20	0	0
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	0.84	1	2.36	49	4	50	1	100	0	0	3	20	0	0
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	6.39	23	0.54	9	3	25	1	100	0	0	3	20	0	0
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	6.39	23	0.47	7	3	25	1	100	0	0	3	20	0	0
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	8.46	30	1.22	24	2	0	1	100	0	0	4	40	0	0
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	1.19	3	2.36	49	4	50	0	0	0	0	2	0	0	0
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	5.98	21	0.48	8	4	50	0	0	1	50	2	0	0	0
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	5.98	21	0.55	9	3	25	1	100	1	50	3	20	0	0
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	8.14	29	1.22	24	2	0	1	100	0	0	4	40	0	0
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	9.08	33	1.17	23	3	25	0	0	1	50	6	80	0	0
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	7.44	27	0.94	18	3	25	0	0	2	100	2	0	0	0
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	5.98	21	0.36	5	4	50	0	0	2	100	2	0	0	0
321	4,9,11,16,23,25,34,47,48,52,53,69,80	10.54	38	0.76	14	3	25	0	0	1	50	6	80	0	0
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	0.51	0	2.36	49	4	50	1	100	0	0	3	20	0	0
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	6.07	21	0.55	9	3	25	1	100	0	0	3	20	0	0
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	9.08	33	1.09	21	3	25	0	0	1	50	6	80	0	0
217	3,8,10,20,22,28,43,44,59,66,67,70,81	2.37	7	2.66	55	5	75	1	100	0	0	3	20	0	0
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	7.44	27	0.86	16	3	25	0	0	2	100	2	0	0	0
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	6.07	21	0.48	8	4	50	0	0	0	0	2	0	0	0
521	8,10,20,29,42,43,57,58,66,67,70,79	0.84	1	2.17	45	5	75	1	100	0	0	3	20	0	0
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	5.98	21	0.47	7	3	25	1	100	1	50	3	20	0	0
202	3,7,8,13,28,42,43,57,58,66,67,70,81	1.19	3	2.24	46	4	50	1	100	0	0	3	20	0	0
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	0.51	0	2.28	47	4	50	1	100	0	0	3	20	0	0
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	7.53	27	0.94	18	3	25	0	0	1	50	2	0	0	0
248	4,17,24,25,34,47,48,52,53,69,80	12.07	44	0.90	17	4	50	0	0	1	50	6	80	0	0
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	6.07	21	0.36	5	4	50	0	0	1	50	2	0	0	0
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	6.07	21	0.47	7	3	25	1	100	0	0	3	20	0	0
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	7.53	27	0.86	16	3	25	0	0	1	50	2	0	0	0
510	8,10,15,19,30,33,45,47,48,52,65,67,79	6.31	22	0.36	5	4	50	1	100	1	50	3	20	0	0
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	10.58	39	1.21	24	3	25	0	0	1	50	6	80	0	0
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	10.58	39	1.13	22	3	25	0	0	1	50	6	80	0	0
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	12.10	44	1.04	20	4	50	0	0	1	50	6	80	0	0
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	8.93	32	0.98	19	3	25	0	0	2	100	2	0	0	0
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	6.07	21	1.43	28	3	25	0	0	1	50	2	0	0	0
218	3,8,10,20,29,42,43,57,58,66,67,70,81	0.51	0	2.17	45	5	75	1	100	0	0	3	20	0	0
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	10.45	38	0.81	15	4	50	0	0	2	100	2	0	0	0
524	8,10,20,22,28,42,43,57,58,66,67,70,79	0.84	1	2.17	45	5	75	1	100	0	0	3	20	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	10.54	38	0.81	15	4	50	0	0	1	50	2	0	0	0
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	6.39	23	0.36	5	4	50	1	100	0	0	3	20	0	0
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	12.03	44	0.80	15	3	25	0	0	1	50	6	80	0	0
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	9.41	34	1.05	20	3	25	1	100	1	50	7	100	0	0
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	9.41	34	0.97	18	3	25	1	100	1	50	7	100	0	0
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	7.53	27	1.01	19	3	25	0	0	1	50	2	0	0	0
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	10.93	40	0.88	16	4	50	1	100	1	50	7	100	0	0
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	7.76	28	0.82	15	3	25	1	100	2	100	3	20	0	0
438	23,25,34,47,48,52,65,67,78,79,82	7.76	28	0.74	13	3	25	1	100	2	100	3	20	0	0
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	6.07	21	1.35	27	3	25	0	0	1	50	2	0	0	0
425	9,17,24,25,34,47,48,52,65,67,71,79,81	9.29	34	0.64	11	4	50	1	100	2	100	3	20	0	0
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	9.08	33	0.81	15	3	25	0	0	1	50	6	80	0	0
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	9.38	34	0.64	11	4	50	1	100	1	50	3	20	0	0
429	11,16,23,25,34,47,48,52,53,69,79,80,81	10.87	40	0.63	11	3	25	1	100	1	50	7	100	0	0
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	9.08	33	0.93	18	3	25	0	0	0	0	6	80	0	0
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	7.44	27	0.58	10	3	25	0	0	2	100	2	0	0	0
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	9.02	33	0.98	19	3	25	0	0	1	50	2	0	0	0
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	9.02	33	0.90	17	3	25	0	0	1	50	2	0	0	0
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	5.98	21	0.58	10	3	25	0	0	1	50	2	0	0	0
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	5.98	21	0.36	5	4	50	1	100	1	50	3	20	0	0
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	9.08	33	0.85	16	3	25	0	0	0	0	6	80	0	0
228	3,9,17,24,25,34,47,48,52,67,70,76,84	9.05	33	0.65	11	4	50	1	100	1	50	3	20	0	0
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	7.85	28	0.82	15	3	25	1	100	1	50	3	20	0	0
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	7.44	27	0.50	8	3	25	0	0	2	100	2	0	0	0
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	7.85	28	0.74	13	3	25	1	100	1	50	3	20	0	0
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	9.05	33	1.15	22	4	50	0	0	1	50	2	0	0	0
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	10.61	39	0.88	16	4	50	1	100	1	50	7	100	0	0
227	3,9,17,24,25,34,47,48,52,65,67	8.96	32	0.65	11	4	50	1	100	2	100	3	20	0	0
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	9.08	33	1.05	20	3	25	1	100	1	50	7	100	0	0
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	0.51	0	2.17	45	5	75	1	100	0	0	3	20	0	0
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	7.53	27	0.58	10	3	25	0	0	1	50	2	0	0	0
152	3,11,16,23,25,34,47,48,52,53,69,80	10.54	38	0.64	11	3	25	1	100	1	50	7	100	0	0
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	6.07	21	0.36	5	4	50	1	100	0	0	3	20	0	0
172	3,11,23,25,34,47,48,52,65,67,77,82,83	7.44	27	0.82	15	3	25	1	100	2	100	3	20	0	0
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	7.53	27	0.50	8	3	25	0	0	1	50	2	0	0	0
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	6.07	21	0.58	10	3	25	0	0	0	0	2	0	0	0
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	7.56	27	1.38	27	3	25	0	0	1	50	2	0	0	0
7	2,10,15,19,30,33,45,47,48,52,53,69,80	10.58	39	0.65	11	4	50	0	0	0	0	6	80	0	0
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	7.53	27	0.82	15	3	25	1	100	1	50	3	20	0	0
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	9.08	33	1.29	25	4	50	0	0	1	50	2	0	0	0
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	9.08	33	0.97	19	3	25	1	100	1	50	7	100	0	0
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	7.56	27	1.46	29	3	25	0	0	1	50	2	0	0	0
199	3,23,25,34,47,48,52,65,67,78,81,82	7.44	27	0.74	13	3	25	1	100	2	100	3	20	0	0
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	6.39	23	1.22	24	3	25	1	100	1	50	3	20	0	0
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	7.92	28	1.13	22	4	50	1	100	1	50	3	20	0	0
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	9.76	35	1.03	20	4	50	0	0	0	0	6	80	0	0
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	10.58	39	0.97	19	3	25	0	0	0	0	6	80	0	0
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	10.58	39	0.89	17	3	25	0	0	0	0	6	80	0	0
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	9.02	33	1.05	20	3	25	0	0	1	50	2	0	0	0
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	6.07	21	1.06	20	3	25	0	0	1	50	2	0	0	0
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	6.39	23	1.30	26	3	25	1	100	1	50	3	20	0	0
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	6.07	21	1.19	23	3	25	0	0	0	0	2	0	0	0
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	7.47	27	0.62	11	3	25	0	0	1	50	2	0	0	0
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	7.53	27	0.74	13	3	25	1	100	1	50	3	20	0	0
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	9.41	34	0.81	15	3	25	1	100	0	0	7	100	0	0
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	9.41	34	0.73	13	3	25	1	100	0	0	7	100	0	0
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	7.85	28	0.88	17	3	25	1	100	1	50	3	20	0	0
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	7.59	27	1.13	22	4	50	1	100	1	50	3	20	0	0
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	6.07	21	1.11	21	3	25	0	0	0	0	2	0	0	0
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	6.31	22	0.45	7	3	25	1	100	1	50	3	20	0	0
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	6.07	21	1.30	26	3	25	1	100	1	50	3	20	0	0
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	7.53	27	0.89	17	3	25	1	100	1	50	3	20	0	0
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	7.56	27	0.62	11	3	25	0	0	0	0	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
5	2,10,15,19,21,29,43,44,55,67,70,76	3.86	13	2.25	46	5	75	0	0	0	0	2	0	0	0
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	6.07	21	1.22	24	3	25	1	100	1	50	3	20	0	0
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	6.39	23	0.45	7	3	25	1	100	0	0	3	20	0	0
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	5.98	21	1.03	20	3	25	0	0	1	50	2	0	0	0
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	5.98	21	0.46	7	3	25	1	100	1	50	3	20	0	0
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	9.08	33	0.74	14	4	50	0	0	0	0	6	80	0	0
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	9.08	33	0.81	15	3	25	1	100	0	0	7	100	0	0
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	6.75	24	1.28	25	4	50	0	0	0	0	2	0	0	0
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	10.54	38	1.21	24	3	25	0	0	1	50	6	80	0	0
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	7.56	27	0.90	17	4	50	0	0	0	0	2	0	0	0
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	9.08	33	0.62	11	4	50	0	0	1	50	6	80	0	0
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	7.44	27	0.39	6	4	50	0	0	2	100	2	0	0	0
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	3.86	13	2.57	53	4	50	0	0	0	0	2	0	0	0
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	5.98	21	0.95	18	3	25	0	0	1	50	2	0	0	0
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	6.07	21	0.46	7	3	25	1	100	0	0	3	20	0	0
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	7.56	27	1.15	22	3	25	0	0	0	0	2	0	0	0
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	10.54	38	1.13	22	3	25	0	0	1	50	6	80	0	0
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	6.07	21	1.03	20	3	25	0	0	0	0	2	0	0	0
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	9.08	33	0.73	13	3	25	1	100	0	0	7	100	0	0
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	7.56	27	1.22	24	3	25	0	0	0	0	2	0	0	0
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	2.70	8	2.41	50	4	50	1	100	0	0	3	20	0	0
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	6.39	23	0.98	19	3	25	1	100	0	0	3	20	0	0
2	2,10,15,19,21,22,28,43,44,55,67,70,76	3.86	13	2.25	46	5	75	0	0	0	0	2	0	0	0
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	7.53	27	0.39	6	4	50	0	0	1	50	2	0	0	0
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	6.39	23	1.06	20	3	25	1	100	0	0	3	20	0	0
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	6.07	21	0.95	18	3	25	0	0	0	0	2	0	0	0
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	9.41	34	0.62	11	4	50	1	100	0	0	7	100	0	0
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	3.86	13	2.57	53	4	50	0	0	0	0	2	0	0	0
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	2.37	7	2.41	50	4	50	1	100	0	0	3	20	0	0
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	7.47	27	1.07	21	3	25	0	0	1	50	2	0	0	0
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	7.47	27	0.99	19	3	25	0	0	1	50	2	0	0	0
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	2.70	8	2.41	50	4	50	1	100	0	0	3	20	0	0
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	6.07	21	1.00	19	4	50	0	0	0	0	2	0	0	0
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	6.07	21	1.06	21	3	25	1	100	0	0	3	20	0	0
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	12.03	44	1.25	25	3	25	0	0	1	50	6	80	0	0
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	12.03	44	1.17	23	3	25	0	0	1	50	6	80	0	0
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	13.56	50	1.07	21	4	50	0	0	1	50	6	80	0	0
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	7.53	27	1.46	29	3	25	0	0	1	50	2	0	0	0
458	11,18,19,30,33,45,47,48,52,65,67,77,83	6.31	22	0.91	17	3	25	1	100	1	50	3	20	0	0
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	6.07	21	0.87	16	4	50	0	0	1	50	2	0	0	0
462	18,19,30,33,45,47,48,52,65,67,77,78,79	6.31	22	0.83	15	3	25	1	100	1	50	3	20	0	0
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	10.87	40	1.09	21	3	25	1	100	1	50	7	100	0	0
437	23,25,34,47,48,52,53,69,77,78,79,80,82	10.87	40	1.01	19	3	25	1	100	1	50	7	100	0	0
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	6.07	21	0.99	19	3	25	1	100	0	0	3	20	0	0
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	12.39	46	0.91	17	4	50	1	100	1	50	7	100	0	0
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	7.56	27	1.07	21	3	25	0	0	0	0	2	0	0	0
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	7.56	27	0.99	19	3	25	0	0	0	0	2	0	0	0
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	7.53	27	1.38	27	3	25	0	0	1	50	2	0	0	0
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	10.54	38	0.85	16	3	25	0	0	1	50	6	80	0	0
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	2.37	7	2.41	50	4	50	1	100	0	0	3	20	0	0
6	2,10,15,19,21,29,43,44,59,66,67,70	3.86	13	2.76	58	5	75	0	0	0	0	2	0	0	0
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	9.08	33	0.84	16	3	25	0	0	0	0	6	80	0	0
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	6.39	23	0.91	17	3	25	1	100	0	0	3	20	0	0
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	6.39	23	0.83	15	3	25	1	100	0	0	3	20	0	0
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	9.08	33	0.62	11	4	50	1	100	0	0	7	100	0	0
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	10.54	38	0.77	14	3	25	0	0	1	50	6	80	0	0
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	5.98	21	0.91	17	3	25	1	100	1	50	3	20	0	0
226	3,9,17,24,25,34,47,48,52,53,69,80	12.07	44	0.91	17	4	50	1	100	1	50	7	100	0	0
513	8,10,15,19,21,29,43,44,55,67,70,76,79	2.70	8	2.22	46	5	75	1	100	0	0	3	20	0	0
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	3.86	13	3.09	65	4	50	0	0	0	0	2	0	0	0
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	10.54	38	1.09	21	3	25	1	100	1	50	7	100	0	0
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	6.39	23	0.87	16	4	50	1	100	0	0	3	20	0	0
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	6.07	21	0.91	17	3	25	1	100	0	0	3	20	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	2.70	8	2.93	61	4	50	1	100	0	0	3	20	0	0
3	2,10,15,19,21,22,28,43,44,59,66,67,70	3.86	13	2.76	58	5	75	0	0	0	0	2	0	0	0
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	9.02	33	1.42	28	3	25	0	0	1	50	2	0	0	0
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	5.98	21	0.83	15	3	25	1	100	1	50	3	20	0	0
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	10.54	38	1.32	26	4	50	0	0	1	50	2	0	0	0
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	2.37	7	2.44	51	4	50	0	0	0	0	2	0	0	0
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	10.54	38	1.01	19	3	25	1	100	1	50	7	100	0	0
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	9.02	33	1.50	30	3	25	0	0	1	50	2	0	0	0
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	7.85	28	1.26	25	3	25	1	100	1	50	3	20	0	0
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	9.38	34	1.16	23	4	50	1	100	1	50	3	20	0	0
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	2.70	8	2.22	46	5	75	1	100	0	0	3	20	0	0
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	6.07	21	0.83	15	3	25	1	100	0	0	3	20	0	0
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	3.86	13	3.09	65	4	50	0	0	0	0	2	0	0	0
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	2.37	7	2.22	46	5	75	1	100	0	0	3	20	0	0
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	2.37	7	2.93	61	4	50	1	100	0	0	3	20	0	0
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	7.53	27	1.10	21	3	25	0	0	1	50	2	0	0	0
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	7.85	28	1.34	26	3	25	1	100	1	50	3	20	0	0
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	10.58	39	0.88	17	3	25	0	0	0	0	6	80	0	0
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	6.07	21	1.09	21	3	25	0	0	0	0	2	0	0	0
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	2.70	8	2.93	61	4	50	1	100	0	0	3	20	0	0
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	9.05	33	1.16	23	4	50	1	100	1	50	3	20	0	0
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	6.07	21	0.87	16	4	50	1	100	0	0	3	20	0	0
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	9.41	34	0.72	13	3	25	1	100	0	0	7	100	0	0
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	7.53	27	1.02	20	3	25	0	0	1	50	2	0	0	0
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	2.37	7	2.44	51	4	50	0	0	0	0	2	0	0	0
4	2,10,15,19,21,29,42,43,57,58,66,67,70	2.00	6	2.28	47	5	75	0	0	0	0	2	0	0	0
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	7.53	27	1.34	27	3	25	1	100	1	50	3	20	0	0
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	2.37	7	2.22	46	5	75	1	100	0	0	3	20	0	0
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	2.37	7	2.93	61	4	50	1	100	0	0	3	20	0	0
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	9.08	33	1.30	26	3	25	0	0	0	0	6	80	0	0
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	9.08	33	0.72	13	3	25	1	100	0	0	7	100	0	0
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	7.53	27	1.26	25	3	25	1	100	1	50	3	20	0	0
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	2.00	6	2.61	54	4	50	0	0	0	0	2	0	0	0
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	10.54	38	0.66	12	4	50	0	0	1	50	6	80	0	0
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	0.84	1	2.45	51	4	50	1	100	0	0	3	20	0	0
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	9.08	33	1.22	24	3	25	0	0	0	0	6	80	0	0
514	8,10,15,19,21,29,43,44,59,66,67,70,79	2.70	8	2.74	57	5	75	1	100	0	0	3	20	0	0
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	3.86	13	2.48	51	4	50	0	0	0	0	2	0	0	0
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	2.00	6	2.28	47	5	75	0	0	0	0	2	0	0	0
401	6,12,39,57,58,66,67,70	16.29	60	2.55	53	5	75	0	0	0	0	2	0	0	0
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	7.56	27	1.13	22	3	25	0	0	0	0	2	0	0	0
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	2.70	8	2.32	48	4	50	1	100	0	0	3	20	0	0
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	0.51	0	2.45	51	4	50	1	100	0	0	3	20	0	0
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	2.37	7	2.96	62	4	50	0	0	0	0	2	0	0	0
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	2.37	7	2.90	60	4	50	0	0	0	0	2	0	0	0
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	6.39	23	0.97	18	3	25	1	100	0	0	3	20	0	0
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	2.00	6	2.61	54	4	50	0	0	0	0	2	0	0	0
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	2.70	8	2.74	57	5	75	1	100	0	0	3	20	0	0
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	2.37	7	2.32	48	4	50	1	100	0	0	3	20	0	0
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	2.37	7	2.74	57	5	75	1	100	0	0	3	20	0	0
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	2.37	7	2.82	59	4	50	0	0	0	0	2	0	0	0
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	3.86	13	2.48	51	4	50	0	0	0	0	2	0	0	0
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	10.58	39	1.33	26	3	25	0	0	0	0	6	80	0	0
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	0.84	1	2.45	51	4	50	1	100	0	0	3	20	0	0
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	10.58	39	1.26	25	3	25	0	0	0	0	6	80	0	0
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	6.07	21	1.55	31	3	25	0	0	0	0	2	0	0	0
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	6.07	21	0.97	19	3	25	1	100	0	0	3	20	0	0
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	2.70	8	2.32	48	4	50	1	100	0	0	3	20	0	0
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	9.41	34	1.17	23	3	25	1	100	0	0	7	100	0	0
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	9.41	34	1.09	21	3	25	1	100	0	0	7	100	0	0
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	7.53	27	0.91	17	4	50	0	0	1	50	2	0	0	0
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	2.37	7	2.96	62	4	50	0	0	0	0	2	0	0	0
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	2.37	7	2.90	60	4	50	0	0	0	0	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	6.07	21	1.47	29	3	25	0	0	0	0	2	0	0	0
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	0.51	0	2.45	51	4	50	1	100	0	0	3	20	0	0
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	2.37	7	2.32	48	4	50	1	100	0	0	3	20	0	0
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	2.37	7	2.74	57	5	75	1	100	0	0	3	20	0	0
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	2.37	7	2.82	59	4	50	0	0	0	0	2	0	0	0
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	0.84	1	2.26	47	5	75	1	100	0	0	3	20	0	0
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	9.08	33	1.17	23	3	25	1	100	0	0	7	100	0	0
399	6,12,39,42,44,55,67,70,76	18.27	68	3.53	74	5	75	0	0	0	0	2	0	0	0
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	3.86	13	2.86	60	4	50	0	0	0	0	2	0	0	0
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	3.86	13	3.00	63	4	50	0	0	0	0	2	0	0	0
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	3.86	13	2.94	61	4	50	0	0	0	0	2	0	0	0
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	7.56	27	1.51	30	3	25	0	0	0	0	2	0	0	0
482	18,19,21,29,43,44,55,67,70,76,77,78,79	2.70	8	2.70	56	4	50	1	100	0	0	3	20	0	0
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0.51	0	2.48	51	4	50	0	0	0	0	2	0	0	0
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	9.08	33	1.10	21	3	25	1	100	0	0	7	100	0	0
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	7.56	27	1.59	32	3	25	0	0	0	0	2	0	0	0
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	2.70	8	2.84	59	4	50	1	100	0	0	3	20	0	0
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	2.70	8	2.77	58	4	50	1	100	0	0	3	20	0	0
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	6.39	23	1.34	27	3	25	1	100	0	0	3	20	0	0
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	0.51	0	2.26	47	5	75	1	100	0	0	3	20	0	0
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	2.36	7	3.41	72	4	50	0	0	0	0	2	0	0	0
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	0.84	1	2.26	47	5	75	1	100	0	0	3	20	0	0
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	6.39	23	1.42	28	3	25	1	100	0	0	3	20	0	0
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	3.86	13	2.86	60	4	50	0	0	0	0	2	0	0	0
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	2.37	7	2.84	59	4	50	1	100	0	0	3	20	0	0
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	2.37	7	3.34	70	4	50	0	0	0	0	2	0	0	0
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	3.86	13	3.00	63	4	50	0	0	0	0	2	0	0	0
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	3.86	13	2.94	61	4	50	0	0	0	0	2	0	0	0
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	2.37	7	2.78	58	4	50	1	100	0	0	3	20	0	0
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	2.70	8	2.70	56	4	50	1	100	0	0	3	20	0	0
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	2.70	8	2.84	59	4	50	1	100	0	0	3	20	0	0
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0.51	0	2.48	51	4	50	0	0	0	0	2	0	0	0
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	6.07	21	1.43	28	3	25	1	100	0	0	3	20	0	0
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	2.37	7	2.70	56	4	50	1	100	0	0	3	20	0	0
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	2.37	7	3.41	72	4	50	0	0	0	0	2	0	0	0
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	0.51	0	2.26	47	5	75	1	100	0	0	3	20	0	0
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	2.37	7	2.84	59	4	50	1	100	0	0	3	20	0	0
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	6.07	21	1.35	27	3	25	1	100	0	0	3	20	0	0
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	2.37	7	3.34	70	4	50	0	0	0	0	2	0	0	0
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	2.37	7	2.78	58	4	50	1	100	0	0	3	20	0	0
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	2.37	7	2.78	58	4	50	1	100	0	0	3	20	0	0
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	2.00	6	2.52	52	4	50	0	0	0	0	2	0	0	0
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	3.86	13	3.37	71	4	50	0	0	0	0	2	0	0	0
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	2.37	7	2.70	56	4	50	1	100	0	0	3	20	0	0
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	0.84	1	2.36	49	4	50	1	100	0	0	3	20	0	0
400	6,12,39,42,44,59,66,67,70	18.27	68	4.05	86	5	75	0	0	0	0	2	0	0	0
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	3.86	13	3.45	73	4	50	0	0	0	0	2	0	0	0
483	18,19,21,29,43,44,59,66,67,70,77,78,79	2.70	8	3.21	67	4	50	1	100	0	0	3	20	0	0
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0.51	0	2.93	61	4	50	0	0	0	0	2	0	0	0
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	2.70	8	3.29	69	4	50	1	100	0	0	3	20	0	0
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0.51	0	2.36	49	4	50	1	100	0	0	3	20	0	0
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0.51	0	2.85	59	4	50	0	0	0	0	2	0	0	0
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	3.86	13	3.37	71	4	50	0	0	0	0	2	0	0	0
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	2.00	6	2.52	52	4	50	0	0	0	0	2	0	0	0
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	3.86	13	3.45	73	4	50	0	0	0	0	2	0	0	0
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	2.37	7	3.29	69	4	50	1	100	0	0	3	20	0	0
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	2.70	8	3.21	67	4	50	1	100	0	0	3	20	0	0
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	0.84	1	2.36	49	4	50	1	100	0	0	3	20	0	0
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	2.70	8	3.29	69	4	50	1	100	0	0	3	20	0	0
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0.51	0	2.93	61	4	50	0	0	0	0	2	0	0	0
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	2.37	7	3.21	67	4	50	1	100	0	0	3	20	0	0
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0.51	0	2.36	49	4	50	1	100	0	0	3	20	0	0
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0.51	0	2.85	59	4	50	0	0	0	0	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	2.00	6	2.89	60	4	50	0	0	0	0	2	0	0	0
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	2.37	7	3.29	69	4	50	1	100	0	0	3	20	0	0
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	2.00	6	2.97	62	4	50	0	0	0	0	2	0	0	0
404	6,26,40,41,57,58,66,67,70	19.51	73	3.22	67	4	50	0	0	0	0	2	0	0	0
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	0.84	1	2.73	57	4	50	1	100	0	0	3	20	0	0
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	2.37	7	3.21	67	4	50	1	100	0	0	3	20	0	0
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	0.84	1	2.81	59	4	50	1	100	0	0	3	20	0	0
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	2.00	6	2.89	60	4	50	0	0	0	0	2	0	0	0
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0.51	0	2.81	59	4	50	1	100	0	0	3	20	0	0
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	2.00	6	2.97	62	4	50	0	0	0	0	2	0	0	0
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	0.84	1	2.73	57	4	50	1	100	0	0	3	20	0	0
397	6,12,27,40,41,57,58,66,67,70	19.15	71	2.74	57	6	100	0	0	0	0	2	0	0	0
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0.51	0	2.73	57	4	50	1	100	0	0	3	20	0	0
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	0.84	1	2.81	59	4	50	1	100	0	0	3	20	0	0
402	6,26,40,41,42,44,55,67,70,76	21.50	80	4.19	89	4	50	0	0	0	0	2	0	0	0
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0.51	0	2.81	59	4	50	1	100	0	0	3	20	0	0
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0.51	0	2.73	57	4	50	1	100	0	0	3	20	0	0
395	6,12,27,40,41,42,44,55,67,70,76	21.13	79	3.71	78	6	100	0	0	0	0	2	0	0	0
403	6,26,40,41,42,59,66,67,70	21.49	80	4.71	100	4	50	0	0	0	0	2	0	0	0
396	6,12,27,40,41,42,44,59,66,67,70	21.13	79	4.23	90	6	100	0	0	0	0	2	0	0	0
405	6,26,40,56,58,66,67,70	26.62	100	2.92	61	4	50	0	0	0	0	2	0	0	0
398	6,12,27,40,56,58,66,67,70	26.25	99	2.44	50	6	100	0	0	0	0	2	0	0	0
	MIN	0.51	0	0.12	0	2	0	0	0	0	0	2	0	0	0
	MAX	26.62	100	4.71	100	6	100	1	100	2	100	7	100	0	0
	RANGE	26.10	100	4.59	100	4	100	1	100	2	100	5	100	0	0

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
392	5,35,38,64,71,73	4	4.55	6	0.74	11	1.58	17	1	36	20	61.40	42	2	50	0	0
252	4,17,32,37,50,69,75,80	0	0.00	7	1.11	7	0.53	15	1	32	7	59.35	40	2	50	0	0
382	5,35,36,37,50,69,75,80	0	0.00	9	1.85	13	2.11	19	1	35	17	53.99	36	2	50	0	0
394	5,60,62,64	0	0.00	11	2.59	16	2.89	25	1	32	7	69.90	50	1	25	0	0
393	5,60,61,64	2	2.27	12	2.96	14	2.37	24	1	30	0	73.71	53	1	25	0	0
267	4,17,32,37,64,71,72,74,75	1	1.14	4	0.00	7	0.53	16	1	32	7	62.96	43	2	50	0	0
261	4,17,32,37,49,64,71,73	1	1.14	5	0.37	7	0.53	13	0	33	10	70.98	51	2	50	0	0
384	5,35,36,37,64,71,72,74,75	1	1.14	6	0.74	13	2.11	20	1	35	17	57.60	39	2	50	0	0
388	5,35,38,49,50,69,75,80	3	3.41	8	1.48	12	1.84	18	1	38	27	50.61	33	2	50	0	0
378	5,35,36,37,49,64,71,73	1	1.14	7	1.11	13	2.11	17	1	36	20	65.63	46	2	50	0	0
263	4,17,32,37,50,53,65,67,75	0	0.00	6	0.74	7	0.53	15	1	33	10	59.35	40	2	50	0	0
259	4,17,32,36,38,64,71,73	4	4.55	5	0.37	5	0.00	12	0	35	17	69.31	49	2	50	0	0
380	5,35,36,37,50,53,65,67,75	0	0.00	8	1.48	13	2.11	19	1	36	20	53.99	36	2	50	0	0
264	4,17,32,37,50,53,67,70,75,76,84	0	0.00	6	0.74	7	0.53	16	1	34	13	64.92	45	2	50	0	0
390	5,35,38,49,64,71,72,74,75	4	4.55	5	0.37	12	1.84	19	1	38	27	54.22	36	2	50	0	0
381	5,35,36,37,50,53,67,70,75,76,84	0	0.00	8	1.48	13	2.11	20	1	37	23	59.57	41	2	50	0	0
266	4,17,32,37,63,74,75,80	3	3.41	6	0.74	14	2.37	12	0	34	13	66.49	47	2	50	0	0
383	5,35,36,37,63,74,75,80	3	3.41	8	1.48	20	3.95	16	1	37	23	61.13	42	2	50	0	0
386	5,35,38,49,50,53,65,67,75	3	3.41	7	1.11	12	1.84	18	1	39	30	50.61	33	2	50	0	0
387	5,35,38,49,50,53,67,70,75,76,84	3	3.41	7	1.11	12	1.84	19	1	40	33	56.19	38	2	50	0	0
256	4,17,32,36,38,49,50,69,75,80	3	3.41	7	1.11	6	0.26	13	0	36	20	58.51	40	2	50	0	0
389	5,35,38,49,63,74,75,80	6	6.82	7	1.11	19	3.68	15	1	40	33	57.75	39	2	50	0	0
391	5,35,38,63,72,73,80	6	6.82	8	1.48	18	3.42	13	0	41	37	64.93	45	2	50	0	0
258	4,17,32,36,38,49,64,71,72,74,75	4	4.55	4	0.00	6	0.26	14	0	36	20	62.12	43	2	50	0	0
118	2,8,9,17,32,37,50,69,75,80,81	1	1.14	12	2.96	13	2.11	20	1	40	33	62.96	43	1	25	0	0
241	3,9,17,32,37,50,69,75,80	4	4.55	14	3.70	14	2.37	22	1	36	20	52.79	35	1	25	0	0
413	9,17,32,37,50,69,75,79,80,81	0	0.00	9	1.85	16	2.89	23	1	34	13	63.48	44	1	25	0	0
254	4,17,32,36,38,49,50,53,65,67,75	3	3.41	6	0.74	6	0.26	13	0	37	23	58.51	40	2	50	0	0
260	4,17,32,37,49,63,72,73,80	3	3.41	7	1.11	14	2.37	9	0	38	27	74.51	54	2	50	0	0
255	4,17,32,36,38,49,50,53,67,70,75,76,84	3	3.41	6	0.74	6	0.26	14	0	38	27	64.09	44	2	50	0	0
120	2,8,9,17,32,37,64,71,72,74,75,81	2	2.27	9	1.85	13	2.11	21	1	40	33	66.57	47	1	25	0	0
377	5,35,36,37,49,63,72,73,80	3	3.41	9	1.85	20	3.95	13	0	41	37	69.16	49	2	50	0	0
114	2,8,9,17,32,37,49,64,71,73,81	2	2.27	10	2.22	13	2.11	18	1	41	37	74.59	54	1	25	0	0
243	3,9,17,32,37,64,71,72,74,75	5	5.68	11	2.59	14	2.37	23	1	36	20	56.40	38	1	25	0	0
408	9,17,32,37,64,71,72,74,75,79,81	1	1.14	6	0.74	16	2.89	24	1	34	13	67.09	47	1	25	0	0
257	4,17,32,36,38,49,63,34,74,75,80	6	6.82	6	0.74	13	2.11	10	0	38	27	65.65	46	2	50	0	0
237	3,9,17,32,37,49,64,71,73	5	5.68	12	2.96	14	2.37	20	1	37	23	64.43	45	1	25	0	0
407	9,17,32,37,49,64,71,73,79,81	1	1.14	7	1.11	16	2.89	21	1	35	17	75.11	54	1	25	0	0
253	4,17,32,36,38,36,34,72,73,80	6	6.82	7	1.11	12	1.84	8	0	40	33	72.84	52	2	50	0	0
117	2,8,9,17,32,37,50,53,65,67,71,75,81	1	1.14	11	2.59	13	2.11	21	1	40	33	62.96	43	1	25	0	0
415	9,17,32,37,50,53,65,67,71,75,79,81	0	0.00	8	1.48	16	2.89	23	1	34	13	63.48	44	1	25	0	0
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	1	1.14	11	2.59	13	2.11	21	1	41	37	68.53	48	1	25	0	0
262	4,17,32,37,50,53,55,59,66,67,70,75,84	0	0.00	14	3.70	15	2.63	20	1	40	33	82.91	61	3	75	0	0
112	2,8,9,17,32,36,38,64,71,73,81	5	5.68	10	2.22	11	1.58	18	1	43	43	72.92	52	1	25	0	0
240	3,9,17,32,37,50,53,65,67,75	4	4.55	13	3.33	14	2.37	22	1	37	23	52.79	35	1	25	0	0
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	0	0.00	8	1.48	16	2.89	24	1	35	17	69.06	49	1	25	0	0
235	3,9,17,32,36,38,64,71,73	8	9.09	12	2.96	12	1.84	19	1	39	30	62.75	43	1	25	0	0
406	9,17,32,36,38,64,71,73,79,81	4	4.55	7	1.11	14	2.37	20	1	37	23	73.44	53	1	25	0	0
379	5,35,36,37,50,53,55,59,66,67,70,75,84	0	0.00	16	4.44	21	4.21	24	1	43	43	77.56	56	3	75	0	0
238	3,9,17,32,37,50,35,67,70,75,76,84	4	4.55	13	3.33	14	2.37	23	1	38	27	58.37	39	1	25	0	0
119	2,8,9,17,32,37,63,74,75,80,81	4	4.55	11	2.59	20	3.95	18	1	42	40	70.10	50	1	25	0	0
242	3,9,17,32,37,63,74,75,80	7	7.95	13	3.33	21	4.21	19	1	38	27	59.93	41	1	25	0	0
410	9,17,32,37,63,74,75,79,80,81	3	3.41	8	1.48	23	4.74	20	1	36	20	70.62	50	1	25	0	0
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	12	13.64	30	9.63	18	3.42	25	1	43	43	47.83	30	1	25	0	0
385	5,35,38,49,50,53,55,59,66,67,70,75,84	3	3.41	15	4.07	20	3.95	23	1	46	53	74.18	53	3	75	0	0
246	4,17,24,25,31,33,45,47,48,52,65,67	4	4.55	10	2.22	13	2.11	21	1	47	57	44.58	27	1	25	0	0
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	4	4.55	12	2.96	12	1.84	18	1	44	47	62.12	43	1	25	0	0
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	12	13.64	30	9.63	18	3.42	26	1	45	50	53.40	35	1	25	0	0
232	3,9,17,32,36,38,49,50,69,75,80	7	7.95	14	3.70	13	2.11	20	1	40	33	51.95	34	1	25	0	0
414	9,17,32,36,38,49,50,69,75,71,79,80,81	3	3.41	9	1.85	15	2.63	21	1	38	27	62.64	43	1	25	0	0
247	4,17,24,25,31,33,47,48,52,67,70,76,84	4	4.55	10	2.22	13	2.11	22	1	49	63	50.16	32	1	25	0	0
306	4,9,11,14,20,29,43,44,55,67,70,76,83	2	2.27	11	2.59	9	1.05	12	0	41	37	95.09	72	2	50	0	0
18	2,7,13,28,43,44,55,67,70,76	2	2.27	12	2.96	15	2.63	16	1	39	30	85.35	63	1	25	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	13	14.77	33	10.74	22	4.47	28	1	43	43	44.01	27	0	0	0	0
354	4,9,14,20,29,43,44,55,67,70,76,78,81	2	2.27	11	2.59	9	1.05	12	0	42	40	87.18	65	2	50	0	0
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	5	5.68	9	1.85	12	1.84	19	1	44	47	65.73	46	1	25	0	0
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	12	13.64	30	9.63	25	5.26	31	2	37	23	44.53	27	0	0	0	0
233	3,9,17,32,36,38,49,64,71,72,74,75	8	9.09	11	2.59	13	2.11	21	1	40	33	55.57	37	1	25	0	0
409	9,17,32,36,38,49,64,71,72,74,75,79,81	4	4.55	6	0.74	15	2.63	22	1	38	27	66.25	46	1	25	0	0
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	13	14.77	33	10.74	22	4.47	29	2	45	50	49.59	32	0	0	0	0
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	4	4.55	9	1.85	10	1.32	14	0	41	37	92.68	70	2	50	0	0
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	12	13.64	30	9.63	25	5.26	32	2	39	30	50.11	32	0	0	0	0
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	4	4.55	9	1.85	10	1.32	14	0	42	40	84.77	63	2	50	0	0
149	3,11,16,23,25,31,33,45,47,48,52,65,67	16	18.18	35	11.48	23	4.74	30	2	42	40	33.85	18	0	0	0	0
276	4,7,8,9,13,28,43,44,55,67,70,76,81	1	1.14	11	2.59	13	2.11	15	1	39	30	99.01	75	2	50	0	0
15	2,10,20,29,43,44,55,67,70,76	4	4.55	11	2.59	12	1.84	13	0	41	37	83.86	62	1	25	0	0
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	4	4.55	11	2.59	12	1.84	19	1	44	47	62.12	43	1	25	0	0
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	16	18.18	35	11.48	23	4.74	31	2	43	43	39.42	23	0	0	0	0
80	2,8,14,20,29,43,44,55,67,70,76,78	3	3.41	14	3.70	13	2.11	15	1	44	47	83.37	61	1	25	0	0
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	3	3.41	8	1.48	15	2.63	21	1	38	27	62.64	43	1	25	0	0
113	2,8,9,17,32,37,49,63,72,73,80,81	4	4.55	12	2.96	20	3.95	15	1	46	53	78.12	57	1	25	0	0
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	4	4.55	11	2.59	12	1.84	19	1	45	50	67.70	48	1	25	0	0
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	3	3.41	14	3.70	13	2.11	15	1	43	43	91.28	68	1	25	0	0
500	14,20,29,43,44,55,67,70,76,78,79	2	2.27	11	2.59	16	2.89	18	1	38	27	83.89	62	1	25	0	0
230	3,9,17,32,36,38,49,50,53,65,67,75	7	7.95	13	3.33	13	2.11	20	1	41	37	51.95	34	1	25	0	0
236	3,9,17,32,37,49,63,72,73,80	7	7.95	14	3.70	21	4.21	16	1	42	40	67.96	48	1	25	0	0
412	9,17,32,37,49,63,72,73,79,80,81	3	3.41	9	1.85	23	4.74	17	1	40	33	78.64	57	1	25	0	0
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	3	3.41	8	1.48	15	2.63	22	1	39	30	68.22	48	1	25	0	0
497	11,14,20,29,43,44,55,67,70,76,79,81,83	2	2.27	11	2.59	16	2.89	18	1	37	23	91.80	69	1	25	0	0
12	2,10,20,22,28,43,44,55,67,70,76	6	6.82	9	1.85	13	2.11	15	1	41	37	81.45	60	1	25	0	0
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	7	7.95	13	3.33	13	2.11	21	1	42	40	57.53	39	1	25	0	0
307	4,9,11,14,20,29,43,44,59,66,67,70,83	2	2.27	19	5.56	15	2.63	15	1	43	43	94.59	71	2	50	0	0
77	2,8,14,20,22,28,43,44,55,67,70,76,78	5	5.68	12	2.96	14	2.37	17	1	44	47	80.96	59	1	25	0	0
19	2,7,13,28,43,44,59,66,67,70	2	2.27	20	5.93	21	4.21	19	1	41	37	84.84	63	1	25	0	0
355	4,9,14,20,29,43,44,59,66,67,70,78,81	2	2.27	19	5.56	15	2.63	15	1	44	47	86.67	64	2	50	0	0
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	5	5.68	12	2.96	14	2.37	17	1	43	43	88.87	66	1	25	0	0
136	3,11,14,20,29,43,44,55,67,70,76,83	6	6.82	16	4.44	14	2.37	17	1	42	40	81.11	59	1	25	0	0
506	14,20,22,28,43,44,55,67,70,76,78,79	4	4.55	9	1.85	17	3.16	20	1	38	27	81.48	60	1	25	0	0
111	2,8,9,17,32,36,38,63,72,73,80,81	7	7.95	12	2.96	18	3.42	14	0	48	60	76.45	55	1	25	0	0
525	7,8,13,28,43,44,55,67,70,76,79	1	1.14	11	2.59	20	3.95	21	1	35	17	95.71	72	1	25	0	0
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	1	1.14	19	5.56	21	4.21	25	1	46	53	86.52	64	2	50	0	0
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	4	4.55	9	1.85	17	3.16	20	1	37	23	89.39	67	1	25	0	0
181	3,14,20,29,43,44,55,67,70,76,78,81	6	6.82	16	4.44	14	2.37	17	1	43	43	73.20	52	1	25	0	0
234	3,9,17,32,36,38,63,72,73,80	10	11.36	14	3.70	19	3.68	15	1	44	47	66.28	46	1	25	0	0
411	9,17,32,36,38,63,72,73,79,80,81	6	6.82	9	1.85	21	4.21	16	1	42	40	76.97	56	1	25	0	0
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	4	4.55	17	4.81	16	2.89	17	1	43	43	92.18	69	2	50	0	0
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	16	18.18	33	10.74	16	2.89	21	1	47	57	41.99	25	1	25	0	0
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	16	18.18	33	10.74	16	2.89	21	1	47	57	41.99	25	1	25	0	0
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	0	0.00	16	4.44	24	5.00	28	1	40	33	87.05	65	2	50	0	0
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	3	3.41	13	3.33	13	2.11	14	0	42	40	105.75	81	2	50	0	0
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	12	13.64	31	10.00	19	3.68	26	1	44	47	47.83	30	1	25	0	0
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	4	4.55	21	6.30	22	4.47	27	1	43	43	76.36	55	2	50	0	0
323	4,9,11,16,23,25,34,47,48,52,65,67	13	14.77	47	15.93	47	11.05	67	4	42	40	41.24	24	1	25	0	0
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	4	4.55	17	4.81	16	2.89	17	1	44	47	84.27	62	2	50	0	0
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	16	18.18	33	10.74	16	2.89	21	1	48	60	34.08	18	1	25	0	0
133	3,11,14,20,22,28,43,44,55,67,70,76,83	8	9.09	14	3.70	15	2.63	19	1	42	40	78.70	57	1	25	0	0
277	4,7,8,9,13,28,43,44,59,66,67,70,81	1	1.14	19	5.56	19	3.68	18	1	41	37	98.50	75	2	50	0	0
16	2,10,20,29,43,44,59,66,67,70	4	4.55	19	5.56	18	3.42	16	1	43	43	83.35	61	1	25	0	0
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	16	18.18	33	10.74	16	2.89	22	1	49	63	47.57	30	1	25	0	0
244	4,17,24,25,31,33,45,47,48,52,53,69,80	4	4.55	11	2.59	14	2.37	22	1	48	60	44.58	27	1	25	0	0
203	3,7,8,13,28,43,44,55,67,70,76,81	5	5.68	16	4.44	18	3.42	20	1	39	30	85.02	63	1	25	0	0
250	4,17,24,25,34,47,48,52,65,67	5	5.68	27	8.52	42	9.74	63	4	46	53	37.99	22	1	25	0	0
81	2,8,14,20,29,43,44,59,66,67,70,78	3	3.41	22	6.67	19	3.68	18	1	46	53	82.86	61	1	25	0	0
178	3,14,20,22,28,43,44,55,67,70,76,78,81	8	9.09	14	3.70	15	2.63	19	1	43	43	70.79	50	1	25	0	0
519	8,10,20,29,43,44,55,67,70,76,79	3	3.41	10	2.22	17	3.16	18	1	37	23	94.16	71	1	25	0	0
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	13	14.77	47	15.93	47	11.05	68	4	44	47	46.81	29	1	25	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	3	3.41	22	6.67	19	3.68	18	1	45	50	90.77	68	1	25	0	0
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	16	18.18	33	10.74	16	2.89	22	1	50	67	39.66	23	1	25	0	0
501	14,20,29,43,44,59,66,67,70,78,79	2	2.27	19	5.56	22	4.47	21	1	40	33	83.38	61	1	25	0	0
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	7	7.95	15	4.07	19	3.68	16	1	47	57	112.25	87	2	50	0	0
498	11,14,20,29,43,44,59,66,67,70,79,81,83	2	2.27	19	5.56	22	4.47	21	1	39	30	91.30	68	1	25	0	0
251	4,17,24,25,34,47,48,52,67,70,76,84	5	5.68	27	8.52	42	9.74	64	4	48	60	43.57	26	1	25	0	0
13	2,10,20,22,28,43,44,59,66,67,70	6	6.82	17	4.81	19	3.68	18	1	43	43	80.94	59	1	25	0	0
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	7	7.95	15	4.07	19	3.68	16	1	48	60	104.34	80	2	50	0	0
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	17	19.32	36	11.85	20	3.95	24	1	47	57	38.18	22	0	0	0	0
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	17	19.32	36	11.85	20	3.95	24	1	49	63	30.27	15	0	0	0	0
17	2,7,13,28,42,43,57,58,66,67,70	7	7.95	16	4.44	25	5.26	20	1	46	53	102.50	78	1	25	0	0
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	5	5.68	15	4.07	19	3.68	27	1	53	77	48.19	30	0	0	0	0
78	2,8,14,20,22,28,43,44,59,66,67,70,78	5	5.68	20	5.93	20	3.95	20	1	46	53	80.46	59	1	25	0	0
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	13	14.77	34	11.11	23	4.74	29	2	44	47	44.01	27	0	0	0	0
522	8,10,20,22,28,43,44,55,67,70,76,79	5	5.68	8	1.48	18	3.42	20	1	37	23	91.75	69	1	25	0	0
53	2,8,11,16,23,25,34,47,48,52,65,67,81	14	15.91	50	17.04	51	12.11	70	4	42	40	37.42	21	0	0	0	0
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	12	13.64	38	12.59	26	5.53	30	2	50	67	71.39	51	2	50	0	0
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	16	18.18	33	10.74	23	4.74	27	1	41	37	38.70	22	0	0	0	0
450	23,25,31,33,45,47,48,52,65,67,77,78,82	16	18.18	33	10.74	23	4.74	27	1	43	43	30.79	15	0	0	0	0
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	5	5.68	20	5.93	20	3.95	20	1	45	50	88.37	66	1	25	0	0
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	4	4.55	12	2.96	22	4.47	29	2	47	57	48.72	31	0	0	0	0
219	3,8,10,20,29,43,44,55,67,70,76,81	7	7.95	15	4.07	15	2.63	17	1	41	37	83.47	62	1	25	0	0
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	23	26.14	53	18.15	32	7.11	18	1	39	30	58.20	39	1	25	0	0
137	3,11,14,20,29,43,44,59,66,67,70,83	6	6.82	24	7.41	20	3.95	20	1	44	47	80.61	59	1	25	0	0
507	14,20,22,28,43,44,59,66,67,70,78,79	4	4.55	17	4.81	23	4.74	23	1	40	33	80.98	59	1	25	0	0
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	12	13.64	31	10.00	26	5.53	32	2	38	27	44.53	27	0	0	0	0
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	25	28.41	28	8.89	12	1.84	21	1	47	57	57.82	39	1	25	0	0
430	11,16,23,25,34,47,48,52,65,67,79,81	13	14.77	47	15.93	54	12.89	73	5	36	20	37.94	21	0	0	0	0
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	23	26.14	53	18.15	32	7.11	18	1	38	27	70.59	50	1	25	0	0
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	17	19.32	36	11.85	20	3.95	25	1	49	63	43.76	27	0	0	0	0
526	7,8,13,28,43,44,59,66,67,70,79	1	1.14	19	5.56	26	5.53	24	1	37	23	95.21	72	1	25	0	0
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	17	19.32	36	11.85	20	3.95	25	1	51	70	35.85	20	0	0	0	0
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	4	4.55	17	4.81	23	4.74	23	1	39	30	88.89	66	1	25	0	0
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	5	5.68	15	4.07	19	3.68	28	1	55	83	53.77	35	0	0	0	0
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	9	10.23	13	3.33	20	3.95	18	1	48	60	109.84	85	2	50	0	0
182	3,14,20,29,43,44,59,66,67,70,78,81	6	6.82	24	7.41	20	3.95	20	1	45	50	72.70	52	1	25	0	0
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	14	15.91	50	17.04	51	12.11	71	5	44	47	43.00	26	0	0	0	0
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	16	18.18	33	10.74	23	4.74	28	1	43	43	44.28	27	0	0	0	0
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	16	18.18	33	10.74	23	4.74	28	1	45	50	36.37	20	0	0	0	0
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	4	4.55	18	5.19	21	4.21	26	1	55	83	68.15	48	2	50	0	0
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	4	4.55	12	2.96	22	4.47	30	2	49	63	54.30	36	0	0	0	0
14	2,10,20,29,42,43,57,58,66,67,70	9	10.23	15	4.07	22	4.47	17	1	47	57	101.01	77	1	25	0	0
224	3,9,17,24,25,31,33,45,47,48,52,65,67	8	9.09	17	4.81	20	3.95	28	1	52	73	38.03	22	0	0	0	0
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	9	10.23	13	3.33	20	3.95	18	1	49	63	101.93	78	2	50	0	0
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	3	3.41	21	6.30	19	3.68	17	1	44	47	105.24	81	2	50	0	0
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	25	28.41	28	8.89	12	1.84	22	1	49	63	63.40	44	1	25	0	0
151	3,11,16,23,25,31,33,45,47,52,53,69,80	16	18.18	36	11.85	24	5.00	31	2	43	43	33.85	18	0	0	0	0
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	23	26.14	53	18.15	32	7.11	19	1	40	33	76.17	55	1	25	0	0
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	20	22.73	38	12.59	21	4.21	26	1	47	57	28.01	13	0	0	0	0
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	6	6.82	15	4.07	23	4.74	19	1	46	53	116.16	90	2	50	0	0
154	3,11,16,23,25,34,47,48,52,65,67	17	19.32	52	17.78	52	12.37	72	5	41	37	27.26	12	0	0	0	0
216	3,8,10,20,22,28,43,44,55,67,70,76,81	9	10.23	13	3.33	16	2.89	19	1	41	37	81.06	59	1	25	0	0
79	2,8,14,20,29,42,43,57,58,66,67,70,78	8	9.09	18	5.19	23	4.74	19	1	50	67	100.52	77	1	25	0	0
134	3,11,14,20,22,28,43,44,59,66,67,70,83	8	9.09	22	6.67	21	4.21	22	1	44	47	78.20	57	1	25	0	0
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	8	9.09	17	4.81	20	3.95	29	2	53	77	43.61	26	0	0	0	0
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	8	9.09	18	5.19	23	4.74	19	1	49	63	108.43	83	1	25	0	0
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	23	26.14	53	18.15	32	7.11	19	1	41	37	68.26	48	1	25	0	0
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	20	22.73	38	12.59	21	4.21	27	1	48	60	33.59	18	0	0	0	0
9	2,10,15,19,30,33,45,47,48,52,65,67	25	28.41	53	18.15	35	7.89	21	1	36	20	59.38	40	0	0	0	0
155	3,11,16,23,25,34,47,48,52,67,70,76,84	17	19.32	52	17.78	52	12.37	73	5	42	40	32.84	17	0	0	0	0
431	11,16,23,25,34,47,48,52,67,70,76,84	17	19.32	52	17.78	52	12.37	73	5	42	40	32.84	17	0	0	0	0
204	3,7,8,13,28,43,44,59,66,67,70,81	5	5.68	24	7.41	24	5.00	23	1	41	37	84.52	62	1	25	0	0
502	14,20,29,42,43,57,58,66,67,70,78,79	7	7.95	15	4.07	26	5.53	22	1	44	47	101.05	77	1	25	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
179	3,14,20,22,28,43,44,59,66,67,70,78,81	8	9.09	22	6.67	21	4.21	22	1	45	50	70.29	50	1	25	0	0
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	10	11.36	33	10.74	38	8.68	44	3	44	47	86.86	65	1	25	0	0
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	20	22.73	38	12.59	21	4.21	26	1	49	63	20.10	6	0	0	0	0
520	8,10,20,29,43,44,59,66,67,70,79	3	3.41	18	5.19	23	4.74	21	1	39	30	93.65	70	1	25	0	0
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	7	7.95	15	4.07	26	5.53	22	1	43	43	108.96	84	1	25	0	0
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	13	14.77	41	13.70	30	6.58	33	2	51	70	67.58	48	1	25	0	0
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	24	27.27	56	19.26	36	8.16	21	1	38	27	66.78	47	0	0	0	0
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	24	27.27	56	19.26	36	8.16	21	1	40	33	58.87	40	0	0	0	0
11	2,10,20,22,28,42,43,57,58,66,67,70	11	12.50	13	3.33	23	4.74	19	1	48	60	98.60	75	1	25	0	0
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	20	22.73	38	12.59	21	4.21	27	1	50	67	25.68	11	0	0	0	0
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	25	28.41	53	18.15	35	7.89	22	1	38	27	64.96	45	0	0	0	0
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	12	13.64	38	12.59	33	7.37	36	2	45	50	68.10	48	1	25	0	0
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	23	26.14	53	18.15	39	8.95	24	1	32	7	67.30	47	0	0	0	0
470	14,15,19,30,33,45,47,48,52,65,67,78,79	23	26.14	53	18.15	39	8.95	24	1	34	13	59.39	40	0	0	0	0
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	10	11.36	16	4.44	24	5.00	21	1	51	70	98.12	74	1	25	0	0
135	3,11,14,20,29,42,43,57,58,66,67,70,83	11	12.50	20	5.93	24	5.00	21	1	48	60	98.27	75	1	25	0	0
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	10	11.36	16	4.44	24	5.00	21	1	50	67	106.03	81	1	25	0	0
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	10	11.36	33	10.74	38	8.68	45	3	46	53	92.44	69	1	25	0	0
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	24	27.27	56	19.26	36	8.16	22	1	40	33	72.36	52	0	0	0	0
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	24	27.27	56	19.26	36	8.16	22	1	42	40	64.45	45	0	0	0	0
523	8,10,20,22,28,43,44,59,66,67,70,79	5	5.68	16	4.44	24	5.00	23	1	39	30	91.24	68	1	25	0	0
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	16	18.18	43	14.44	31	6.84	35	2	49	63	57.41	39	1	25	0	0
508	14,20,22,28,42,43,57,58,66,67,70,78,79	9	10.23	13	3.33	27	5.79	24	1	45	50	98.64	75	1	25	0	0
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	4	4.55	19	5.56	20	3.95	23	1	50	67	85.69	63	2	50	0	0
220	3,8,10,20,29,43,44,59,66,67,70,81	7	7.95	23	7.04	21	4.21	20	1	43	43	82.96	61	1	25	0	0
527	7,8,13,28,42,43,57,58,66,67,70,79	6	6.82	15	4.07	30	6.58	25	1	42	40	112.87	87	1	25	0	0
180	3,14,20,29,42,43,57,58,66,67,70,78,81	11	12.50	20	5.93	24	5.00	21	1	49	63	90.36	68	1	25	0	0
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	9	10.23	13	3.33	27	5.79	24	1	44	47	106.55	82	1	25	0	0
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	23	26.14	53	18.15	39	8.95	25	1	34	13	72.88	52	0	0	0	0
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	23	26.14	53	18.15	39	8.95	25	1	36	20	64.97	45	0	0	0	0
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	3	3.41	16	4.44	23	4.74	26	1	44	47	86.21	64	2	50	0	0
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	8	9.09	17	4.81	23	4.74	18	1	48	60	122.90	96	2	50	0	0
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	24	27.27	52	17.78	33	7.37	20	1	38	27	72.97	52	1	25	0	0
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	27	30.68	58	20.00	37	8.42	23	1	38	27	56.61	38	0	0	0	0
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	7	7.95	21	6.30	21	4.21	25	1	47	57	75.52	55	2	50	0	0
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	16	18.18	34	11.11	17	3.16	22	1	48	60	41.99	25	1	25	0	0
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	17	19.32	50	17.04	45	10.53	63	4	46	53	35.40	19	1	25	0	0
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	26	29.55	27	8.52	13	2.11	23	1	48	60	60.20	41	1	25	0	0
321	4,9,11,16,23,25,34,47,48,52,53,69,80	13	14.77	48	16.30	48	11.32	68	4	43	43	41.24	24	1	25	0	0
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	13	14.77	18	5.19	25	5.26	23	1	49	63	95.86	72	1	25	0	0
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	27	30.68	58	20.00	37	8.42	24	1	39	30	62.19	43	0	0	0	0
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	16	18.18	34	11.11	17	3.16	22	1	49	63	34.08	18	1	25	0	0
217	3,8,10,20,22,28,43,44,59,66,67,70,81	9	10.23	21	6.30	22	4.47	22	1	43	43	80.55	59	1	25	0	0
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	17	19.32	50	17.04	45	10.53	63	4	47	57	27.49	12	1	25	0	0
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	24	27.27	52	17.78	33	7.37	21	1	40	33	78.55	57	1	25	0	0
521	8,10,20,29,42,43,57,58,66,67,70,79	8	9.09	14	3.70	27	5.79	22	1	43	43	111.31	86	1	25	0	0
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	27	30.68	58	20.00	37	8.42	23	1	40	33	48.70	31	0	0	0	0
202	3,7,8,13,28,42,43,57,58,66,67,70,81	10	11.36	20	5.93	28	6.05	24	1	46	53	102.18	78	1	25	0	0
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	13	14.77	18	5.19	25	5.26	23	1	50	67	87.95	65	1	25	0	0
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	17	19.32	50	17.04	45	10.53	64	4	48	60	40.98	24	1	25	0	0
248	4,17,24,25,34,47,48,52,53,69,80	5	5.68	28	8.89	43	10.00	64	4	47	57	37.99	22	1	25	0	0
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	26	29.55	27	8.52	13	2.11	24	1	50	67	65.78	46	1	25	0	0
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	27	30.68	58	20.00	37	8.42	24	1	41	37	54.28	36	0	0	0	0
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	17	19.32	50	17.04	45	10.53	64	4	49	63	33.07	17	1	25	0	0
510	8,10,15,19,30,33,45,47,48,52,65,67,79	24	27.27	52	17.78	40	9.21	26	1	32	7	69.68	49	0	0	0	0
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	17	19.32	37	12.22	21	4.21	25	1	48	60	38.18	22	0	0	0	0
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	17	19.32	37	12.22	21	4.21	25	1	50	67	30.27	15	0	0	0	0
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	5	5.68	16	4.44	20	3.95	28	1	54	80	48.19	30	0	0	0	0
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	18	20.45	53	18.15	49	11.58	66	4	46	53	31.59	16	0	0	0	0
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	16	18.18	41	13.70	24	5.00	26	1	54	80	65.56	46	2	50	0	0
218	3,8,10,20,29,42,43,57,58,66,67,70,81	12	13.64	19	5.56	25	5.26	21	1	47	57	100.62	77	1	25	0	0
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	6	6.82	32	10.37	48	11.32	69	4	52	73	41.60	25	0	0	0	0
524	8,10,20,22,28,42,43,57,58,66,67,70,79	10	11.36	12	2.96	28	6.05	24	1	44	47	108.91	84	1	25	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	6	6.82	32	10.37	48	11.32	70	4	52	73	47.18	30	0	0	0	0
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	24	27.27	52	17.78	40	9.21	27	1	34	13	75.26	54	0	0	0	0
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	14	15.91	51	17.41	52	12.37	71	5	43	43	37.42	21	0	0	0	0
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	16	18.18	34	11.11	24	5.00	28	1	42	40	38.70	22	0	0	0	0
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	16	18.18	34	11.11	24	5.00	28	1	44	47	30.79	15	0	0	0	0
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	13	14.77	55	18.89	55	13.16	72	5	49	63	64.80	45	2	50	0	0
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	4	4.55	13	3.33	23	4.74	30	2	48	60	48.72	31	0	0	0	0
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	17	19.32	50	17.04	52	12.37	69	4	40	33	32.11	16	0	0	0	0
438	23,25,34,47,48,52,65,67,78,79,82	17	19.32	50	17.04	52	12.37	69	4	42	40	24.20	9	0	0	0	0
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	16	18.18	41	13.70	24	5.00	26	1	55	83	57.65	39	2	50	0	0
425	9,17,24,25,34,47,48,52,65,67,71,79,81	5	5.68	29	9.26	51	12.11	71	5	46	53	42.13	25	0	0	0	0
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	25	28.41	29	9.26	13	2.11	22	1	48	60	57.82	39	1	25	0	0
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	5	5.68	29	9.26	51	12.11	72	5	46	53	47.71	30	0	0	0	0
429	11,16,23,25,34,47,48,52,53,69,79,80,81	13	14.77	48	16.30	55	13.16	74	5	37	23	37.94	21	0	0	0	0
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	23	26.14	54	18.52	33	7.37	19	1	39	30	70.59	50	1	25	0	0
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	26	29.55	45	15.19	41	9.47	63	4	46	53	51.23	33	1	25	0	0
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	18	20.45	53	18.15	49	11.58	67	4	48	60	37.17	21	0	0	0	0
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	18	20.45	53	18.15	49	11.58	67	4	50	67	29.26	14	0	0	0	0
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	37	42.05	71	24.81	32	7.11	20	1	38	27	69.18	49	1	25	0	0
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	28	31.82	57	19.63	38	8.68	25	1	37	23	59.00	40	0	0	0	0
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	23	26.14	54	18.52	33	7.37	19	1	40	33	62.68	43	1	25	0	0
228	3,9,17,24,25,34,47,48,52,67,70,76,84	9	10.23	34	11.11	49	11.58	71	5	50	67	37.02	21	0	0	0	0
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	17	19.32	50	17.04	52	12.37	70	4	42	40	37.69	21	0	0	0	0
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	26	29.55	45	15.19	41	9.47	63	4	47	57	43.32	26	1	25	0	0
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	17	19.32	50	17.04	52	12.37	70	4	44	47	29.78	14	0	0	0	0
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	5	5.68	35	11.48	50	11.84	68	4	54	80	61.56	42	2	50	0	0
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	8	9.09	18	5.19	21	4.21	29	2	53	77	38.03	22	0	0	0	0
227	3,9,17,24,25,34,47,48,52,65,67	9	10.23	34	11.11	49	11.58	70	4	51	70	31.44	16	0	0	0	0
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	20	22.73	39	12.96	22	4.47	27	1	48	60	28.01	13	0	0	0	0
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	14	15.91	17	4.81	26	5.53	23	1	48	60	98.22	74	1	25	0	0
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	26	29.55	45	15.19	41	9.47	64	4	48	60	56.81	38	1	25	0	0
152	3,11,16,23,25,34,47,48,52,53,69,80	17	19.32	53	18.15	53	12.63	73	5	42	40	27.26	12	0	0	0	0
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	28	31.82	57	19.63	38	8.68	26	1	38	27	64.57	45	0	0	0	0
172	3,11,23,25,34,47,48,52,65,67,77,82,83	21	23.86	55	18.89	50	11.84	68	4	46	53	21.43	7	0	0	0	0
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	26	29.55	45	15.19	41	9.47	64	4	49	63	48.90	31	1	25	0	0
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	37	42.05	71	24.81	32	7.11	21	1	40	33	74.76	54	1	25	0	0
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	17	19.32	44	14.81	28	6.05	29	2	56	87	53.84	35	1	25	0	0
7	2,10,15,19,30,33,45,47,48,52,53,69,80	25	28.41	54	18.52	36	8.16	22	1	37	23	59.38	40	0	0	0	0
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	21	23.86	55	18.89	50	11.84	69	4	47	57	27.00	12	0	0	0	0
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	5	5.68	23	7.04	27	5.79	32	2	60	100	71.76	51	1	25	0	0
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	20	22.73	39	12.96	22	4.47	27	1	50	67	20.10	6	0	0	0	0
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	17	19.32	44	14.81	28	6.05	29	2	55	83	61.75	42	1	25	0	0
199	3,23,25,34,47,48,52,65,67,78,81,82	21	23.86	55	18.89	50	11.84	68	4	48	60	13.51	0	0	0	0	0
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	16	18.18	41	13.70	31	6.84	32	2	50	67	54.36	36	1	25	0	0
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	4	4.55	20	5.93	30	6.58	34	2	54	80	72.29	52	1	25	0	0
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	10	11.36	34	11.11	39	8.95	45	3	45	50	86.86	65	1	25	0	0
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	24	27.27	57	19.63	37	8.42	22	1	39	30	66.78	47	0	0	0	0
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	24	27.27	57	19.63	37	8.42	22	1	41	37	58.87	40	0	0	0	0
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	14	15.91	58	20.00	59	14.21	75	5	50	67	60.99	42	1	25	0	0
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	25	28.41	36	11.85	20	3.95	26	1	54	80	81.39	60	2	50	0	0
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	16	18.18	41	13.70	31	6.84	32	2	49	63	62.27	43	1	25	0	0
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	23	26.14	61	21.11	40	9.21	23	1	45	50	94.16	71	2	50	0	0
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	38	43.18	74	25.93	36	8.16	23	1	38	27	65.37	46	0	0	0	0
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	21	23.86	55	18.89	50	11.84	69	4	49	63	19.09	5	0	0	0	0
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	23	26.14	54	18.52	40	9.21	25	1	33	10	67.30	47	0	0	0	0
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	23	26.14	54	18.52	40	9.21	25	1	35	17	59.39	40	0	0	0	0
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	13	14.77	55	18.89	62	15.00	78	5	44	47	61.51	42	1	25	0	0
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	8	9.09	25	7.78	28	6.05	33	2	58	93	61.60	42	1	25	0	0
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	23	26.14	61	21.11	40	9.21	23	1	46	53	86.25	64	2	50	0	0
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	37	42.05	71	24.81	39	8.95	26	1	32	7	65.89	46	0	0	0	0
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	20	22.73	46	15.56	29	6.32	31	2	54	80	51.58	33	1	25	0	0
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	17	19.32	60	20.74	60	14.47	77	5	48	60	50.82	33	1	25	0	0
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	38	43.18	74	25.93	36	8.16	24	1	40	33	70.95	51	0	0	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
5	2,10,15,19,21,29,43,44,55,67,70,76	21	23.86	52	17.78	30	6.58	13	0	38	27	99.77	76	1	25	0	0
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	20	22.73	46	15.56	29	6.32	31	2	55	83	43.67	27	1	25	0	0
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	37	42.05	71	24.81	39	8.95	27	1	34	13	71.47	51	0	0	0	0
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	37	42.05	72	25.19	34	7.63	17	1	40	33	63.35	44	1	25	0	0
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	41	46.59	76	26.67	37	8.42	25	1	37	23	55.20	37	0	0	0	0
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	24	27.27	53	18.15	34	7.63	21	1	39	30	72.97	52	1	25	0	0
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	27	30.68	59	20.37	38	8.68	24	1	39	30	56.61	38	0	0	0	0
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	10	11.36	41	13.70	46	10.79	49	3	50	67	110.43	85	2	50	0	0
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	17	19.32	51	17.41	46	10.79	64	4	47	57	35.40	19	1	25	0	0
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	25	28.41	61	21.11	43	10.00	26	1	44	47	82.95	61	1	25	0	0
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	26	29.55	28	8.89	14	2.37	24	1	49	63	60.20	41	1	25	0	0
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	27	30.68	44	14.81	42	9.74	65	4	47	57	53.61	35	1	25	0	0
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	20	22.73	55	18.89	31	6.84	13	0	40	33	107.17	82	1	25	0	0
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	37	42.05	72	25.19	34	7.63	17	1	41	37	55.44	37	1	25	0	0
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	41	46.59	76	26.67	37	8.42	26	1	38	27	60.78	42	0	0	0	0
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	24	27.27	64	22.22	44	10.26	26	1	47	57	82.44	61	1	25	0	0
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	17	19.32	51	17.41	46	10.79	64	4	48	60	27.49	12	1	25	0	0
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	37	42.05	72	25.19	34	7.63	18	1	42	40	68.93	49	1	25	0	0
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	27	30.68	59	20.37	38	8.68	24	1	41	37	48.70	31	0	0	0	0
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	24	27.27	64	22.22	44	10.26	26	1	46	53	90.35	68	1	25	0	0
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	19	21.59	52	17.78	34	7.63	16	1	34	13	107.69	83	1	25	0	0
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	23	26.14	61	21.11	47	11.05	29	2	41	37	82.96	61	1	25	0	0
2	2,10,15,19,21,22,28,43,44,55,67,70,76	23	26.14	50	17.04	31	6.84	15	1	38	27	97.37	74	1	25	0	0
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	27	30.68	44	14.81	42	9.74	66	4	49	63	59.19	40	1	25	0	0
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	23	26.14	61	21.11	47	11.05	29	2	40	33	90.87	68	1	25	0	0
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	37	42.05	72	25.19	34	7.63	18	1	43	43	61.02	42	1	25	0	0
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	24	27.27	53	18.15	41	9.47	27	1	33	10	69.69	49	0	0	0	0
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	22	25.00	53	18.15	32	7.11	15	1	40	33	104.77	80	1	25	0	0
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	23	26.14	57	19.63	32	7.11	15	1	39	30	97.00	73	1	25	0	0
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	38	43.18	75	26.30	38	8.68	20	1	40	33	59.54	40	0	0	0	0
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	38	43.18	75	26.30	38	8.68	20	1	42	40	51.63	34	0	0	0	0
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	21	23.86	50	17.04	35	7.89	18	1	34	13	105.29	81	1	25	0	0
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	24	27.27	60	20.74	41	9.47	25	1	45	50	96.54	73	2	50	0	0
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	27	30.68	66	22.96	45	10.53	28	1	45	50	80.18	59	1	25	0	0
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	18	20.45	54	18.52	50	11.84	67	4	47	57	31.59	16	0	0	0	0
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	18	20.45	54	18.52	50	11.84	67	4	49	63	23.68	9	0	0	0	0
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	6	6.82	33	10.74	49	11.58	69	4	53	77	41.60	25	0	0	0	0
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	17	19.32	58	20.00	53	12.63	68	4	53	77	58.97	40	2	50	0	0
458	11,18,19,30,33,45,47,48,52,65,67,77,83	37	42.05	72	25.19	41	9.47	23	1	34	13	60.06	41	0	0	0	0
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	26	29.55	35	11.48	21	4.21	28	1	55	83	83.77	62	2	50	0	0
462	18,19,30,33,45,47,48,52,65,67,77,78,79	37	42.05	72	25.19	41	9.47	23	1	36	20	52.15	34	0	0	0	0
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	17	19.32	51	17.41	53	12.63	70	4	41	37	32.11	16	0	0	0	0
437	23,25,34,47,48,52,53,69,77,78,79,80,82	17	19.32	51	17.41	53	12.63	70	4	43	43	24.20	9	0	0	0	0
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	27	30.68	66	22.96	45	10.53	28	1	46	53	72.27	52	1	25	0	0
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	5	5.68	30	9.63	52	12.37	72	5	47	57	42.13	25	0	0	0	0
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	38	43.18	75	26.30	38	8.68	21	1	42	40	65.12	45	0	0	0	0
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	38	43.18	75	26.30	38	8.68	21	1	44	47	57.21	38	0	0	0	0
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	17	19.32	58	20.00	53	12.63	68	4	54	80	51.06	33	2	50	0	0
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	26	29.55	46	15.56	42	9.74	64	4	47	57	51.23	33	1	25	0	0
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	25	28.41	55	18.89	33	7.37	17	1	39	30	94.61	71	1	25	0	0
6	2,10,15,19,21,29,43,44,59,66,67,70	21	23.86	60	20.74	36	8.16	16	1	40	33	99.26	75	1	25	0	0
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	37	42.05	72	25.19	33	7.37	21	1	39	30	69.18	49	1	25	0	0
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	37	42.05	72	25.19	41	9.47	24	1	36	20	65.64	46	0	0	0	0
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	37	42.05	72	25.19	41	9.47	24	1	38	27	57.73	39	0	0	0	0
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	28	31.82	58	20.00	39	8.95	26	1	38	27	59.00	40	0	0	0	0
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	26	29.55	46	15.56	42	9.74	64	4	48	60	43.32	26	1	25	0	0
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	41	46.59	77	27.04	39	8.95	22	1	40	33	49.37	32	0	0	0	0
226	3,9,17,24,25,34,47,48,52,53,69,80	9	10.23	35	11.48	50	11.84	71	5	52	73	31.44	16	0	0	0	0
513	8,10,15,19,21,29,43,44,55,67,70,76,79	20	22.73	51	17.41	35	7.89	18	1	34	13	110.07	85	1	25	0	0
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	20	22.73	63	21.85	37	8.42	16	1	42	40	106.66	82	1	25	0	0
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	21	23.86	56	19.26	51	12.11	69	4	47	57	21.43	7	0	0	0	0
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	24	27.27	60	20.74	48	11.32	31	2	40	33	93.25	70	1	25	0	0
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	41	46.59	77	27.04	39	8.95	23	1	41	37	54.95	36	0	0	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	19	21.59	60	20.74	40	9.21	19	1	36	20	107.18	82	1	25	0	0
3	2,10,15,19,21,22,28,43,44,59,66,67,70	23	26.14	58	20.00	37	8.42	18	1	40	33	96.87	73	1	25	0	0
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	18	20.45	61	21.11	57	13.68	71	5	55	83	47.25	30	1	25	0	0
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	41	46.59	77	27.04	39	8.95	22	1	42	40	41.46	25	0	0	0	0
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	6	6.82	40	13.33	56	13.42	74	5	59	97	65.17	45	1	25	0	0
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	33	37.50	70	24.44	27	5.79	12	0	38	27	109.57	84	2	50	0	0
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	21	23.86	56	19.26	51	12.11	69	4	49	63	13.51	0	0	0	0	0
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	18	20.45	61	21.11	57	13.68	71	5	54	80	55.16	37	1	25	0	0
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	17	19.32	58	20.00	60	14.47	74	5	49	63	47.77	30	1	25	0	0
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	5	5.68	37	12.22	59	14.21	76	5	53	77	65.70	46	1	25	0	0
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	22	25.00	49	16.67	36	8.16	20	1	34	13	107.68	83	1	25	0	0
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	41	46.59	77	27.04	39	8.95	23	1	43	43	47.04	29	0	0	0	0
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	22	25.00	61	21.11	38	8.68	18	1	42	40	104.27	80	1	25	0	0
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	24	27.27	56	19.26	33	7.37	17	1	38	27	99.38	76	1	25	0	0
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	23	26.14	65	22.59	38	8.68	18	1	41	37	96.49	73	1	25	0	0
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	26	29.55	53	18.15	49	11.58	68	4	53	77	74.80	54	2	50	0	0
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	17	19.32	58	20.00	60	14.47	74	5	48	60	55.68	37	1	25	0	0
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	38	43.18	75	26.30	37	8.42	24	1	39	30	65.37	46	0	0	0	0
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	37	42.05	79	27.78	40	9.21	25	1	45	50	92.75	70	2	50	0	0
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	21	23.86	58	20.00	41	9.47	21	1	36	20	104.79	80	1	25	0	0
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	9	10.23	42	14.07	57	13.68	75	5	57	90	55.01	36	1	25	0	0
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	28	31.82	65	22.59	46	10.79	30	2	44	47	82.56	61	1	25	0	0
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	37	42.05	72	25.19	40	9.21	27	1	33	10	65.89	46	0	0	0	0
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	26	29.55	53	18.15	49	11.58	68	4	54	80	66.89	47	2	50	0	0
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	35	39.77	68	23.70	28	6.05	14	0	38	27	107.17	82	2	50	0	0
4	2,10,15,19,21,29,42,43,57,58,66,67,70	26	29.55	56	19.26	40	9.21	17	1	44	47	116.92	91	1	25	0	0
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	21	23.86	63	21.85	58	13.95	73	5	53	77	44.99	28	1	25	0	0
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	26	29.55	54	18.52	34	7.63	19	1	38	27	96.99	73	1	25	0	0
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	25	28.41	63	21.85	39	8.95	20	1	41	37	94.10	71	1	25	0	0
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	37	42.05	73	25.56	35	7.89	18	1	41	37	63.35	44	1	25	0	0
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	41	46.59	77	27.04	38	8.68	26	1	38	27	55.20	37	0	0	0	0
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	21	23.86	63	21.85	58	13.95	73	5	54	80	37.08	21	1	25	0	0
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	25	28.41	59	20.37	41	9.47	17	1	46	53	124.32	97	1	25	0	0
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	27	30.68	45	15.19	43	10.00	66	4	48	60	53.61	35	1	25	0	0
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	24	27.27	56	19.26	44	10.26	20	1	40	33	124.84	98	1	25	0	0
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	37	42.05	73	25.56	35	7.89	18	1	42	40	55.44	37	1	25	0	0
514	8,10,15,19,21,29,43,44,59,66,67,70,79	20	22.73	59	20.37	41	9.47	21	1	36	20	109.56	84	1	25	0	0
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	34	38.64	73	25.56	31	6.84	15	1	40	33	105.75	81	1	25	0	0
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	28	31.82	54	18.52	41	9.47	19	1	45	50	114.53	89	1	25	0	0
401	6,12,39,57,58,66,67,70	10	11.36	16	4.44	28	6.05	29	2	39	30	71.73	51	1	25	1	100
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	38	43.18	82	28.89	44	10.26	28	1	46	53	88.94	66	1	25	0	0
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	33	37.50	70	24.44	34	7.63	18	1	34	13	106.28	82	1	25	0	0
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	28	31.82	61	21.11	42	9.74	19	1	45	50	114.16	89	1	25	0	0
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	33	37.50	78	27.41	33	7.37	15	1	40	33	109.06	84	2	50	0	0
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	33	37.50	71	24.81	29	6.32	9	0	40	33	103.74	79	2	50	0	0
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	37	42.05	79	27.78	47	11.05	31	2	40	33	89.46	67	1	25	0	0
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	27	30.68	57	19.63	42	9.74	19	1	47	57	121.93	95	1	25	0	0
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	22	25.00	57	19.63	42	9.74	23	1	36	20	107.17	82	1	25	0	0
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	37	42.05	75	26.30	32	7.11	17	1	38	27	95.59	72	1	25	0	0
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	24	27.27	64	22.22	39	8.95	20	1	40	33	98.87	75	1	25	0	0
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	33	37.50	71	24.81	29	6.32	9	0	41	37	95.82	72	2	50	0	0
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	36	40.91	71	24.81	32	7.11	17	1	40	33	103.36	79	1	25	0	0
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	38	43.18	76	26.67	39	8.95	21	1	41	37	59.54	40	0	0	0	0
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	26	29.55	54	18.52	45	10.53	22	1	41	37	122.45	96	1	25	0	0
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	38	43.18	76	26.67	39	8.95	21	1	43	43	51.63	34	0	0	0	0
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	37	42.05	80	28.15	42	9.74	22	1	47	57	86.92	65	2	50	0	0
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	41	46.59	84	29.63	45	10.53	30	2	44	47	78.77	57	1	25	0	0
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	35	39.77	68	23.70	35	7.89	20	1	34	13	103.88	79	1	25	0	0
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	37	42.05	73	25.56	42	9.74	24	1	35	17	60.06	41	0	0	0	0
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	37	42.05	73	25.56	42	9.74	24	1	37	23	52.15	34	0	0	0	0
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	27	30.68	52	17.78	50	11.84	70	4	54	80	77.18	56	2	50	0	0
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	35	39.77	76	26.67	34	7.63	17	1	40	33	106.67	82	2	50	0	0
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	35	39.77	69	24.07	30	6.58	11	0	40	33	101.34	77	2	50	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	37	42.05	80	28.15	42	9.74	22	1	48	60	79.01	58	2	50	0	0
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	30	34.09	59	20.37	43	10.00	21	1	46	53	111.76	86	1	25	0	0
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	39	44.32	73	25.56	33	7.37	19	1	38	27	93.19	70	1	25	0	0
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	26	29.55	62	21.48	40	9.21	22	1	40	33	96.48	73	1	25	0	0
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	35	39.77	69	24.07	30	6.58	11	0	41	37	93.43	70	2	50	0	0
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	25	28.41	55	18.89	45	10.53	22	1	40	33	127.22	100	1	25	0	0
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	41	46.59	78	27.41	40	9.21	23	1	41	37	49.37	32	0	0	0	0
399	6,12,39,42,44,55,67,70,76	5	5.68	12	2.96	22	4.47	27	1	38	27	54.65	36	1	25	1	100
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	34	38.64	74	25.93	33	7.37	12	0	43	43	92.01	69	1	25	0	0
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	34	38.64	81	28.52	37	8.42	18	1	42	40	105.25	81	1	25	0	0
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	34	38.64	74	25.93	33	7.37	12	0	42	40	99.92	76	1	25	0	0
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	38	43.18	83	29.26	46	10.79	25	1	49	63	75.20	54	1	25	0	0
482	18,19,21,29,43,44,55,67,70,76,77,78,79	33	37.50	71	24.81	36	8.16	15	1	37	23	92.54	69	1	25	0	0
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	38	43.18	74	25.93	37	8.42	16	1	44	47	126.72	100	2	50	0	0
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	41	46.59	78	27.41	40	9.21	23	1	43	43	41.46	25	0	0	0	0
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	38	43.18	83	29.26	46	10.79	25	1	48	60	83.11	61	1	25	0	0
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	33	37.50	78	27.41	40	9.21	21	1	36	20	105.77	81	1	25	0	0
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	33	37.50	71	24.81	36	8.16	15	1	36	20	100.44	76	1	25	0	0
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	37	42.05	80	28.15	49	11.58	28	1	43	43	75.72	55	1	25	0	0
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	29	32.95	60	20.74	43	10.00	21	1	44	47	116.54	91	1	25	0	0
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	33	37.50	79	27.78	35	7.89	12	0	42	40	103.22	79	2	50	0	0
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	27	30.68	53	18.15	46	10.79	24	1	41	37	124.83	98	1	25	0	0
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	37	42.05	80	28.15	49	11.58	28	1	42	40	83.63	62	1	25	0	0
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	36	40.91	72	25.19	34	7.63	14	0	43	43	89.62	67	1	25	0	0
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	37	42.05	83	29.26	38	8.68	20	1	40	33	95.08	72	1	25	0	0
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	33	37.50	79	27.78	35	7.89	12	0	43	43	95.32	72	2	50	0	0
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	36	40.91	79	27.78	38	8.68	20	1	42	40	102.85	79	1	25	0	0
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	36	40.91	72	25.19	34	7.63	14	0	42	40	97.53	74	1	25	0	0
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	37	42.05	76	26.67	34	7.63	14	0	41	37	89.76	67	1	25	0	0
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	35	39.77	69	24.07	37	8.42	17	1	37	23	90.14	67	1	25	0	0
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	35	39.77	76	26.67	41	9.47	23	1	36	20	103.38	79	1	25	0	0
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	40	45.45	72	25.19	38	8.68	18	1	45	50	124.33	97	2	50	0	0
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	41	46.59	85	30.00	47	11.05	27	1	47	57	72.94	52	1	25	0	0
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	37	42.05	76	26.67	34	7.63	14	0	42	40	81.84	60	1	25	0	0
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	35	39.77	77	27.04	36	8.16	14	0	42	40	100.83	77	2	50	0	0
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	31	35.23	58	20.00	44	10.26	23	1	45	50	114.14	88	1	25	0	0
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	39	44.32	81	28.52	39	8.95	22	1	40	33	92.69	70	1	25	0	0
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	41	46.59	85	30.00	47	11.05	27	1	48	60	65.03	45	1	25	0	0
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	35	39.77	77	27.04	36	8.16	14	0	43	43	92.92	70	2	50	0	0
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	39	44.32	74	25.93	35	7.89	16	1	41	37	87.36	65	1	25	0	0
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	39	44.32	74	25.93	35	7.89	16	1	41	37	87.36	65	1	25	0	0
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	39	44.32	77	27.04	41	9.47	19	1	46	53	122.91	96	1	25	0	0
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	34	38.64	82	28.89	39	8.95	15	1	45	50	91.51	69	1	25	0	0
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	39	44.32	74	25.93	35	7.89	16	1	42	40	79.45	58	1	25	0	0
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	38	43.18	74	25.93	44	10.26	22	1	40	33	123.43	97	1	25	0	0
400	6,12,39,42,44,59,66,67,70	5	5.68	20	5.93	28	6.05	30	2	41	37	54.15	36	1	25	1	100
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	34	38.64	82	28.89	39	8.95	15	1	44	47	99.42	76	1	25	0	0
483	18,19,21,29,43,44,59,66,67,70,77,78,79	33	37.50	79	27.78	42	9.74	18	1	39	30	92.03	69	1	25	0	0
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	38	43.18	75	26.30	39	8.95	13	0	46	53	120.89	94	2	50	0	0
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	33	37.50	79	27.78	42	9.74	18	1	38	27	99.94	76	1	25	0	0
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	42	47.73	79	27.78	42	9.74	21	1	44	47	112.74	87	1	25	0	0
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	38	43.18	75	26.30	39	8.95	13	0	47	57	112.98	87	2	50	0	0
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	36	40.91	80	28.15	40	9.21	17	1	45	50	89.11	66	1	25	0	0
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	41	46.59	75	26.30	42	9.74	21	1	47	57	120.52	94	1	25	0	0
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	36	40.91	80	28.15	40	9.21	17	1	44	47	97.02	73	1	25	0	0
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	37	42.05	84	29.63	40	9.21	17	1	43	43	89.25	67	1	25	0	0
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	35	39.77	77	27.04	43	10.00	20	1	39	30	89.63	67	1	25	0	0
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	40	45.45	72	25.19	45	10.53	24	1	41	37	121.04	95	1	25	0	0
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	35	39.77	77	27.04	43	10.00	20	1	38	27	97.54	74	1	25	0	0
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	40	45.45	73	25.56	40	9.21	15	1	47	57	118.50	92	2	50	0	0
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	37	42.05	84	29.63	40	9.21	17	1	44	47	81.34	60	1	25	0	0
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	44	50.00	77	27.04	43	10.00	23	1	45	50	110.35	85	1	25	0	0
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	40	45.45	73	25.56	40	9.21	15	1	48	60	110.59	85	2	50	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Routes	Study Segments	Land Use															
		Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	39	44.32	78	27.41	43	10.00	16	1	49	63	109.17	84	1	25	0	0
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	39	44.32	82	28.89	41	9.47	19	1	43	43	86.86	64	1	25	0	0
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	39	44.32	78	27.41	43	10.00	16	1	48	60	117.08	91	1	25	0	0
404	6,26,40,41,57,58,66,67,70	12	13.64	32	10.37	48	11.32	39	2	39	30	64.35	45	1	25	1	100
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	38	43.18	75	26.30	46	10.79	19	1	43	43	109.69	85	1	25	0	0
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	39	44.32	82	28.89	41	9.47	19	1	44	47	78.94	58	1	25	0	0
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	38	43.18	75	26.30	46	10.79	19	1	42	40	117.60	92	1	25	0	0
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	41	46.59	76	26.67	44	10.26	18	1	50	67	106.77	82	1	25	0	0
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	42	47.73	80	28.15	44	10.26	18	1	47	57	106.91	82	1	25	0	0
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	41	46.59	76	26.67	44	10.26	18	1	49	63	114.68	89	1	25	0	0
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	40	45.45	73	25.56	47	11.05	21	1	44	47	107.29	82	1	25	0	0
397	6,12,27,40,41,57,58,66,67,70	12	13.64	32	10.37	47	11.05	41	2	37	23	70.43	50	1	25	1	100
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	42	47.73	80	28.15	44	10.26	18	1	48	60	99.00	75	1	25	0	0
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	40	45.45	73	25.56	47	11.05	21	1	43	43	115.21	89	1	25	0	0
402	6,26,40,41,42,44,55,67,70,76	7	7.95	28	8.89	42	9.74	37	2	38	27	47.28	30	1	25	1	100
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	44	50.00	78	27.41	45	10.53	20	1	48	60	104.52	80	1	25	0	0
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	44	50.00	78	27.41	45	10.53	20	1	49	63	96.61	73	1	25	0	0
395	6,12,27,40,41,42,44,55,67,70,76	7	7.95	28	8.89	41	9.47	39	2	36	20	53.36	35	1	25	1	100
403	6,26,40,41,42,59,66,67,70	7	7.95	36	11.85	48	11.32	40	2	41	37	46.77	29	1	25	1	100
396	6,12,27,40,41,42,44,59,66,67,70	7	7.95	36	11.85	47	11.05	42	2	39	30	52.85	35	1	25	1	100
405	6,26,40,56,58,66,67,70	12	13.64	31	10.00	46	10.79	34	2	40	33	67.97	48	4	100	1	100
398	6,12,27,40,56,58,66,67,70	12	13.64	31	10.00	45	10.53	36	2	38	27	74.05	53	4	100	1	100
	MIN	0	0.00	4	0.00	5	0.00	8	0	30	0	13.51	0	0	0	0	0
	MAX	44	50.00	85	30.00	62	15.00	78	5	60	100	127.22	100	4	100	1	100
	RANGE	44	50.00	81	30.00	57	15.00	70	5	30	100	113.71	100	4	100	1	100

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
392	5,35,38,64,71,73	1	25	1	8	7.83	0	0.00	30	6.16	13	0.00	100	9.86	29	0.07	0
252	4,17,32,37,50,69,75,80	0	0	6	46	5.77	8	0.00	30	0.43	38	0.23	96	9.31	20	0.15	1
382	5,35,36,37,50,69,75,80	1	25	8	62	5.79	8	0.00	30	4.44	20	0.23	96	9.43	22	0.07	0
394	5,60,62,64	1	25	0	0	3.61	16	0.00	30	3.61	24	0.00	100	9.89	29	0.07	0
393	5,60,61,64	1	25	1	8	3.61	16	0.00	30	3.61	24	0.00	100	10.06	32	0.07	0
267	4,17,32,37,64,71,72,74,75	2	50	3	23	7.90	0	0.00	30	0.00	40	0.00	100	10.02	31	0.15	1
261	4,17,32,37,49,64,71,73	2	50	3	23	7.88	0	0.00	30	1.55	33	0.00	100	10.00	31	0.15	1
384	5,35,36,37,64,71,72,74,75	3	75	5	38	7.91	0	0.00	30	4.01	22	0.00	100	10.14	33	0.07	0
388	5,35,38,49,50,69,75,80	1	25	8	62	5.76	8	0.00	30	5.04	18	0.23	96	9.41	21	0.07	0
378	5,35,36,37,49,64,71,73	3	75	5	38	7.90	0	0.00	30	5.55	16	0.00	100	10.12	33	0.07	0
263	4,17,32,37,50,53,65,67,75	0	0	4	31	5.77	8	1.73	22	0.00	40	1.73	67	9.47	22	0.15	1
259	4,17,32,36,38,64,71,73	2	50	3	23	7.87	0	0.00	30	2.15	31	0.00	100	10.00	31	0.15	1
380	5,35,36,37,50,53,65,67,75	1	25	6	46	5.79	8	1.73	22	4.01	22	1.73	67	9.59	24	0.07	0
264	4,17,32,37,50,53,67,70,75,76,84	0	0	4	31	5.77	8	0.71	27	0.00	40	0.53	90	9.63	25	0.15	1
390	5,35,38,49,64,71,72,74,75	3	75	5	38	7.88	0	0.00	30	4.61	20	0.00	100	10.12	33	0.07	0
381	5,35,36,37,50,53,67,70,75,76,84	1	25	6	46	5.79	8	0.71	27	4.01	22	0.53	90	9.75	27	0.07	0
266	4,17,32,37,63,74,75,80	0	0	4	31	7.56	1	0.00	30	2.91	27	0.00	100	9.47	22	0.15	1
383	5,35,36,37,63,74,75,80	1	25	6	46	7.58	1	0.00	30	6.92	9	0.00	100	9.58	24	0.07	0
386	5,35,38,49,50,53,65,67,75	1	25	6	46	5.76	8	1.73	22	4.61	20	1.73	67	9.57	24	0.07	0
387	5,35,38,49,50,53,67,70,75,76,84	1	25	6	46	5.76	8	0.71	27	4.61	20	0.53	90	9.74	27	0.07	0
256	4,17,32,36,38,49,50,69,75,80	2	50	10	77	5.80	8	0.00	30	1.04	35	0.23	96	9.55	24	0.15	1
389	5,35,38,49,63,74,75,80	1	25	6	46	7.55	1	0.00	30	7.52	7	0.00	100	9.57	24	0.07	0
391	5,35,38,63,72,73,80	1	25	6	46	7.55	1	0.00	30	9.07	0	0.00	100	9.58	24	0.07	0
258	4,17,32,36,38,49,64,71,72,74,75	4	100	7	54	7.92	0	0.00	30	0.61	37	0.00	100	10.26	35	0.15	1
118	2,8,9,17,32,37,50,69,75,80,81	0	0	9	69	3.77	16	0.00	30	0.43	38	0.23	96	11.32	52	2.16	32
241	3,9,17,32,37,50,69,75,80	0	0	7	54	3.77	16	1.42	23	0.43	38	1.64	69	10.71	42	1.07	15
413	9,17,32,37,50,69,75,79,80,81	0	0	8	62	3.77	16	2.03	20	0.43	38	0.23	96	10.75	43	1.13	16
254	4,17,32,36,38,49,50,53,65,67,75	2	50	8	62	5.80	8	1.73	22	0.61	37	1.73	67	9.71	26	0.15	1
260	4,17,32,37,49,63,72,73,80	2	50	8	62	7.60	1	0.00	30	4.46	20	0.00	100	9.72	26	0.15	1
255	4,17,32,36,38,49,50,53,67,70,75,76,84	2	50	8	62	5.80	8	0.71	27	0.61	37	0.53	90	9.87	29	0.15	1
120	2,8,9,17,32,37,64,71,72,74,75,81	2	50	6	46	5.89	8	0.00	30	0.00	40	0.00	100	12.03	64	2.16	32
377	5,35,36,37,49,63,72,73,80	3	75	10	77	7.61	1	0.00	30	8.46	3	0.00	100	9.84	28	0.07	0
114	2,8,9,17,32,37,49,64,71,73,81	2	50	6	46	5.88	8	0.00	30	1.55	33	0.00	100	12.01	63	2.16	32
243	3,9,17,32,37,64,71,72,74,75	2	50	4	31	5.89	8	1.42	23	0.00	40	1.40	74	11.42	54	1.07	15
408	9,17,32,37,64,71,72,74,75,79,81	2	50	5	38	5.89	8	2.03	20	0.00	40	0.00	100	11.46	55	1.13	16
257	4,17,32,36,38,49,63,34,74,75,80	2	50	8	62	7.58	1	0.00	30	3.52	24	0.00	100	9.70	26	0.15	1
237	3,9,17,32,37,49,64,71,73	2	50	4	31	5.88	8	1.42	23	1.55	33	1.40	74	11.40	54	1.07	15
407	9,17,32,37,49,64,71,73,79,81	2	50	5	38	5.88	8	2.03	20	1.55	33	0.00	100	11.44	54	1.13	16
253	4,17,32,36,38,36,34,72,73,80	2	50	8	62	7.58	1	0.00	30	5.07	18	0.00	100	9.72	26	0.15	1
117	2,8,9,17,32,37,50,53,65,67,71,75,81	0	0	7	54	3.77	16	1.73	22	0.00	40	1.73	67	11.48	55	2.16	32
415	9,17,32,37,50,53,65,67,71,75,79,81	0	0	6	46	3.77	16	3.76	12	0.00	40	1.73	67	10.91	46	1.13	16
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	0	0	7	54	3.77	16	0.71	27	0.00	40	0.53	90	11.64	57	2.16	32
262	4,17,32,37,50,53,55,59,66,67,70,75,84	0	0	4	31	5.77	8	1.44	23	0.00	40	0.53	90	10.87	45	0.15	1
112	2,8,9,17,32,36,38,64,71,73,81	2	50	6	46	5.86	8	0.00	30	2.15	31	0.00	100	12.00	63	2.16	32
240	3,9,17,32,37,50,53,65,67,75	0	0	5	38	3.77	16	3.15	15	0.00	40	3.13	41	10.87	45	1.07	15
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	0	0	6	46	3.77	16	2.74	17	0.00	40	0.53	90	11.08	48	1.13	16
235	3,9,17,32,36,38,64,71,73	2	50	4	31	5.86	8	1.42	23	2.15	31	1.40	74	11.39	53	1.07	15
406	9,17,32,36,38,64,71,73,79,81	2	50	5	38	5.86	8	2.03	20	2.15	31	0.00	100	11.44	54	1.13	16
379	5,35,36,37,50,53,55,59,66,67,70,75,84	1	25	6	46	5.79	8	1.44	23	4.01	22	0.53	90	10.99	47	0.07	0
238	3,9,17,32,37,50,35,67,70,75,76,84	0	0	5	38	3.77	16	2.13	20	0.00	40	1.94	63	11.03	48	1.07	15
119	2,8,9,17,32,37,63,74,75,80,81	0	0	7	54	5.56	9	0.00	30	2.91	27	0.00	100	11.47	55	2.16	32
242	3,9,17,32,37,63,74,75,80	0	0	5	38	5.56	9	1.42	23	2.91	27	1.40	74	10.86	45	1.07	15
410	9,17,32,37,63,74,75,79,80,81	0	0	6	46	5.56	9	2.03	20	2.91	27	0.00	100	10.91	46	1.13	16
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	0	0	6	46	2.03	22	3.85	11	0.00	40	3.89	26	9.64	25	0.15	1
385	5,35,38,49,50,53,55,59,66,67,70,75,84	1	25	6	46	5.76	8	1.44	23	4.61	20	0.53	90	10.98	47	0.07	0
246	4,17,24,25,31,33,45,47,48,52,65,67	0	0	5	38	3.24	18	2.36	19	0.00	40	2.34	56	9.56	24	0.15	1
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	2	50	13	100	3.79	16	0.00	30	1.04	35	0.23	96	11.55	56	2.16	32
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	0	0	6	46	2.03	22	2.83	16	0.00	40	2.70	49	9.80	28	0.15	1
232	3,9,17,32,36,38,49,50,69,75,80	2	50	11	85	3.79	16	1.42	23	1.04	35	1.64	69	10.94	46	1.07	15
414	9,17,32,36,38,49,50,69,75,71,79,80,81	2	50	12	92	3.79	16	2.03	20	1.04	35	0.23	96	10.99	47	1.13	16
247	4,17,24,25,31,33,47,48,52,67,70,76,84	0	0	5	38	3.24	18	1.33	24	0.00	40	1.14	78	9.72	26	0.15	1
306	4,9,11,14,20,29,43,44,55,67,70,76,83	0	0	6	46	2.03	22	1.17	24	0.00	40	0.44	92	10.81	44	0.15	1
18	2,7,13,28,43,44,55,67,70,76	0	0	5	38	0.00	30	0.76	26	0.00	40	0.00	100	9.66	25	2.16	32

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	0	0	7	54	0.00	30	3.85	11	0.00	40	3.89	26	8.94	14	2.16	32
354	4,9,14,20,29,43,44,55,67,70,76,78,81	0	0	6	46	2.03	22	1.18	24	0.00	40	0.00	100	10.83	44	0.15	1
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	4	100	10	77	5.92	8	0.00	30	0.61	37	0.00	100	12.26	68	2.16	32
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	0	0	6	46	0.00	30	5.88	2	0.00	40	3.89	26	8.37	5	1.13	16
233	3,9,17,32,36,38,49,64,71,72,74,75	4	100	8	62	5.92	8	1.42	23	0.61	37	1.40	74	11.65	58	1.07	15
409	9,17,32,36,38,49,64,71,72,74,75,79,81	4	100	9	69	5.92	8	2.03	20	0.61	37	0.00	100	11.70	58	1.13	16
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	0	0	7	54	0.00	30	2.83	16	0.00	40	2.70	49	9.10	16	2.16	32
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	0	0	7	54	2.03	22	1.17	24	0.00	40	0.44	92	11.07	48	0.15	1
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	0	0	6	46	0.00	30	4.86	7	0.00	40	2.70	49	8.54	7	1.13	16
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	0	0	7	54	2.03	22	1.18	24	0.00	40	0.00	100	11.08	48	0.15	1
149	3,11,16,23,25,31,33,45,47,48,52,65,67	0	0	5	38	0.00	30	5.27	5	0.00	40	5.30	0	8.33	4	1.07	15
276	4,7,8,9,13,28,43,44,55,67,70,76,81	0	0	8	62	2.03	22	0.76	26	0.00	40	0.00	100	11.63	57	0.15	1
15	2,10,20,29,43,44,55,67,70,76	0	0	4	31	0.00	30	0.76	26	0.00	40	0.00	100	9.10	16	2.16	32
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	2	50	11	85	3.79	16	1.73	22	0.61	37	1.73	67	11.71	59	2.16	32
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	0	0	5	38	0.00	30	4.25	10	0.00	40	4.10	23	8.49	6	1.07	15
80	2,8,14,20,29,43,44,55,67,70,76,78	0	0	5	38	0.00	30	1.18	24	0.00	40	0.00	100	10.02	31	2.16	32
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	2	50	10	77	3.79	16	3.76	12	0.61	37	1.73	67	11.15	50	1.13	16
113	2,8,9,17,32,37,49,63,72,73,80,81	2	50	11	85	5.59	9	0.00	30	4.46	20	0.00	100	11.73	59	2.16	32
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	2	50	11	85	3.79	16	0.71	27	0.61	37	0.53	90	11.87	61	2.16	32
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	0	0	7	54	0.00	30	1.17	24	0.00	40	0.44	92	10.11	33	2.16	32
500	14,20,29,43,44,55,67,70,76,78,79	0	0	4	31	0.00	30	3.21	15	0.00	40	0.00	100	9.45	22	1.13	16
230	3,9,17,32,36,38,49,50,53,65,67,75	2	50	9	69	3.79	16	3.15	15	0.61	37	3.13	41	11.10	49	1.07	15
236	3,9,17,32,37,49,63,72,73,80	2	50	9	69	5.59	9	1.42	23	4.46	20	1.40	74	11.12	49	1.07	15
412	9,17,32,37,49,63,72,73,79,80,81	2	50	10	77	5.59	9	2.03	20	4.46	20	0.00	100	11.16	50	1.13	16
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	2	50	10	77	3.79	16	2.74	17	0.61	37	0.53	90	11.31	52	1.13	16
497	11,14,20,29,43,44,55,67,70,76,79,81,83	0	0	6	46	0.00	30	3.20	15	0.00	40	0.44	92	9.55	24	1.13	16
12	2,10,20,22,28,43,44,55,67,70,76	0	0	5	38	0.00	30	0.76	26	0.00	40	0.00	100	9.36	21	2.16	32
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	2	50	9	69	3.79	16	2.13	20	0.61	37	1.94	63	11.26	51	1.07	15
307	4,9,11,14,20,29,43,44,59,66,67,70,83	0	0	4	31	2.03	22	0.41	28	0.00	40	0.44	92	10.53	39	0.15	1
77	2,8,14,20,22,28,43,44,55,67,70,76,78	0	0	6	46	0.00	30	1.18	24	0.00	40	0.00	100	10.27	35	2.16	32
19	2,7,13,28,43,44,59,66,67,70	0	0	3	23	0.00	30	0.00	30	0.00	40	0.00	100	9.37	21	2.16	32
355	4,9,14,20,29,43,44,59,66,67,70,78,81	0	0	4	31	2.03	22	0.42	28	0.00	40	0.00	100	10.54	40	0.15	1
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	0	0	8	62	0.00	30	1.17	24	0.00	40	0.44	92	10.36	37	2.16	32
136	3,11,14,20,29,43,44,55,67,70,76,83	0	0	5	38	0.00	30	2.59	18	0.00	40	1.85	65	9.50	23	1.07	15
506	14,20,22,28,43,44,55,67,70,76,78,79	0	0	5	38	0.00	30	3.21	15	0.00	40	0.00	100	9.71	26	1.13	16
111	2,8,9,17,32,36,38,63,72,73,80,81	2	50	11	85	5.58	9	0.00	30	5.07	18	0.00	100	11.72	59	2.16	32
525	7,8,13,28,43,44,55,67,70,76,79	0	0	6	46	0.00	30	2.79	17	0.00	40	0.00	100	10.26	35	1.13	16
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	0	0	7	54	3.77	16	1.44	23	0.00	40	0.53	90	12.88	78	2.16	32
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	0	0	7	54	0.00	30	3.20	15	0.00	40	0.44	92	9.80	28	1.13	16
181	3,14,20,29,43,44,55,67,70,76,78,81	0	0	5	38	0.00	30	2.60	17	0.00	40	1.40	74	9.52	23	1.07	15
234	3,9,17,32,36,38,63,72,73,80	2	50	9	69	5.58	9	1.42	23	5.07	18	1.40	74	11.11	49	1.07	15
411	9,17,32,36,38,63,72,73,79,80,81	2	50	10	77	5.58	9	2.03	20	5.07	18	0.00	100	11.16	50	1.13	16
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	0	0	5	38	2.03	22	0.41	28	0.00	40	0.44	92	10.78	44	0.15	1
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	0	0	9	69	2.03	22	3.83	12	0.00	40	3.33	37	9.73	27	0.15	1
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	0	0	9	69	2.03	22	3.83	12	0.00	40	3.33	37	9.73	27	0.15	1
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	0	0	6	46	3.77	16	3.47	13	0.00	40	0.53	90	12.32	68	1.13	16
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	0	0	9	69	2.03	22	0.76	26	0.00	40	0.00	100	12.10	65	0.15	1
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	0	0	8	62	2.03	22	3.16	15	0.43	38	3.43	35	10.54	40	0.15	1
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	0	0	5	38	3.77	16	2.86	16	0.00	40	1.94	63	12.27	68	1.07	15
323	4,9,11,16,23,25,34,47,48,52,65,67	0	0	4	31	2.03	22	4.20	10	0.00	40	3.89	26	9.40	21	0.15	1
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	0	0	5	38	2.03	22	0.42	28	0.00	40	0.00	100	10.79	44	0.15	1
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	0	0	9	69	2.03	22	3.85	11	0.00	40	2.89	46	9.75	27	0.15	1
133	3,11,14,20,22,28,43,44,55,67,70,76,83	0	0	6	46	0.00	30	2.59	18	0.00	40	1.85	65	9.75	27	1.07	15
277	4,7,8,9,13,28,43,44,59,66,67,70,81	0	0	6	46	2.03	22	0.00	30	0.00	40	0.00	100	11.35	53	0.15	1
16	2,10,20,29,43,44,59,66,67,70	0	0	2	15	0.00	30	0.00	30	0.00	40	0.00	100	8.82	12	2.16	32
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	0	0	9	69	2.03	22	2.81	16	0.00	40	2.13	60	9.89	29	0.15	1
244	4,17,24,25,31,33,45,47,48,52,53,69,80	0	0	7	54	3.24	18	1.66	22	0.43	38	1.88	65	10.46	38	0.15	1
203	3,7,8,13,28,43,44,55,67,70,76,81	0	0	7	54	0.00	30	2.18	19	0.00	40	1.40	74	10.32	36	1.07	15
250	4,17,24,25,34,47,48,52,65,67	0	0	3	23	3.24	18	2.70	17	0.00	40	2.34	56	9.32	20	0.15	1
81	2,8,14,20,29,43,44,59,66,67,70,78	0	0	3	23	0.00	30	0.42	28	0.00	40	0.00	100	9.73	27	2.16	32
178	3,14,20,22,28,43,44,55,67,70,76,78,81	0	0	6	46	0.00	30	2.60	17	0.00	40	1.40	74	9.77	27	1.07	15
519	8,10,20,29,43,44,55,67,70,76,79	0	0	5	38	0.00	30	2.79	17	0.00	40	0.00	100	9.71	26	1.13	16
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	0	0	4	31	2.03	22	3.17	15	0.00	40	2.70	49	9.56	24	0.15	1

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	0	0	5	38	0.00	30	0.41	28	0.00	40	0.44	92	9.83	28	2.16	32
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	0	0	9	69	2.03	22	2.83	16	0.00	40	1.69	68	9.91	29	0.15	1
501	14,20,29,43,44,59,66,67,70,78,79	0	0	2	15	0.00	30	2.45	18	0.00	40	0.00	100	9.17	17	1.13	16
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	0	0	5	38	2.03	22	0.41	28	0.00	40	0.44	92	12.98	79	0.15	1
498	11,14,20,29,43,44,59,66,67,70,79,81,83	0	0	4	31	0.00	30	2.44	18	0.00	40	0.44	92	9.26	19	1.13	16
251	4,17,24,25,34,47,48,52,67,70,76,84	0	0	3	23	3.24	18	1.68	22	0.00	40	1.14	78	9.49	23	0.15	1
13	2,10,20,22,28,43,44,59,66,67,70	0	0	3	23	0.00	30	0.00	30	0.00	40	0.00	100	9.07	16	2.16	32
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	0	0	5	38	2.03	22	0.42	28	0.00	40	0.00	100	12.99	79	0.15	1
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	0	0	10	77	0.00	30	3.83	12	0.00	40	3.33	37	9.03	15	2.16	32
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	0	0	8	62	0.00	30	3.85	11	0.00	40	2.89	46	8.93	14	2.16	32
17	2,7,13,28,42,43,57,58,66,67,70	0	0	4	31	0.00	30	0.00	30	0.00	40	0.00	100	11.82	60	2.16	32
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	0	0	8	62	1.24	25	2.36	19	0.00	40	2.34	56	11.56	56	2.16	32
78	2,8,14,20,22,28,43,44,59,66,67,70,78	0	0	4	31	0.00	30	0.42	28	0.00	40	0.00	100	9.98	31	2.16	32
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	0	0	9	69	0.00	30	3.16	15	0.43	38	3.43	35	9.84	28	2.16	32
522	8,10,20,22,28,43,44,55,67,70,76,79	0	0	6	46	0.00	30	2.79	17	0.00	40	0.00	100	9.96	30	1.13	16
53	2,8,11,16,23,25,34,47,48,52,65,67,81	0	0	5	38	0.00	30	4.20	10	0.00	40	3.89	26	8.70	10	2.16	32
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	6	46	2.03	22	3.56	13	0.00	40	2.70	49	11.04	48	0.15	1
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	0	0	9	69	0.00	30	5.86	2	0.00	40	3.33	37	8.47	6	1.13	16
450	23,25,31,33,45,47,48,52,65,67,77,78,82	0	0	7	54	0.00	30	5.88	2	0.00	40	2.89	46	8.37	5	1.13	16
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	0	0	6	46	0.00	30	0.41	28	0.00	40	0.44	92	10.08	32	2.16	32
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	0	0	7	54	1.24	25	4.39	9	0.00	40	2.34	56	11.00	47	1.13	16
219	3,8,10,20,29,43,44,55,67,70,76,81	0	0	6	46	0.00	30	2.18	19	0.00	40	1.40	74	9.77	27	1.07	15
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	0	0	6	46	2.03	22	2.78	17	0.00	40	2.34	56	9.69	26	0.15	1
137	3,11,14,20,29,43,44,59,66,67,70,83	0	0	3	23	0.00	30	1.83	21	0.00	40	1.85	65	9.22	18	1.07	15
507	14,20,22,28,43,44,59,66,67,70,78,79	0	0	3	23	0.00	30	2.45	18	0.00	40	0.00	100	9.42	22	1.13	16
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	0	0	8	62	0.00	30	5.19	5	0.43	38	3.43	35	9.28	19	1.13	16
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	0	0	9	69	2.03	22	3.29	14	0.00	40	3.33	37	10.36	37	0.15	1
430	11,16,23,25,34,47,48,52,65,67,79,81	0	0	4	31	0.00	30	6.23	0	0.00	40	3.89	26	8.14	1	1.13	16
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	0	0	7	54	2.03	22	2.76	17	0.00	40	2.78	48	9.97	31	0.15	1
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	0	0	10	77	0.00	30	2.81	16	0.00	40	2.13	60	9.19	18	2.16	32
526	7,8,13,28,43,44,59,66,67,70,79	0	0	4	31	0.00	30	2.03	20	0.00	40	0.00	100	9.97	31	1.13	16
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	0	0	8	62	0.00	30	2.83	16	0.00	40	1.69	68	9.10	16	2.16	32
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	0	0	5	38	0.00	30	2.44	18	0.00	40	0.44	92	9.52	23	1.13	16
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	0	0	8	62	1.24	25	1.33	24	0.00	40	1.14	78	11.73	59	2.16	32
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	0	0	6	46	2.03	22	0.41	28	0.00	40	0.44	92	13.23	83	0.15	1
182	3,14,20,29,43,44,59,66,67,70,78,81	0	0	3	23	0.00	30	1.84	21	0.00	40	1.40	74	9.23	18	1.07	15
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	0	0	5	38	0.00	30	3.17	15	0.00	40	2.70	49	8.86	13	2.16	32
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	0	0	9	69	0.00	30	4.84	7	0.00	40	2.13	60	8.63	9	1.13	16
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	0	0	7	54	0.00	30	4.86	7	0.00	40	1.69	68	8.53	7	1.13	16
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	5	38	3.24	18	2.07	20	0.00	40	1.14	78	10.96	46	0.15	1
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	0	0	7	54	1.24	25	3.37	14	0.00	40	1.14	78	11.16	50	1.13	16
14	2,10,20,29,42,43,57,58,66,67,70	0	0	3	23	0.00	30	0.00	30	0.00	40	0.00	100	11.27	51	2.16	32
224	3,9,17,24,25,31,33,45,47,48,52,65,67	0	0	6	46	1.24	25	3.78	12	0.00	40	3.74	29	10.95	46	1.07	15
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	0	0	6	46	2.03	22	0.42	28	0.00	40	0.00	100	13.24	83	0.15	1
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	0	0	7	54	2.03	22	0.00	30	0.00	40	0.00	100	11.82	60	0.15	1
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	0	0	9	69	2.03	22	2.27	19	0.00	40	2.13	60	10.52	39	0.15	1
151	3,11,16,23,25,31,33,45,47,52,53,69,80	0	0	7	54	0.00	30	4.58	8	0.43	38	4.84	9	9.23	18	1.07	15
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	0	0	7	54	2.03	22	1.74	22	0.00	40	1.58	70	10.14	33	0.15	1
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	0	0	8	62	0.00	30	5.26	5	0.00	40	4.73	11	8.42	5	1.07	15
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	0	0	7	54	2.03	22	0.00	30	0.00	40	0.00	100	13.80	92	0.15	1
154	3,11,16,23,25,34,47,48,52,65,67	0	0	3	23	0.00	30	5.62	3	0.00	40	5.30	0	8.09	0	1.07	15
216	3,8,10,20,22,28,43,44,55,67,70,76,81	0	0	7	54	0.00	30	2.18	19	0.00	40	1.40	74	10.02	31	1.07	15
79	2,8,14,20,29,42,43,57,58,66,67,70,78	0	0	4	31	0.00	30	0.42	28	0.00	40	0.00	100	12.18	66	2.16	32
134	3,11,14,20,22,28,43,44,59,66,67,70,83	0	0	4	31	0.00	30	1.83	21	0.00	40	1.85	65	9.47	22	1.07	15
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	0	0	6	46	1.24	25	2.76	17	0.00	40	2.54	52	11.12	49	1.07	15
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	0	0	6	46	0.00	30	0.41	28	0.00	40	0.44	92	12.28	68	2.16	32
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	0	0	7	54	2.03	22	1.76	22	0.00	40	1.14	78	10.15	33	0.15	1
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	0	0	8	62	0.00	30	4.23	10	0.00	40	3.53	33	8.58	8	1.07	15
9	2,10,15,19,30,33,45,47,48,52,65,67	0	0	5	38	0.00	30	2.36	19	0.00	40	2.34	56	8.26	3	2.16	32
155	3,11,16,23,25,34,47,48,52,67,70,76,84	0	0	3	23	0.00	30	4.59	8	0.00	40	4.10	23	8.25	3	1.07	15
431	11,16,23,25,34,47,48,52,67,70,76,84	0	0	3	23	0.00	30	4.59	8	0.00	40	4.10	23	8.25	3	1.07	15
204	3,7,8,13,28,43,44,59,66,67,70,81	0	0	5	38	0.00	30	1.42	23	0.00	40	1.40	74	10.04	32	1.07	15
502	14,20,29,42,43,57,58,66,67,70,78,79	0	0	3	23	0.00	30	2.45	18	0.00	40	0.00	100	11.62	57	1.13	16

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
179	3,14,20,22,28,43,44,59,66,67,70,78,81	0	0	4	31	0.00	30	1.84	21	0.00	40	1.40	74	9.48	23	1.07	15
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	0	0	9	69	2.03	22	2.36	19	0.00	40	2.34	56	11.98	63	0.15	1
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	0	0	8	62	0.00	30	5.27	5	0.00	40	4.29	19	8.43	6	1.07	15
520	8,10,20,29,43,44,59,66,67,70,79	0	0	3	23	0.00	30	2.03	20	0.00	40	0.00	100	9.42	22	1.13	16
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	0	0	5	38	0.00	30	2.44	18	0.00	40	0.44	92	11.71	59	1.13	16
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	0	0	7	54	0.00	30	3.56	13	0.00	40	2.70	49	10.34	36	2.16	32
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	0	0	8	62	0.00	30	2.76	17	0.00	40	2.78	48	9.27	19	2.16	32
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	0	0	6	46	0.00	30	2.78	17	0.00	40	2.34	56	9.17	18	2.16	32
11	2,10,20,22,28,42,43,57,58,66,67,70	0	0	4	31	0.00	30	0.00	30	0.00	40	0.00	100	11.52	56	2.16	32
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	0	0	8	62	0.00	30	4.25	10	0.00	40	3.09	42	8.60	8	1.07	15
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	0	0	5	38	0.00	30	1.33	24	0.00	40	1.14	78	8.43	5	2.16	32
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	0	0	6	46	0.00	30	5.59	3	0.00	40	2.70	49	9.78	27	1.13	16
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	0	0	7	54	0.00	30	4.80	7	0.00	40	2.78	48	8.71	10	1.13	16
470	14,15,19,30,33,45,47,48,52,65,67,78,79	0	0	5	38	0.00	30	4.81	7	0.00	40	2.34	56	8.61	8	1.13	16
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	0	0	5	38	0.00	30	0.42	28	0.00	40	0.00	100	12.43	70	2.16	32
135	3,11,14,20,29,42,43,57,58,66,67,70,83	0	0	4	31	0.00	30	1.83	21	0.00	40	1.85	65	11.67	58	1.07	15
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	0	0	7	54	0.00	30	0.41	28	0.00	40	0.44	92	12.53	72	2.16	32
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	0	0	10	77	2.03	22	1.33	24	0.00	40	1.14	78	12.20	67	0.15	1
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	0	0	8	62	0.00	30	1.74	22	0.00	40	1.58	70	9.43	22	2.16	32
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	0	0	6	46	0.00	30	1.76	22	0.00	40	1.14	78	9.34	20	2.16	32
523	8,10,20,22,28,43,44,59,66,67,70,79	0	0	4	31	0.00	30	2.03	20	0.00	40	0.00	100	9.67	26	1.13	16
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	5	38	0.00	30	4.99	6	0.00	40	4.10	23	9.73	27	1.07	15
508	14,20,22,28,42,43,57,58,66,67,70,78,79	0	0	4	31	0.00	30	2.45	18	0.00	40	0.00	100	11.87	61	1.13	16
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	2	50	11	85	3.79	16	1.44	23	0.61	37	0.53	90	13.11	81	2.16	32
220	3,8,10,20,29,43,44,59,66,67,70,81	0	0	4	31	0.00	30	1.42	23	0.00	40	1.40	74	9.49	23	1.07	15
527	7,8,13,28,42,43,57,58,66,67,70,79	0	0	5	38	0.00	30	2.03	20	0.00	40	0.00	100	12.42	70	1.13	16
180	3,14,20,29,42,43,57,58,66,67,70,78,81	0	0	4	31	0.00	30	1.84	21	0.00	40	1.40	74	11.68	58	1.07	15
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	0	0	6	46	0.00	30	2.44	18	0.00	40	0.44	92	11.97	63	1.13	16
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	0	0	7	54	0.00	30	3.77	12	0.00	40	1.58	70	8.87	13	1.13	16
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	0	0	5	38	0.00	30	3.79	12	0.00	40	1.14	78	8.78	11	1.13	16
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	2	50	10	77	3.79	16	3.47	13	0.61	37	0.53	90	12.55	72	1.13	16
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	0	0	8	62	2.03	22	0.00	30	0.00	40	0.00	100	14.27	100	0.15	1
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	0	0	8	62	2.03	22	2.36	19	0.00	40	2.34	56	10.24	35	0.15	1
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	0	0	6	46	0.00	30	4.19	10	0.00	40	4.18	21	8.66	9	1.07	15
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	2	50	9	69	3.79	16	2.86	16	0.61	37	1.94	63	12.50	71	1.07	15
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	0	0	11	85	2.03	22	3.14	15	0.43	38	2.87	46	10.64	41	0.15	1
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	0	0	7	54	2.03	22	4.18	10	0.00	40	3.33	37	9.49	23	0.15	1
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	0	0	10	77	2.03	22	2.88	16	0.00	40	2.89	46	10.63	41	0.15	1
321	4,9,11,16,23,25,34,47,48,52,53,69,80	0	0	6	46	2.03	22	3.50	13	0.43	38	3.43	35	10.30	36	0.15	1
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	0	0	5	38	0.00	30	1.83	21	0.00	40	1.85	65	11.92	62	1.07	15
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	0	0	6	46	0.00	30	3.16	15	0.00	40	2.99	44	8.82	12	1.07	15
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	0	0	11	85	2.03	22	3.15	15	0.43	38	2.43	54	10.65	41	0.15	1
217	3,8,10,20,22,28,43,44,59,66,67,70,81	0	0	5	38	0.00	30	1.42	23	0.00	40	1.40	74	9.74	27	1.07	15
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	0	0	7	54	2.03	22	4.19	10	0.00	40	2.89	46	9.51	23	0.15	1
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	0	0	8	62	2.03	22	1.33	24	0.00	40	1.14	78	10.41	37	0.15	1
521	8,10,20,29,42,43,57,58,66,67,70,79	0	0	4	31	0.00	30	2.03	20	0.00	40	0.00	100	11.87	61	1.13	16
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	0	0	6	46	0.00	30	4.20	10	0.00	40	3.74	29	8.68	10	1.07	15
202	3,7,8,13,28,42,43,57,58,66,67,70,81	0	0	6	46	0.00	30	1.42	23	0.00	40	1.40	74	12.49	71	1.07	15
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	0	0	5	38	0.00	30	1.84	21	0.00	40	1.40	74	11.93	62	1.07	15
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	0	0	7	54	2.03	22	3.16	15	0.00	40	2.13	60	9.66	25	0.15	1
248	4,17,24,25,34,47,48,52,53,69,80	0	0	5	38	3.24	18	2.01	20	0.43	38	1.88	65	10.23	35	0.15	1
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	0	0	10	77	2.03	22	1.86	21	0.00	40	1.69	68	10.79	44	0.15	1
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	0	0	6	46	0.00	30	3.18	15	0.00	40	2.54	52	8.84	12	1.07	15
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	0	0	7	54	2.03	22	3.17	15	0.00	40	1.69	68	9.67	26	0.15	1
510	8,10,15,19,30,33,45,47,48,52,65,67,79	0	0	6	46	0.00	30	4.39	9	0.00	40	2.34	56	8.87	13	1.13	16
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	0	0	12	92	0.00	30	3.14	15	0.43	38	2.87	46	9.93	30	2.16	32
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	0	0	10	77	0.00	30	3.15	15	0.43	38	2.43	54	9.84	28	2.16	32
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	0	0	10	77	1.24	25	1.66	22	0.43	38	1.88	65	12.47	71	2.16	32
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	0	0	8	62	0.00	30	4.18	10	0.00	40	3.33	37	8.79	11	2.16	32
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	0	0	9	69	2.03	22	3.55	13	0.00	40	2.13	60	11.13	49	0.15	1
218	3,8,10,20,29,42,43,57,58,66,67,70,81	0	0	5	38	0.00	30	1.42	23	0.00	40	1.40	74	11.94	62	1.07	15
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	0	0	6	46	1.24	25	2.70	17	0.00	40	2.34	56	11.33	52	2.16	32
524	8,10,20,22,28,42,43,57,58,66,67,70,79	0	0	5	38	0.00	30	2.03	20	0.00	40	0.00	100	12.12	65	1.13	16

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	0	0	6	46	1.24	25	1.68	22	0.00	40	1.14	78	11.35	53	2.16	32
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	0	0	6	46	0.00	30	3.37	14	0.00	40	1.14	78	9.03	15	1.13	16
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	0	0	7	54	0.00	30	3.50	13	0.43	38	3.43	35	9.60	25	2.16	32
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	0	0	11	85	0.00	30	5.17	5	0.43	38	2.87	46	9.37	21	1.13	16
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	0	0	9	69	0.00	30	5.19	5	0.43	38	2.43	54	9.28	19	1.13	16
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	0	0	4	31	2.03	22	3.91	11	0.00	40	2.70	49	10.80	44	0.15	1
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	0	0	9	69	1.24	25	3.69	12	0.43	38	1.88	65	11.91	62	1.13	16
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	0	0	7	54	0.00	30	6.21	0	0.00	40	3.33	37	8.23	2	1.13	16
438	23,25,34,47,48,52,65,67,78,79,82	0	0	5	38	0.00	30	6.22	0	0.00	40	2.89	46	8.13	1	1.13	16
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	9	69	2.03	22	3.56	13	0.00	40	1.69	68	11.15	50	0.15	1
425	9,17,24,25,34,47,48,52,65,67,71,79,81	0	0	5	38	1.24	25	4.73	7	0.00	40	2.34	56	10.77	43	1.13	16
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	0	0	11	85	2.03	22	2.60	17	0.43	38	2.87	46	11.26	51	0.15	1
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	0	0	5	38	1.24	25	3.71	12	0.00	40	1.14	78	10.79	44	1.13	16
429	11,16,23,25,34,47,48,52,53,69,79,80,81	0	0	6	46	0.00	30	5.53	3	0.43	38	3.43	35	9.04	15	1.13	16
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	0	0	9	69	2.03	22	2.07	20	0.43	38	2.32	56	10.88	45	0.15	1
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	0	0	7	54	2.03	22	3.64	12	0.00	40	3.33	37	10.12	33	0.15	1
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	0	0	8	62	0.00	30	3.16	15	0.00	40	2.13	60	8.96	14	2.16	32
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	0	0	6	46	0.00	30	3.17	15	0.00	40	1.69	68	8.86	12	2.16	32
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	0	0	6	46	2.03	22	3.32	14	0.00	40	3.37	36	10.01	31	0.15	1
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	0	0	7	54	0.00	30	3.78	12	0.00	40	3.74	29	8.93	14	1.07	15
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	0	0	9	69	2.03	22	2.09	20	0.43	38	1.88	65	10.89	45	0.15	1
228	3,9,17,24,25,34,47,48,52,67,70,76,84	0	0	4	31	1.24	25	3.10	15	0.00	40	2.54	52	10.74	43	1.07	15
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	0	0	7	54	0.00	30	5.19	5	0.00	40	2.13	60	8.39	5	1.13	16
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	0	0	7	54	2.03	22	3.65	12	0.00	40	2.89	46	10.14	33	0.15	1
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	0	0	5	38	0.00	30	5.20	5	0.00	40	1.69	68	8.30	3	1.13	16
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	0	0	3	23	3.24	18	2.42	18	0.00	40	1.14	78	10.72	43	0.15	1
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	0	0	8	62	1.24	25	3.09	15	0.43	38	3.28	38	11.86	61	1.07	15
227	3,9,17,24,25,34,47,48,52,65,67	0	0	4	31	1.24	25	4.12	10	0.00	40	3.74	29	10.72	43	1.07	15
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	0	0	10	77	0.00	30	4.56	8	0.43	38	4.27	19	9.32	20	1.07	15
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	0	0	6	46	0.00	30	1.42	23	0.00	40	1.40	74	12.19	66	1.07	15
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	0	0	7	54	2.03	22	2.61	17	0.00	40	2.13	60	10.28	36	0.15	1
152	3,11,16,23,25,34,47,48,52,53,69,80	0	0	5	38	0.00	30	4.92	6	0.43	38	4.84	9	8.99	15	1.07	15
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	0	0	7	54	0.00	30	2.76	17	0.00	40	2.54	52	9.09	16	1.07	15
172	3,11,23,25,34,47,48,52,65,67,77,82,83	0	0	6	46	0.00	30	5.60	3	0.00	40	4.73	11	8.18	2	1.07	15
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	0	0	6	46	2.03	22	2.63	17	0.00	40	1.69	68	10.25	35	0.15	1
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	0	0	6	46	2.03	22	2.30	19	0.00	40	2.17	59	10.17	34	0.15	1
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	0	0	8	62	0.00	30	3.56	13	0.00	40	1.69	68	10.33	36	2.16	32
7	2,10,15,19,30,33,45,47,48,52,53,69,80	0	0	7	54	0.00	30	1.66	22	0.43	38	1.88	65	9.17	17	2.16	32
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	0	0	6	46	0.00	30	4.58	8	0.00	40	3.53	33	8.35	4	1.07	15
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	0	0	8	62	1.24	25	2.07	20	0.00	40	1.14	78	12.97	79	2.16	32
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	0	0	10	77	0.00	30	4.58	8	0.43	38	3.83	28	9.34	20	1.07	15
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	0	0	10	77	0.00	30	3.55	13	0.00	40	2.13	60	10.43	38	2.16	32
199	3,23,25,34,47,48,52,65,67,78,81,82	0	0	6	46	0.00	30	5.61	3	0.00	40	4.29	19	8.20	2	1.07	15
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	0	0	7	54	0.00	30	5.59	3	0.00	40	1.69	68	9.77	27	1.13	16
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	0	0	7	54	1.24	25	4.10	10	0.00	40	1.14	78	12.40	70	1.13	16
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	0	0	12	92	2.03	22	1.66	22	0.43	38	1.88	65	12.94	79	0.15	1
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	0	0	10	77	0.00	30	2.07	20	0.43	38	2.32	56	10.18	34	2.16	32
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	0	0	8	62	0.00	30	2.09	20	0.43	38	1.88	65	10.08	32	2.16	32
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	0	0	5	38	0.00	30	3.91	11	0.00	40	2.70	49	10.10	33	2.16	32
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	0	0	9	69	2.03	22	3.00	16	0.00	40	2.13	60	11.76	59	0.15	1
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	0	0	9	69	0.00	30	5.58	3	0.00	40	2.13	60	9.87	29	1.13	16
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	0	0	7	54	2.03	22	2.48	18	0.00	40	1.58	70	11.37	53	0.15	1
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	0	0	7	54	0.00	30	3.32	14	0.00	40	3.37	36	9.31	20	2.16	32
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	0	0	6	46	0.00	30	4.59	8	0.00	40	3.09	42	8.36	4	1.07	15
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	0	0	9	69	0.00	30	4.10	10	0.43	38	2.32	56	9.61	25	1.13	16
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	0	0	7	54	0.00	30	4.12	10	0.43	38	1.88	65	9.52	23	1.13	16
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	0	0	4	31	0.00	30	5.94	1	0.00	40	2.70	49	9.54	23	1.13	16
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	6	46	1.24	25	3.49	13	0.00	40	2.54	52	12.36	69	1.07	15
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	0	0	7	54	2.03	22	2.49	18	0.00	40	1.14	78	11.39	53	0.15	1
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	0	0	6	46	0.00	30	5.36	4	0.00	40	3.37	36	8.75	11	1.13	16
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	0	0	8	62	0.00	30	4.97	6	0.00	40	3.53	33	9.82	28	1.07	15
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	0	0	3	23	0.00	30	5.33	4	0.00	40	4.10	23	9.49	23	1.07	15
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	0	0	7	54	0.00	30	2.30	19	0.00	40	2.17	59	9.47	22	2.16	32

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
5	2,10,15,19,21,29,43,44,55,67,70,76	0	0	6	46	0.00	30	0.76	26	0.00	40	0.00	100	9.51	23	2.16	32
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	8	62	0.00	30	4.98	6	0.00	40	3.09	42	9.84	28	1.07	15
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	0	0	6	46	0.00	30	4.33	9	0.00	40	2.17	59	8.91	13	1.13	16
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	0	0	7	54	2.03	22	3.31	14	0.00	40	2.78	48	10.00	31	0.15	1
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	0	0	5	38	0.00	30	4.75	7	0.00	40	4.78	10	8.70	10	1.07	15
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	0	0	10	77	2.03	22	1.66	22	0.43	38	1.88	65	11.15	50	0.15	1
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	0	0	8	62	0.00	30	3.49	13	0.43	38	3.72	30	9.57	24	1.07	15
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	10	77	2.03	22	2.07	20	0.00	40	1.14	78	13.44	87	0.15	1
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	0	0	9	69	2.03	22	3.49	13	0.43	38	2.87	46	10.40	37	0.15	1
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	0	0	5	38	0.00	30	2.07	20	0.00	40	1.14	78	9.67	26	2.16	32
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	0	0	12	92	2.03	22	2.19	19	0.43	38	2.43	54	11.53	56	0.15	1
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	0	0	8	62	2.03	22	3.23	14	0.00	40	2.89	46	10.39	37	0.15	1
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	0	0	9	69	0.00	30	1.17	24	0.00	40	0.44	92	10.52	39	2.16	32
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	0	0	7	54	2.03	22	3.32	14	0.00	40	2.34	56	10.01	31	0.15	1
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	0	0	5	38	0.00	30	3.72	12	0.00	40	3.58	32	8.86	12	1.07	15
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	0	0	6	46	0.00	30	2.49	18	0.00	40	1.14	78	10.58	40	2.16	32
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	0	0	9	69	2.03	22	3.50	13	0.43	38	2.43	54	10.41	38	0.15	1
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	0	0	7	54	2.03	22	2.29	19	0.00	40	1.58	70	10.16	34	0.15	1
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	0	0	8	62	0.00	30	3.51	13	0.43	38	3.28	38	9.58	24	1.07	15
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	0	0	8	62	0.00	30	2.48	18	0.00	40	1.58	70	10.67	42	2.16	32
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	0	0	8	62	0.00	30	3.20	15	0.00	40	0.44	92	9.96	30	1.13	16
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	0	0	5	38	0.00	30	4.52	8	0.00	40	1.14	78	10.01	31	1.13	16
2	2,10,15,19,21,22,28,43,44,55,67,70,76	0	0	7	54	0.00	30	0.76	26	0.00	40	0.00	100	9.76	27	2.16	32
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	0	0	8	62	2.03	22	2.21	19	0.00	40	1.69	68	10.55	40	0.15	1
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	0	0	7	54	0.00	30	4.51	8	0.00	40	1.58	70	10.11	33	1.13	16
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	0	0	7	54	2.03	22	2.30	19	0.00	40	1.14	78	10.17	34	0.15	1
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	0	0	8	62	0.00	30	3.69	12	0.43	38	1.88	65	9.77	27	1.13	16
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	0	0	10	77	0.00	30	1.17	24	0.00	40	0.44	92	10.77	43	2.16	32
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	0	0	7	54	0.00	30	2.59	18	0.00	40	1.85	65	9.91	29	1.07	15
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	0	0	8	62	0.00	30	3.31	14	0.00	40	2.78	48	9.30	20	2.16	32
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	0	0	6	46	0.00	30	3.32	14	0.00	40	2.34	56	9.20	18	2.16	32
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	0	0	9	69	0.00	30	3.20	15	0.00	40	0.44	92	10.21	34	1.13	16
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	8	62	2.03	22	2.07	20	0.00	40	1.14	78	11.64	58	0.15	1
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	0	0	6	46	0.00	30	3.90	11	0.00	40	2.99	44	10.06	32	1.07	15
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	0	0	10	77	0.00	30	3.49	13	0.43	38	2.87	46	9.70	26	2.16	32
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	0	0	8	62	0.00	30	3.50	13	0.43	38	2.43	54	9.60	24	2.16	32
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	0	0	8	62	1.24	25	2.01	20	0.43	38	1.88	65	12.23	67	2.16	32
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	0	0	7	54	2.03	22	3.89	11	0.00	40	2.13	60	10.90	45	0.15	1
458	11,18,19,30,33,45,47,48,52,65,67,77,83	0	0	7	54	0.00	30	5.34	4	0.00	40	2.78	48	8.74	10	1.13	16
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	0	0	10	77	2.03	22	2.60	17	0.00	40	1.69	68	12.03	64	0.15	1
462	18,19,30,33,45,47,48,52,65,67,77,78,79	0	0	5	38	0.00	30	5.35	4	0.00	40	2.34	56	8.64	9	1.13	16
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	0	0	9	69	0.00	30	5.52	3	0.43	38	2.87	46	9.14	17	1.13	16
437	23,25,34,47,48,52,53,69,77,78,79,80,82	0	0	7	54	0.00	30	5.53	3	0.43	38	2.43	54	9.04	15	1.13	16
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	0	0	6	46	0.00	30	3.91	11	0.00	40	2.54	52	10.08	32	1.07	15
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	0	0	7	54	1.24	25	4.04	11	0.43	38	1.88	65	11.67	58	1.13	16
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	0	0	8	62	0.00	30	2.29	19	0.00	40	1.58	70	9.46	22	2.16	32
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	0	0	6	46	0.00	30	2.30	19	0.00	40	1.14	78	9.36	21	2.16	32
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	7	54	2.03	22	3.91	11	0.00	40	1.69	68	10.91	46	0.15	1
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	0	0	9	69	2.03	22	2.94	16	0.43	38	2.87	46	11.03	48	0.15	1
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	0	0	8	62	0.00	30	2.59	18	0.00	40	1.85	65	10.16	34	1.07	15
6	2,10,15,19,21,29,43,44,59,66,67,70	0	0	4	31	0.00	30	0.00	30	0.00	40	0.00	100	9.23	18	2.16	32
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	0	0	8	62	2.03	22	2.63	17	0.43	38	2.91	45	10.91	46	0.15	1
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	0	0	7	54	0.00	30	4.32	9	0.00	40	1.58	70	8.90	13	1.13	16
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	0	0	5	38	0.00	30	4.33	9	0.00	40	1.14	78	8.80	12	1.13	16
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	0	0	9	69	0.00	30	3.09	15	0.43	38	3.28	38	9.84	28	1.07	15
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	0	0	9	69	2.03	22	2.96	16	0.43	38	2.43	54	11.04	48	0.15	1
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	0	0	6	46	0.00	30	4.73	7	0.00	40	4.18	21	8.69	10	1.07	15
226	3,9,17,24,25,34,47,48,52,53,69,80	0	0	6	46	1.24	25	3.43	13	0.43	38	3.28	38	11.62	57	1.07	15
513	8,10,15,19,21,29,43,44,55,67,70,76,79	0	0	7	54	0.00	30	2.79	17	0.00	40	0.00	100	10.12	33	1.13	16
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	0	0	7	54	0.00	30	0.41	28	0.00	40	0.44	92	10.23	35	2.16	32
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	0	0	8	62	0.00	30	4.91	6	0.43	38	4.27	19	9.09	16	1.07	15
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	0	0	6	46	0.00	30	4.10	10	0.00	40	1.14	78	10.27	35	1.13	16
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	0	0	6	46	0.00	30	3.71	12	0.00	40	2.99	44	8.85	12	1.07	15

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	0	0	6	46	0.00	30	2.44	18	0.00	40	0.44	92	9.67	26	1.13	16
3	2,10,15,19,21,22,28,43,44,59,66,67,70	0	0	5	38	0.00	30	0.00	30	0.00	40	0.00	100	9.48	22	2.16	32
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	0	0	6	46	0.00	30	3.91	11	0.00	40	1.69	68	10.10	33	2.16	32
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	0	0	6	46	0.00	30	4.74	7	0.00	40	3.74	29	8.70	10	1.07	15
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	0	0	6	46	1.24	25	2.42	18	0.00	40	1.14	78	12.73	75	2.16	32
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	0	0	7	54	2.03	22	1.73	22	0.00	40	1.03	80	11.26	51	0.15	1
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	0	0	8	62	0.00	30	4.92	6	0.43	38	3.83	28	9.10	16	1.07	15
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	0	0	8	62	0.00	30	3.89	11	0.00	40	2.13	60	10.19	34	2.16	32
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	0	0	5	38	0.00	30	5.94	1	0.00	40	1.69	68	9.54	23	1.13	16
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	0	0	5	38	1.24	25	4.45	9	0.00	40	1.14	78	12.17	66	1.13	16
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	0	0	8	62	0.00	30	2.79	17	0.00	40	0.00	100	10.37	37	1.13	16
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	0	0	6	46	0.00	30	3.72	12	0.00	40	2.54	52	8.86	13	1.07	15
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	0	0	8	62	0.00	30	0.41	28	0.00	40	0.44	92	10.49	39	2.16	32
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	0	0	8	62	0.00	30	2.18	19	0.00	40	1.40	74	10.18	34	1.07	15
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	0	0	5	38	0.00	30	1.83	21	0.00	40	1.85	65	9.62	25	1.07	15
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	0	0	7	54	2.03	22	3.35	14	0.00	40	2.13	60	11.52	56	0.15	1
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	0	0	7	54	0.00	30	5.92	1	0.00	40	2.13	60	9.63	25	1.13	16
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	0	0	9	69	0.00	30	2.63	17	0.43	38	2.91	45	10.21	34	2.16	32
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	0	0	6	46	2.03	22	3.04	15	0.00	40	2.17	59	11.41	54	0.15	1
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	0	0	7	54	0.00	30	2.44	18	0.00	40	0.44	92	9.92	30	1.13	16
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	0	0	4	31	1.24	25	3.84	12	0.00	40	2.54	52	12.12	65	1.07	15
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	7	54	0.00	30	3.49	13	0.00	40	2.54	52	10.33	36	1.07	15
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	0	0	8	62	0.00	30	4.66	8	0.43	38	2.91	45	9.65	25	1.13	16
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	0	0	7	54	2.03	22	3.36	14	0.00	40	1.69	68	11.54	56	0.15	1
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	0	0	8	62	2.03	22	1.73	22	0.00	40	1.03	80	11.51	55	0.15	1
4	2,10,15,19,21,29,42,43,57,58,66,67,70	0	0	5	38	0.00	30	0.00	30	0.00	40	0.00	100	11.68	58	2.16	32
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	0	0	6	46	0.00	30	5.31	4	0.00	40	3.53	33	9.58	24	1.07	15
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	0	0	9	69	0.00	30	2.18	19	0.00	40	1.40	74	10.43	38	1.07	15
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	0	0	6	46	0.00	30	1.83	21	0.00	40	1.85	65	9.87	29	1.07	15
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	0	0	9	69	2.03	22	2.62	17	0.43	38	2.32	56	10.90	46	0.15	1
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	0	0	7	54	0.00	30	4.05	10	0.43	38	4.31	19	9.60	25	1.07	15
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	6	46	0.00	30	5.33	4	0.00	40	3.09	42	9.60	24	1.07	15
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	0	0	8	62	0.00	30	0.41	28	0.00	40	0.44	92	12.68	74	2.16	32
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	0	0	10	77	2.03	22	2.53	18	0.43	38	2.43	54	11.30	52	0.15	1
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	0	0	7	54	0.00	30	2.44	18	0.00	40	0.44	92	12.12	65	1.13	16
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	0	0	9	69	2.03	22	2.63	17	0.43	38	1.88	65	10.92	46	0.15	1
514	8,10,15,19,21,29,43,44,59,66,67,70,79	0	0	5	38	0.00	30	2.03	20	0.00	40	0.00	100	9.83	28	1.13	16
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	0	0	8	62	0.00	30	1.73	22	0.00	40	1.03	80	10.56	40	2.16	32
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	0	0	6	46	0.00	30	0.00	30	0.00	40	0.00	100	11.93	62	2.16	32
401	6,12,39,57,58,66,67,70	0	0	0	0	0.00	30	0.00	30	0.00	40	0.00	100	9.57	24	6.62	100
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	0	0	7	54	0.00	30	3.04	15	0.00	40	2.17	59	10.71	42	2.16	32
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	0	0	7	54	0.00	30	3.76	12	0.00	40	1.03	80	9.99	31	1.13	16
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	0	0	6	46	0.00	30	1.83	21	0.00	40	1.85	65	12.07	64	1.07	15
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	0	0	5	38	2.03	22	0.97	25	0.00	40	1.03	80	10.97	47	0.15	1
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	0	0	8	62	2.03	22	1.71	22	0.00	40	0.44	92	11.25	51	0.15	1
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	0	0	6	46	0.00	30	5.07	6	0.00	40	2.17	59	10.15	33	1.13	16
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	0	0	9	69	0.00	30	0.41	28	0.00	40	0.44	92	12.93	78	2.16	32
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	0	0	6	46	0.00	30	2.03	20	0.00	40	0.00	100	10.08	32	1.13	16
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	0	0	6	46	0.00	30	3.15	15	0.00	40	2.44	54	9.95	30	1.07	15
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	0	0	6	46	0.00	30	1.42	23	0.00	40	1.40	74	9.89	29	1.07	15
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	0	0	8	62	2.03	22	1.73	22	0.00	40	0.00	100	11.26	51	0.15	1
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	0	0	9	69	0.00	30	1.73	22	0.00	40	1.03	80	10.81	44	2.16	32
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	0	0	10	77	0.00	30	2.62	17	0.43	38	2.32	56	10.20	34	2.16	32
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	0	0	8	62	0.00	30	2.44	18	0.00	40	0.44	92	12.37	69	1.13	16
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	0	0	8	62	0.00	30	2.63	17	0.43	38	1.88	65	10.10	33	2.16	32
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	0	0	7	54	2.03	22	3.02	15	0.00	40	1.58	70	11.40	54	0.15	1
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	0	0	5	38	0.00	30	4.46	9	0.00	40	3.58	32	10.10	33	1.07	15
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	0	0	8	62	0.00	30	3.76	12	0.00	40	1.03	80	10.25	35	1.13	16
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	0	0	9	69	0.00	30	4.65	8	0.43	38	2.32	56	9.64	25	1.13	16
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	0	0	7	54	0.00	30	4.66	8	0.43	38	1.88	65	9.54	24	1.13	16
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	0	0	8	62	2.03	22	2.94	16	0.00	40	1.69	68	11.79	60	0.15	1
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	0	0	6	46	2.03	22	0.97	25	0.00	40	1.03	80	11.22	51	0.15	1
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	0	0	9	69	2.03	22	1.71	22	0.00	40	0.44	92	11.50	55	0.15	1

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	0	0	7	54	2.03	22	3.04	15	0.00	40	1.14	78	11.41	54	0.15	1
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	0	0	7	54	0.00	30	1.83	21	0.00	40	1.85	65	12.32	69	1.07	15
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	0	0	7	54	0.00	30	3.15	15	0.00	40	2.44	54	10.20	34	1.07	15
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	0	0	7	54	0.00	30	1.42	23	0.00	40	1.40	74	10.14	33	1.07	15
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	0	0	9	69	2.03	22	1.73	22	0.00	40	0.00	100	11.51	55	0.15	1
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	0	0	6	46	0.00	30	2.03	20	0.00	40	0.00	100	12.28	68	1.13	16
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	0	0	8	62	0.00	30	4.04	11	0.43	38	3.72	30	9.59	24	1.07	15
399	6,12,39,42,44,55,67,70,76	0	0	5	38	0.00	30	0.76	26	0.00	40	0.00	100	10.35	37	6.62	100
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	0	0	7	54	0.00	30	1.73	22	0.00	40	0.00	100	10.45	38	2.16	32
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	0	0	6	46	0.00	30	0.97	25	0.00	40	1.03	80	10.27	35	2.16	32
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	0	0	9	69	0.00	30	1.71	22	0.00	40	0.44	92	10.54	40	2.16	32
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	0	0	6	46	0.00	30	3.04	15	0.00	40	1.14	78	10.60	41	2.16	32
482	18,19,21,29,43,44,55,67,70,76,77,78,79	0	0	6	46	0.00	30	3.76	12	0.00	40	0.00	100	9.89	29	1.13	16
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0	0	6	46	2.03	22	0.97	25	0.00	40	1.03	80	13.42	86	0.15	1
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	0	0	8	62	0.00	30	4.05	10	0.43	38	3.28	38	9.61	25	1.07	15
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	0	0	8	62	0.00	30	3.02	15	0.00	40	1.58	70	10.70	42	2.16	32
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	0	0	5	38	0.00	30	3.00	16	0.00	40	1.03	80	9.71	26	1.13	16
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	0	0	8	62	0.00	30	3.74	12	0.00	40	0.44	92	9.98	31	1.13	16
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	0	0	5	38	0.00	30	5.07	6	0.00	40	1.14	78	10.04	32	1.13	16
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	0	0	7	54	0.00	30	1.42	23	0.00	40	1.40	74	12.34	69	1.07	15
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	0	0	6	46	2.03	22	0.95	25	0.00	40	0.44	92	10.96	46	0.15	1
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	0	0	7	54	0.00	30	2.03	20	0.00	40	0.00	100	12.53	72	1.13	16
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	0	0	7	54	0.00	30	5.05	6	0.00	40	1.58	70	10.14	33	1.13	16
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	0	0	8	62	0.00	30	1.73	22	0.00	40	0.00	100	10.70	42	2.16	32
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	0	0	4	31	0.00	30	2.39	18	0.00	40	2.44	54	9.66	25	1.07	15
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	0	0	6	46	2.03	22	0.96	25	0.00	40	0.00	100	10.97	47	0.15	1
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	0	0	7	54	0.00	30	0.97	25	0.00	40	1.03	80	10.52	39	2.16	32
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	0	0	10	77	0.00	30	1.71	22	0.00	40	0.44	92	10.80	44	2.16	32
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	0	0	7	54	0.00	30	3.13	15	0.00	40	1.85	65	9.93	30	1.07	15
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	0	0	7	54	0.00	30	3.76	12	0.00	40	0.00	100	10.14	33	1.13	16
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	0	0	6	46	0.00	30	3.00	16	0.00	40	1.03	80	9.96	30	1.13	16
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0	0	7	54	2.03	22	0.97	25	0.00	40	1.03	80	13.67	90	0.15	1
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	0	0	6	46	0.00	30	4.44	9	0.00	40	2.99	44	10.09	32	1.07	15
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	0	0	7	54	0.00	30	3.15	15	0.00	40	1.40	74	9.95	30	1.07	15
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	0	0	7	54	2.03	22	0.95	25	0.00	40	0.44	92	11.21	51	0.15	1
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	0	0	8	62	0.00	30	1.42	23	0.00	40	1.40	74	12.59	73	1.07	15
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	0	0	5	38	0.00	30	2.39	18	0.00	40	2.44	54	9.91	30	1.07	15
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	0	0	6	46	0.00	30	4.46	9	0.00	40	2.54	52	10.10	33	1.07	15
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	0	0	7	54	2.03	22	0.96	25	0.00	40	0.00	100	11.23	51	0.15	1
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	0	0	8	62	0.00	30	3.13	15	0.00	40	1.85	65	10.19	34	1.07	15
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	0	0	8	62	0.00	30	3.13	15	0.00	40	1.85	65	10.19	34	1.07	15
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	0	0	7	54	0.00	30	0.97	25	0.00	40	1.03	80	12.72	75	2.16	32
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	0	0	5	38	0.00	30	0.96	25	0.00	40	0.00	100	10.16	34	2.16	32
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	0	0	8	62	0.00	30	3.15	15	0.00	40	1.40	74	10.20	34	1.07	15
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	0	0	6	46	0.00	30	3.00	16	0.00	40	1.03	80	12.16	66	1.13	16
400	6,12,39,42,44,59,66,67,70	0	0	3	23	0.00	30	0.00	30	0.00	40	0.00	100	10.07	32	6.62	100
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	0	0	7	54	0.00	30	0.95	25	0.00	40	0.44	92	10.26	35	2.16	32
483	18,19,21,29,43,44,59,66,67,70,77,78,79	0	0	4	31	0.00	30	3.00	16	0.00	40	0.00	100	9.60	24	1.13	16
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0	0	7	54	2.03	22	0.95	25	0.00	40	0.44	92	13.41	86	0.15	1
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	0	0	6	46	0.00	30	2.98	16	0.00	40	0.44	92	9.70	26	1.13	16
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0	0	5	38	0.00	30	2.39	18	0.00	40	2.44	54	12.11	65	1.07	15
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0	0	7	54	2.03	22	0.96	25	0.00	40	0.00	100	13.42	86	0.15	1
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	0	0	6	46	0.00	30	0.96	25	0.00	40	0.00	100	10.41	38	2.16	32
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	0	0	8	62	0.00	30	0.97	25	0.00	40	1.03	80	12.97	79	2.16	32
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	0	0	8	62	0.00	30	0.95	25	0.00	40	0.44	92	10.51	39	2.16	32
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	0	0	5	38	0.00	30	2.37	19	0.00	40	1.85	65	9.65	25	1.07	15
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	0	0	5	38	0.00	30	3.00	16	0.00	40	0.00	100	9.85	29	1.13	16
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	0	0	7	54	0.00	30	3.00	16	0.00	40	1.03	80	12.41	70	1.13	16
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	0	0	7	54	0.00	30	2.98	16	0.00	40	0.44	92	9.95	30	1.13	16
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0	0	8	62	2.03	22	0.95	25	0.00	40	0.44	92	13.66	90	0.15	1
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	0	0	5	38	0.00	30	2.39	18	0.00	40	1.40	74	9.66	25	1.07	15
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0	0	6	46	0.00	30	2.39	18	0.00	40	2.44	54	12.36	69	1.07	15
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0	0	8	62	2.03	22	0.96	25	0.00	40	0.00	100	13.68	90	0.15	1

Routes	Study Segments	Technical															
		Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	0	0	6	46	0.00	30	0.96	25	0.00	40	0.00	100	12.61	73	2.16	32
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	0	0	6	46	0.00	30	2.37	19	0.00	40	1.85	65	9.90	29	1.07	15
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	0	0	8	62	0.00	30	0.95	25	0.00	40	0.44	92	12.71	75	2.16	32
404	6,26,40,41,57,58,66,67,70	0	0	4	31	0.00	30	0.00	30	0.00	40	0.00	100	9.77	27	6.62	100
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	0	0	5	38	0.00	30	3.00	16	0.00	40	0.00	100	12.05	64	1.13	16
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	0	0	6	46	0.00	30	2.39	18	0.00	40	1.40	74	9.91	30	1.07	15
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	0	0	7	54	0.00	30	2.98	16	0.00	40	0.44	92	12.15	66	1.13	16
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	0	0	7	54	0.00	30	0.96	25	0.00	40	0.00	100	12.86	77	2.16	32
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0	0	6	46	0.00	30	2.37	19	0.00	40	1.85	65	12.10	65	1.07	15
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	0	0	9	69	0.00	30	0.95	25	0.00	40	0.44	92	12.96	79	2.16	32
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	0	0	6	46	0.00	30	3.00	16	0.00	40	0.00	100	12.30	68	1.13	16
397	6,12,27,40,41,57,58,66,67,70	0	0	2	15	0.00	30	0.00	30	0.00	40	0.00	100	9.73	26	6.62	100
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0	0	6	46	0.00	30	2.39	18	0.00	40	1.40	74	12.11	65	1.07	15
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	0	0	8	62	0.00	30	2.98	16	0.00	40	0.44	92	12.40	70	1.13	16
402	6,26,40,41,42,44,55,67,70,76	0	0	9	69	0.00	30	0.76	26	0.00	40	0.00	100	10.55	40	6.62	100
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0	0	7	54	0.00	30	2.37	19	0.00	40	1.85	65	12.35	69	1.07	15
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0	0	7	54	0.00	30	2.39	18	0.00	40	1.40	74	12.36	69	1.07	15
395	6,12,27,40,41,42,44,55,67,70,76	0	0	7	54	0.00	30	0.76	26	0.00	40	0.00	100	10.51	39	6.62	100
403	6,26,40,41,42,59,66,67,70	0	0	7	54	0.00	30	0.00	30	0.00	40	0.00	100	10.26	35	6.62	100
396	6,12,27,40,41,42,44,59,66,67,70	0	0	5	38	0.00	30	0.00	30	0.00	40	0.00	100	10.22	35	6.62	100
405	6,26,40,56,58,66,67,70	0	0	4	31	0.00	30	0.00	30	0.00	40	0.00	100	10.31	36	6.62	100
398	6,12,27,40,56,58,66,67,70	0	0	2	15	0.00	30	0.00	30	0.00	40	0.00	100	10.26	35	6.62	100
	MIN	0	0	0	0	0	0	0.00	0	0.00	0	0.00	0	8.09	0	0.07	0
	MAX	4	100	13	100	8	30	6.23	30	9.07	40	5.30	100	14.27	100	6.62	100
	RANGE	4	100	13	100	8	30	6.23	30	9.07	40	5.30	100	6.18	100	6.55	100

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
392	5,35,38,64,71,73	7.2	0.0	14.6	45.0	17.0	1
252	4,17,32,37,50,69,75,80	5.2	16.0	9.3	52.9	17.5	2
382	5,35,36,37,50,69,75,80	1.3	16.0	12.1	54.8	17.8	3
394	5,60,62,64	12.8	0.0	10.0	50.7	18.0	4
393	5,60,61,64	12.8	0.0	10.4	52.3	18.4	5
267	4,17,32,37,64,71,72,74,75	10.1	0.0	9.5	58.2	18.5	6
261	4,17,32,37,49,64,71,73	10.9	0.0	10.5	56.5	18.7	7
384	5,35,36,37,64,71,72,74,75	6.2	0.0	12.3	60.1	18.8	8
388	5,35,38,49,50,69,75,80	1.5	16.0	15.1	54.1	18.9	9
378	5,35,36,37,49,64,71,73	7.0	0.0	13.3	58.3	19.1	10
263	4,17,32,37,50,53,65,67,75	17.8	19.0	9.6	42.3	19.5	11
259	4,17,32,36,38,64,71,73	11.1	0.0	13.1	55.8	19.7	12
380	5,35,36,37,50,53,65,67,75	13.9	19.0	12.4	44.2	19.9	13
264	4,17,32,37,50,53,67,70,75,76,84	18.0	4.0	10.4	49.6	19.9	14
390	5,35,38,49,64,71,72,74,75	6.5	0.0	15.3	59.4	20.0	15
381	5,35,36,37,50,53,67,70,75,76,84	14.1	4.0	13.2	51.4	20.2	16
266	4,17,32,37,63,74,75,80	8.8	27.0	13.4	47.7	20.2	17
383	5,35,36,37,63,74,75,80	4.9	27.0	16.2	49.5	20.6	18
386	5,35,38,49,50,53,65,67,75	14.2	19.0	15.4	43.5	21.0	19
387	5,35,38,49,50,53,67,70,75,76,84	14.4	4.0	16.2	50.8	21.3	20
256	4,17,32,36,38,49,50,69,75,80	5.4	16.0	13.1	64.9	21.4	21
389	5,35,38,49,63,74,75,80	5.2	27.0	19.2	48.8	21.7	22
391	5,35,38,63,72,73,80	5.9	27.0	20.0	47.2	21.9	23
258	4,17,32,36,38,49,64,71,72,74,75	10.4	0.0	13.3	70.2	22.5	24
118	2,8,9,17,32,37,50,69,75,80,81	9.2	16.0	13.9	64.7	22.8	25
241	3,9,17,32,37,50,69,75,80	5.3	55.0	14.2	51.7	23.1	26
413	9,17,32,37,50,69,75,79,80,81	5.9	55.0	10.2	58.9	23.1	27
254	4,17,32,36,38,49,50,53,65,67,75	18.1	19.0	13.3	54.3	23.5	28
260	4,17,32,37,49,63,72,73,80	9.5	27.0	15.9	58.6	23.6	29
255	4,17,32,36,38,49,50,53,67,70,75,76,84	18.3	4.0	14.1	61.6	23.9	30
120	2,8,9,17,32,37,64,71,72,74,75,81	14.1	0.0	14.1	70.0	23.9	31
377	5,35,36,37,49,63,72,73,80	5.6	27.0	18.7	60.5	24.0	32
114	2,8,9,17,32,37,49,64,71,73,81	14.9	0.0	15.1	68.3	24.1	33
243	3,9,17,32,37,64,71,72,74,75	10.2	39.0	14.4	57.0	24.1	34
408	9,17,32,37,64,71,72,74,75,79,81	10.8	39.0	10.4	64.2	24.2	35
257	4,17,32,36,38,49,63,34,74,75,80	9.1	27.0	17.2	59.6	24.2	36
237	3,9,17,32,37,49,64,71,73	10.9	39.0	15.4	55.3	24.4	37
407	9,17,32,37,49,64,71,73,79,81	11.6	39.0	11.4	62.5	24.4	38
253	4,17,32,36,38,36,34,72,73,80	9.8	27.0	18.5	58.0	24.6	39
117	2,8,9,17,32,37,50,53,65,67,71,75,81	21.8	19.0	13.7	54.1	24.8	40
415	9,17,32,37,50,53,65,67,71,75,79,81	18.5	58.0	10.0	48.3	25.0	41
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	22.0	4.0	14.5	61.3	25.1	42
262	4,17,32,37,50,53,55,59,66,67,70,75,84	21.4	4.0	19.9	51.7	25.1	43
112	2,8,9,17,32,36,38,64,71,73,81	15.1	0.0	17.7	67.6	25.1	44
240	3,9,17,32,37,50,53,65,67,75	17.9	58.0	14.5	41.1	25.2	45
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	18.7	43.0	10.8	55.6	25.3	46
235	3,9,17,32,36,38,64,71,73	11.2	39.0	18.0	54.6	25.4	47
406	9,17,32,36,38,64,71,73,79,81	11.8	39.0	14.0	61.8	25.4	48
379	5,35,36,37,50,53,55,59,66,67,70,75,84	17.5	4.0	22.7	53.6	25.4	49
238	3,9,17,32,37,50,35,67,70,75,76,84	18.1	43.0	15.3	48.4	25.5	50
119	2,8,9,17,32,37,63,74,75,80,81	12.8	27.0	18.1	59.4	25.6	51
242	3,9,17,32,37,63,74,75,80	8.9	66.0	18.3	46.5	25.9	52
410	9,17,32,37,63,74,75,79,80,81	9.5	66.0	14.3	53.7	25.9	53
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	17.6	30.0	27.2	35.8	26.4	54
385	5,35,38,49,50,53,55,59,66,67,70,75,84	17.8	4.0	25.7	52.9	26.6	55
246	4,17,24,25,31,33,45,47,48,52,65,67	26.5	30.0	18.2	42.5	26.7	56
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	9.4	16.0	17.7	76.7	26.8	57
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	17.8	15.0	28.5	43.1	26.9	58
232	3,9,17,32,36,38,49,50,69,75,80	5.5	55.0	18.0	63.7	27.1	59
414	9,17,32,36,38,49,50,69,75,71,79,80,81	6.1	55.0	14.0	70.9	27.1	60
247	4,17,24,25,31,33,47,48,52,67,70,76,84	26.7	15.0	19.5	49.7	27.3	61
306	4,9,11,14,20,29,43,44,55,67,70,76,83	28.8	0.0	17.8	58.2	27.4	62
18	2,7,13,28,43,44,55,67,70,76	31.5	0.0	15.2	60.3	27.6	63

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	20.8	30.0	26.7	38.7	27.6	64
354	4,9,14,20,29,43,44,55,67,70,76,78,81	28.3	0.0	18.0	60.3	27.7	65
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	14.4	0.0	17.9	82.0	27.9	66
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	17.5	69.0	23.0	33.0	27.9	67
233	3,9,17,32,36,38,49,64,71,72,74,75	10.5	39.0	18.2	69.0	28.1	68
409	9,17,32,36,38,49,64,71,72,74,75,79,81	11.1	39.0	14.2	76.2	28.1	69
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	20.9	15.0	28.0	46.0	28.2	70
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	28.8	0.0	18.9	60.0	28.2	71
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	17.6	54.0	24.3	40.2	28.4	72
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	28.3	0.0	19.0	62.1	28.5	73
149	3,11,16,23,25,31,33,45,47,48,52,65,67	16.9	69.0	28.5	25.8	28.5	74
276	4,7,8,9,13,28,43,44,55,67,70,76,81	29.3	0.0	17.1	65.1	28.6	75
15	2,10,20,29,43,44,55,67,70,76	34.7	0.0	16.7	57.8	28.7	76
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	22.1	19.0	17.5	66.1	28.7	77
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	17.0	54.0	29.3	33.0	28.8	78
80	2,8,14,20,29,43,44,55,67,70,76,78	31.4	0.0	18.4	60.6	28.9	79
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	18.8	58.0	13.7	60.3	29.0	80
113	2,8,9,17,32,37,49,63,72,73,80,81	13.5	27.0	20.5	70.4	29.0	81
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	22.3	4.0	18.2	73.3	29.1	82
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	31.9	0.0	18.3	61.1	29.1	83
500	14,20,29,43,44,55,67,70,76,78,79	28.1	39.0	14.7	54.9	29.2	84
230	3,9,17,32,36,38,49,50,53,65,67,75	18.2	58.0	18.2	53.1	29.2	85
236	3,9,17,32,37,49,63,72,73,80	9.6	66.0	20.8	57.4	29.3	86
412	9,17,32,37,49,63,72,73,79,80,81	10.2	66.0	16.7	64.7	29.3	87
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	19.0	43.0	14.5	67.6	29.3	88
497	11,14,20,29,43,44,55,67,70,76,79,81,83	28.6	39.0	14.5	55.3	29.4	89
12	2,10,20,22,28,43,44,55,67,70,76	34.7	0.0	17.8	59.5	29.4	90
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	18.4	43.0	19.0	60.4	29.5	91
307	4,9,11,14,20,29,43,44,59,66,67,70,83	32.2	0.0	21.6	56.1	29.5	92
77	2,8,14,20,22,28,43,44,55,67,70,76,78	31.4	0.0	19.5	62.4	29.7	93
19	2,7,13,28,43,44,59,66,67,70	34.9	0.0	19.1	58.2	29.7	94
355	4,9,14,20,29,43,44,59,66,67,70,78,81	31.6	0.0	21.8	58.2	29.9	95
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	31.9	0.0	19.3	62.9	29.9	96
136	3,11,14,20,29,43,44,55,67,70,76,83	28.0	39.0	20.0	48.1	29.9	97
506	14,20,22,28,43,44,55,67,70,76,78,79	28.1	39.0	15.7	56.6	29.9	98
111	2,8,9,17,32,36,38,63,72,73,80,81	13.8	27.0	23.1	69.7	30.0	99
525	7,8,13,28,43,44,55,67,70,76,79	29.1	39.0	13.8	59.6	30.1	100
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	25.4	4.0	23.5	63.5	30.1	101
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	28.6	39.0	15.6	57.1	30.1	102
181	3,14,20,29,43,44,55,67,70,76,78,81	27.5	39.0	20.2	50.2	30.3	103
234	3,9,17,32,36,38,63,72,73,80	9.9	66.0	23.4	56.8	30.3	104
411	9,17,32,36,38,63,72,73,79,80,81	10.5	66.0	19.4	64.0	30.3	105
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	32.2	0.0	22.7	57.9	30.3	106
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	20.6	30.0	31.9	42.2	30.4	107
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	20.6	30.0	31.9	42.2	30.4	107
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	22.1	43.0	19.8	57.7	30.4	109
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	29.3	0.0	20.6	67.4	30.5	110
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	25.3	31.0	28.2	42.8	30.5	111
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	21.5	43.0	24.3	50.5	30.6	112
323	4,9,11,16,23,25,34,47,48,52,65,67	20.7	30.0	37.3	32.5	30.6	113
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	31.6	0.0	22.8	60.0	30.6	114
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	20.1	30.0	32.1	44.3	30.7	115
133	3,11,14,20,22,28,43,44,55,67,70,76,83	28.0	39.0	21.1	49.9	30.7	116
277	4,7,8,9,13,28,43,44,59,66,67,70,81	32.6	0.0	20.9	63.0	30.7	117
16	2,10,20,29,43,44,59,66,67,70	38.1	0.0	20.5	55.7	30.8	118
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	20.8	15.0	33.2	49.5	30.9	119
244	4,17,24,25,31,33,45,47,48,52,53,69,80	34.2	31.0	19.2	49.5	30.9	120
203	3,7,8,13,28,43,44,55,67,70,76,81	28.5	39.0	18.8	55.0	31.0	121
250	4,17,24,25,34,47,48,52,65,67	29.5	30.0	28.3	39.2	31.0	122
81	2,8,14,20,29,43,44,59,66,67,70,78	34.8	0.0	22.2	58.5	31.0	123
178	3,14,20,22,28,43,44,55,67,70,76,78,81	27.5	39.0	21.2	52.0	31.0	124
519	8,10,20,29,43,44,55,67,70,76,79	32.4	39.0	15.2	57.1	31.1	125
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	20.8	15.0	38.6	39.8	31.1	126

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	35.3	0.0	22.1	59.0	31.2	127
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	20.3	15.0	33.3	51.6	31.2	128
501	14,20,29,43,44,59,66,67,70,78,79	31.5	39.0	18.5	52.8	31.3	129
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	25.4	0.0	27.6	63.2	31.3	130
498	11,14,20,29,43,44,59,66,67,70,79,81,83	32.0	39.0	18.4	53.3	31.5	131
251	4,17,24,25,34,47,48,52,67,70,76,84	29.7	15.0	29.6	46.4	31.5	132
13	2,10,20,22,28,43,44,59,66,67,70	38.1	0.0	21.6	57.4	31.6	133
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	24.9	0.0	27.8	65.3	31.6	134
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	23.7	30.0	31.3	45.1	31.7	135
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	23.2	30.0	32.0	44.6	31.7	136
17	2,7,13,28,42,43,57,58,66,67,70	28.1	0.0	25.5	65.3	31.7	137
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	30.5	30.0	21.9	54.2	31.8	138
78	2,8,14,20,22,28,43,44,59,66,67,70,78	34.8	0.0	23.3	60.3	31.8	139
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	28.4	31.0	27.6	45.8	31.8	140
522	8,10,20,22,28,43,44,55,67,70,76,79	32.4	39.0	16.3	58.9	31.9	141
53	2,8,11,16,23,25,34,47,48,52,65,67,81	23.8	30.0	36.7	35.4	31.9	142
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	21.2	15.0	37.5	45.2	31.9	143
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	20.4	69.0	27.6	39.3	31.9	144
450	23,25,31,33,45,47,48,52,65,67,77,78,82	19.9	69.0	28.3	38.9	32.0	145
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	35.3	0.0	23.1	60.8	32.0	146
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	27.2	69.0	18.1	48.5	32.0	147
219	3,8,10,20,29,43,44,55,67,70,76,81	31.7	39.0	20.3	52.5	32.0	148
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	18.5	15.0	40.2	44.6	32.1	149
137	3,11,14,20,29,43,44,59,66,67,70,83	31.4	39.0	23.9	46.0	32.1	150
507	14,20,22,28,43,44,59,66,67,70,78,79	31.5	39.0	19.6	54.5	32.1	151
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	25.1	70.0	23.9	40.0	32.1	152
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	18.2	30.0	37.0	44.4	32.1	153
430	11,16,23,25,34,47,48,52,65,67,79,81	20.5	69.0	33.0	29.7	32.2	154
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	19.0	15.0	40.3	44.3	32.2	155
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	23.9	15.0	32.6	52.4	32.2	156
526	7,8,13,28,43,44,59,66,67,70,79	32.5	39.0	17.6	57.6	32.2	157
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	23.4	15.0	33.3	51.9	32.2	158
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	32.0	39.0	19.4	55.0	32.3	159
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	30.7	15.0	23.2	61.5	32.3	160
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	25.4	0.0	29.2	65.0	32.3	161
182	3,14,20,29,43,44,59,66,67,70,78,81	30.9	39.0	24.0	48.2	32.4	162
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	23.9	15.0	38.0	42.7	32.4	163
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	20.6	54.0	28.9	46.6	32.5	164
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	20.1	54.0	29.6	46.1	32.5	165
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	30.0	15.0	29.0	51.9	32.5	166
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	27.4	54.0	19.4	55.7	32.5	167
14	2,10,20,29,42,43,57,58,66,67,70	31.4	0.0	26.5	62.8	32.6	168
224	3,9,17,24,25,31,33,45,47,48,52,65,67	26.6	69.0	23.6	41.3	32.6	169
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	24.9	0.0	29.3	67.1	32.6	170
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	32.6	0.0	24.5	65.3	32.6	171
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	18.4	15.0	38.3	51.6	32.7	172
151	3,11,16,23,25,31,33,45,47,52,53,69,80	24.5	70.0	29.4	32.8	32.7	173
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	19.2	0.0	41.6	51.6	32.7	174
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	19.8	69.0	33.6	32.1	32.7	175
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	25.9	0.0	27.4	70.1	32.7	176
154	3,11,16,23,25,34,47,48,52,65,67	19.9	69.0	38.5	22.5	32.8	177
216	3,8,10,20,22,28,43,44,55,67,70,76,81	31.7	39.0	21.3	54.3	32.8	178
79	2,8,14,20,29,42,43,57,58,66,67,70,78	28.0	0.0	28.2	65.6	32.8	179
134	3,11,14,20,22,28,43,44,59,66,67,70,83	31.4	39.0	24.9	47.8	32.8	180
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	26.8	54.0	24.4	48.5	32.9	181
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	28.5	0.0	28.1	66.1	33.0	182
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	18.7	0.0	41.7	53.7	33.0	183
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	20.0	54.0	34.4	39.4	33.0	184
9	2,10,15,19,30,33,45,47,48,52,65,67	25.0	15.0	38.2	43.9	33.1	185
155	3,11,16,23,25,34,47,48,52,67,70,76,84	20.0	54.0	39.3	29.7	33.1	186
431	11,16,23,25,34,47,48,52,67,70,76,84	20.0	54.0	39.3	29.7	33.1	186
204	3,7,8,13,28,43,44,59,66,67,70,81	31.9	39.0	22.6	52.9	33.1	188
502	14,20,29,42,43,57,58,66,67,70,78,79	24.7	39.0	24.5	59.9	33.1	189

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
179	3,14,20,22,28,43,44,59,66,67,70,78,81	30.9	39.0	25.1	49.9	33.2	190
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	26.0	15.0	32.7	54.1	33.2	191
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	19.3	69.0	34.3	34.2	33.2	192
520	8,10,20,29,43,44,59,66,67,70,79	35.7	39.0	19.1	55.1	33.3	193
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	25.3	39.0	24.3	60.4	33.3	194
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	24.3	15.0	37.5	48.1	33.4	195
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	22.1	15.0	39.7	47.2	33.5	196
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	21.6	15.0	40.4	46.8	33.5	197
11	2,10,20,22,28,42,43,57,58,66,67,70	31.4	0.0	28.1	64.5	33.6	198
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	19.5	54.0	35.1	41.5	33.6	199
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	25.2	0.0	39.5	51.2	33.6	200
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	21.0	54.0	33.8	42.4	33.7	201
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	18.9	54.0	36.0	41.5	33.8	202
470	14,15,19,30,33,45,47,48,52,65,67,78,79	18.3	54.0	36.6	41.0	33.8	203
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	28.0	0.0	29.8	67.4	33.8	204
135	3,11,14,20,29,42,43,57,58,66,67,70,83	24.6	39.0	29.8	53.1	33.9	205
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	28.6	0.0	29.6	67.9	34.0	206
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	26.1	0.0	34.0	62.7	34.0	207
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	22.3	0.0	41.0	54.5	34.0	208
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	21.8	0.0	41.7	54.0	34.0	209
523	8,10,20,22,28,43,44,59,66,67,70,79	35.7	39.0	20.1	56.8	34.0	210
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	20.4	54.0	38.8	35.2	34.1	211
508	14,20,22,28,42,43,57,58,66,67,70,78,79	24.7	39.0	26.0	61.6	34.1	212
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	25.7	4.0	27.2	75.5	34.1	213
220	3,8,10,20,29,43,44,59,66,67,70,81	35.1	39.0	24.1	50.4	34.2	214
527	7,8,13,28,42,43,57,58,66,67,70,79	25.7	39.0	24.1	64.7	34.2	215
180	3,14,20,29,42,43,57,58,66,67,70,78,81	24.1	39.0	30.0	55.3	34.2	216
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	25.3	39.0	25.9	62.1	34.3	217
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	19.0	39.0	37.3	48.8	34.3	218
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	18.5	39.0	37.9	48.3	34.3	219
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	22.4	43.0	23.5	69.7	34.4	220
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	25.9	0.0	30.4	72.4	34.4	221
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	22.8	15.0	41.1	48.7	34.5	222
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	18.2	54.0	42.0	34.3	34.5	223
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	21.8	43.0	28.0	62.5	34.5	224
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	28.3	31.0	32.8	49.2	34.6	225
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	23.6	30.0	41.9	38.9	34.6	226
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	22.0	30.0	38.3	48.8	34.7	227
321	4,9,11,16,23,25,34,47,48,52,53,69,80	28.3	31.0	38.2	39.5	34.8	228
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	24.6	39.0	31.4	54.9	34.8	229
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	18.4	39.0	42.8	41.6	34.9	230
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	27.8	31.0	33.0	51.3	34.9	231
217	3,8,10,20,22,28,43,44,59,66,67,70,81	35.1	39.0	25.1	52.2	34.9	232
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	23.1	30.0	42.1	41.0	35.0	233
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	23.0	0.0	42.4	56.0	35.0	234
521	8,10,20,29,42,43,57,58,66,67,70,79	29.0	39.0	25.1	62.2	35.1	235
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	17.7	54.0	42.7	36.4	35.1	236
202	3,7,8,13,28,42,43,57,58,66,67,70,81	25.1	39.0	29.1	60.0	35.1	237
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	24.1	39.0	31.5	57.0	35.2	238
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	23.8	15.0	43.2	46.2	35.2	239
248	4,17,24,25,34,47,48,52,53,69,80	37.2	31.0	29.2	46.2	35.2	240
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	22.2	15.0	39.6	56.0	35.2	241
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	17.9	39.0	43.4	43.7	35.4	242
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	23.3	15.0	43.4	48.3	35.5	243
510	8,10,15,19,30,33,45,47,48,52,65,67,79	22.6	54.0	36.8	43.3	35.6	244
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	31.4	31.0	32.3	52.1	35.9	245
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	30.9	31.0	32.9	51.7	35.9	246
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	38.2	31.0	22.8	61.3	35.9	247
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	26.7	30.0	41.4	41.8	35.9	248
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	24.2	15.0	42.2	51.6	35.9	249
218	3,8,10,20,29,42,43,57,58,66,67,70,81	28.4	39.0	30.1	57.5	36.0	250
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	33.5	30.0	32.0	50.9	36.0	251
524	8,10,20,22,28,42,43,57,58,66,67,70,79	29.0	39.0	26.6	63.9	36.0	252

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	33.7	15.0	32.2	57.9	36.1	253
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	22.8	39.0	38.1	50.6	36.1	254
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	31.5	31.0	37.7	42.5	36.1	255
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	28.1	70.0	28.5	46.4	36.1	256
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	27.6	70.0	29.2	45.9	36.1	257
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	24.2	15.0	47.6	41.9	36.2	258
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	34.9	70.0	19.1	55.5	36.2	259
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	23.4	69.0	37.7	36.0	36.2	260
438	23,25,34,47,48,52,65,67,78,79,82	22.9	69.0	38.3	35.6	36.2	261
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	23.6	15.0	42.3	53.7	36.3	262
425	9,17,24,25,34,47,48,52,65,67,71,79,81	30.2	69.0	28.2	45.2	36.3	263
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	25.9	31.0	37.9	51.4	36.3	264
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	30.4	54.0	28.5	52.1	36.3	265
429	11,16,23,25,34,47,48,52,53,69,79,80,81	28.2	70.0	33.9	36.7	36.4	266
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	26.7	16.0	41.2	51.4	36.4	267
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	21.3	30.0	47.0	41.1	36.4	268
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	26.9	15.0	42.7	49.1	36.5	269
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	26.4	15.0	43.3	48.6	36.5	270
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	18.4	15.0	53.8	39.8	36.5	271
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	22.0	54.0	42.3	38.7	36.7	272
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	26.2	16.0	41.3	53.5	36.7	273
228	3,9,17,24,25,34,47,48,52,67,70,76,84	29.8	54.0	33.5	44.9	36.7	274
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	23.6	54.0	39.0	43.3	36.7	275
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	20.7	30.0	47.2	43.2	36.7	276
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	23.1	54.0	39.6	42.8	36.7	277
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	33.1	15.0	39.1	48.6	36.8	278
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	34.3	70.0	24.6	48.3	36.8	279
227	3,9,17,24,25,34,47,48,52,65,67	29.6	69.0	33.7	38.0	36.9	280
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	27.5	70.0	34.6	39.2	36.9	281
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	28.4	39.0	31.6	59.3	36.9	282
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	21.4	15.0	48.3	48.3	36.9	283
152	3,11,16,23,25,34,47,48,52,53,69,80	27.6	70.0	39.4	29.5	36.9	284
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	22.2	39.0	43.1	45.9	37.0	285
172	3,11,23,25,34,47,48,52,65,67,77,82,83	22.8	69.0	43.7	28.8	37.0	286
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	20.9	15.0	48.5	49.2	37.0	287
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	18.6	0.0	55.1	47.1	37.1	288
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	26.8	15.0	42.3	54.0	37.2	289
7	2,10,15,19,30,33,45,47,48,52,53,69,80	32.7	16.0	39.2	51.0	37.3	290
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	23.0	54.0	44.5	36.1	37.3	291
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	34.0	15.0	32.2	63.6	37.3	292
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	27.0	70.0	35.2	41.3	37.4	293
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	27.3	15.0	42.1	54.5	37.4	294
199	3,23,25,34,47,48,52,65,67,78,81,82	22.3	69.0	44.3	30.9	37.5	295
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	23.5	54.0	38.6	48.3	37.5	296
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	30.7	54.0	28.4	57.9	37.6	297
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	33.6	16.0	33.7	62.4	37.6	298
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	29.8	16.0	40.6	54.3	37.7	299
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	29.3	16.0	41.3	53.8	37.7	300
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	27.3	15.0	47.5	44.8	37.7	301
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	21.8	15.0	47.3	53.8	37.7	302
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	24.0	54.0	38.4	48.7	37.7	303
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	22.6	0.0	50.6	53.7	37.7	304
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	21.6	15.0	53.3	42.7	37.8	305
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	22.5	54.0	45.1	38.2	37.8	306
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	26.5	55.0	36.9	48.5	37.9	307
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	26.0	55.0	37.6	48.1	37.9	308
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	24.0	54.0	43.8	39.1	37.9	309
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	30.1	54.0	33.4	50.7	37.9	310
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	22.1	0.0	50.7	55.8	38.1	311
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	18.3	54.0	49.6	37.0	38.1	312
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	23.4	54.0	43.9	41.5	38.3	313
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	23.4	54.0	48.8	31.9	38.3	314
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	21.7	0.0	54.6	50.0	38.3	315

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
5	2,10,15,19,21,29,43,44,55,67,70,76	35.3	0.0	39.4	61.1	38.6	316
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	22.8	54.0	44.1	43.6	38.6	317
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	18.4	39.0	50.8	44.2	38.6	318
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	21.4	15.0	55.0	43.7	38.7	319
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	17.6	54.0	55.1	29.8	38.7	320
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	30.5	16.0	42.0	55.8	38.7	321
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	25.9	55.0	42.9	41.3	38.7	322
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	29.5	0.0	42.5	64.8	38.8	323
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	31.3	31.0	42.9	45.9	38.8	324
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	28.6	0.0	49.0	53.3	38.8	325
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	29.7	31.0	39.2	55.8	38.9	326
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	25.0	30.0	48.3	45.5	38.9	327
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	32.5	0.0	40.9	64.4	39.0	328
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	20.9	15.0	55.1	45.9	39.0	329
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	17.8	39.0	55.9	37.0	39.0	330
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	25.2	0.0	50.7	56.2	39.1	331
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	30.8	31.0	43.0	48.0	39.2	332
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	21.6	0.0	56.3	51.0	39.2	333
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	25.4	55.0	43.6	43.4	39.2	334
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	25.7	0.0	50.5	56.6	39.2	335
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	29.2	39.0	37.2	58.6	39.2	336
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	21.9	39.0	46.9	50.4	39.3	337
2	2,10,15,19,21,22,28,43,44,55,67,70,76	35.3	0.0	40.5	62.8	39.4	338
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	25.2	15.0	49.6	52.7	39.5	339
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	22.4	39.0	46.8	50.9	39.5	340
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	21.1	0.0	56.4	53.1	39.5	341
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	30.3	55.0	37.7	50.3	39.7	342
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	32.5	0.0	42.0	66.2	39.8	343
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	28.5	39.0	42.7	51.4	39.8	344
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	24.5	15.0	54.4	46.7	40.0	345
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	24.0	15.0	55.1	46.2	40.0	346
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	29.2	39.0	38.2	60.4	40.0	347
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	26.3	0.0	51.4	58.1	40.1	348
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	21.8	39.0	52.3	43.7	40.1	349
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	34.4	31.0	42.3	48.8	40.1	350
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	33.9	31.0	43.0	48.4	40.1	351
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	41.2	31.0	32.8	58.0	40.2	352
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	27.2	15.0	52.2	48.3	40.2	353
458	11,18,19,30,33,45,47,48,52,65,67,77,83	21.2	54.0	50.7	40.9	40.2	354
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	25.6	15.0	48.6	58.1	40.2	355
462	18,19,30,33,45,47,48,52,65,67,77,78,79	20.7	54.0	51.4	40.4	40.2	356
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	31.1	70.0	38.6	43.1	40.4	357
437	23,25,34,47,48,52,53,69,77,78,79,80,82	30.6	70.0	39.2	42.6	40.4	358
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	21.3	39.0	52.4	45.8	40.4	359
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	37.9	70.0	29.1	52.2	40.5	360
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	24.7	0.0	55.7	53.9	40.5	361
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	24.2	0.0	56.4	53.5	40.5	362
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	26.7	15.0	52.4	50.4	40.5	363
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	28.9	31.0	48.0	48.1	40.6	364
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	28.5	39.0	43.8	53.2	40.6	365
6	2,10,15,19,21,29,43,44,59,66,67,70	38.7	0.0	43.3	59.0	40.7	366
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	26.1	16.0	54.8	46.8	40.7	367
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	21.4	39.0	52.0	48.2	40.8	368
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	20.9	39.0	52.7	47.7	40.8	369
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	29.7	55.0	43.2	45.7	40.8	370
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	28.4	31.0	48.1	50.2	40.9	371
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	20.6	54.0	56.7	33.7	41.0	372
226	3,9,17,24,25,34,47,48,52,53,69,80	37.3	70.0	34.6	45.0	41.0	373
513	8,10,15,19,21,29,43,44,55,67,70,76,79	32.9	39.0	38.0	60.4	41.1	374
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	35.8	0.0	44.7	62.3	41.1	375
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	30.5	70.0	44.6	35.9	41.2	376
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	26.2	39.0	47.6	52.7	41.3	377
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	20.8	39.0	57.5	41.0	41.3	378

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	32.5	39.0	41.0	56.5	41.4	379
3	2,10,15,19,21,22,28,43,44,59,66,67,70	38.7	0.0	44.3	60.7	41.5	380
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	29.8	15.0	52.3	50.7	41.5	381
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	20.1	54.0	57.4	35.8	41.5	382
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	37.1	15.0	42.2	60.3	41.6	383
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	28.7	0.0	54.0	56.9	41.6	384
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	30.0	70.0	45.3	38.0	41.7	385
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	30.3	15.0	52.2	51.2	41.7	386
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	26.5	54.0	48.6	45.0	41.8	387
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	33.8	54.0	38.5	54.6	41.8	388
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	32.9	39.0	39.0	62.2	41.8	389
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	20.3	39.0	58.2	43.1	41.9	390
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	35.8	0.0	45.8	64.1	41.9	391
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	32.3	39.0	43.0	55.8	42.0	392
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	31.9	39.0	46.5	49.3	42.0	393
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	24.8	15.0	57.3	50.5	42.0	394
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	27.0	54.0	48.5	45.4	42.0	395
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	29.2	16.0	54.2	49.8	42.0	396
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	22.0	0.0	64.1	49.2	42.1	397
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	32.5	39.0	42.1	58.3	42.2	398
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	33.2	54.0	43.5	47.4	42.2	399
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	25.6	39.0	52.6	48.1	42.2	400
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	25.9	55.0	50.5	44.0	42.3	401
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	24.3	15.0	57.5	52.6	42.3	402
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	28.7	0.0	55.1	58.7	42.4	403
4	2,10,15,19,21,29,42,43,57,58,66,67,70	32.0	0.0	49.2	66.1	42.5	404
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	26.4	54.0	54.0	38.2	42.6	405
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	32.3	39.0	44.1	57.6	42.7	406
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	31.9	39.0	47.6	51.1	42.7	407
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	29.1	16.0	55.9	50.8	42.8	408
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	25.3	55.0	56.0	36.8	42.9	409
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	25.9	54.0	54.1	40.3	42.9	410
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	29.1	0.0	50.7	69.4	42.9	411
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	32.7	31.0	49.3	52.5	43.1	412
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	25.8	39.0	47.0	63.6	43.2	413
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	28.6	16.0	56.1	52.9	43.2	414
514	8,10,15,19,21,29,43,44,59,66,67,70,79	36.3	39.0	41.8	58.4	43.2	415
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	31.9	0.0	54.5	59.9	43.3	416
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	32.0	0.0	50.8	67.8	43.5	417
401	6,12,39,57,58,66,67,70	61.1	0.0	33.6	58.6	43.5	418
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	25.1	0.0	64.1	52.1	43.6	419
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	28.6	39.0	50.8	54.1	43.6	420
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	25.2	39.0	52.5	56.4	43.7	421
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	32.1	0.0	57.9	54.9	43.8	422
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	31.7	0.0	55.2	60.9	43.8	423
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	21.8	39.0	60.4	46.4	43.9	424
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	29.1	0.0	52.3	71.2	43.9	425
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	36.3	39.0	42.9	60.1	44.0	426
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	28.0	39.0	55.8	46.9	44.0	427
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	35.7	39.0	46.8	53.7	44.1	428
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	31.2	0.0	55.3	63.0	44.1	429
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	31.9	0.0	55.5	61.6	44.1	430
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	32.2	16.0	55.4	53.7	44.1	431
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	25.8	39.0	48.5	65.4	44.1	432
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	31.7	16.0	56.0	53.2	44.2	433
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	25.0	0.0	65.3	53.1	44.2	434
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	21.2	39.0	65.4	39.2	44.2	435
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	28.6	39.0	51.8	55.9	44.4	436
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	28.9	55.0	51.6	47.9	44.4	437
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	28.4	55.0	52.3	47.5	44.4	438
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	28.6	15.0	58.6	54.8	44.5	439
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	32.1	0.0	58.9	56.6	44.5	440
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	31.7	0.0	56.2	62.7	44.5	441

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	24.4	0.0	65.4	55.2	44.6	442
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	25.2	39.0	54.1	58.2	44.7	443
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	28.0	39.0	56.8	48.7	44.7	444
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	35.7	39.0	47.9	55.5	44.9	445
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	31.2	0.0	56.4	64.8	44.9	446
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	29.6	39.0	47.8	65.5	45.0	447
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	28.3	55.0	57.6	40.7	45.2	448
399	6,12,39,42,44,55,67,70,76	71.3	0.0	27.0	65.3	45.3	449
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	34.3	0.0	55.8	63.3	45.3	450
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	35.2	0.0	58.3	57.8	45.4	451
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	34.8	0.0	55.6	63.8	45.5	452
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	27.5	0.0	65.4	55.6	45.5	453
482	18,19,21,29,43,44,55,67,70,76,77,78,79	31.0	39.0	52.1	57.6	45.5	454
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	25.4	0.0	63.8	62.0	45.5	455
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	27.8	55.0	58.3	42.8	45.7	456
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	28.1	0.0	65.2	56.0	45.7	457
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	31.9	39.0	54.6	52.0	45.7	458
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	31.5	39.0	51.9	58.0	45.7	459
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	24.3	39.0	61.7	49.8	45.8	460
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	29.0	39.0	52.8	60.8	45.9	461
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	35.1	0.0	59.0	58.8	45.9	462
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	29.6	39.0	49.4	67.2	46.0	463
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	24.8	39.0	61.5	50.3	46.0	464
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	34.3	0.0	56.8	65.1	46.0	465
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	31.3	39.0	59.6	44.8	46.1	466
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	34.6	0.0	59.2	60.9	46.2	467
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	35.2	0.0	59.4	59.5	46.2	468
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	34.8	0.0	56.7	65.6	46.2	469
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	30.9	39.0	57.4	50.8	46.3	470
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	31.0	39.0	53.1	59.3	46.3	471
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	31.9	39.0	55.6	53.8	46.5	472
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	25.4	0.0	65.4	63.7	46.5	473
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	24.2	39.0	67.0	43.1	46.6	474
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	30.4	39.0	57.6	52.9	46.6	475
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	35.1	0.0	60.1	60.6	46.7	476
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	29.0	39.0	54.4	62.6	46.9	477
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	31.3	39.0	60.7	46.6	46.9	478
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	23.6	39.0	67.2	45.2	46.9	479
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	34.6	0.0	60.2	62.7	47.0	480
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	30.9	39.0	58.5	52.6	47.1	481
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	30.9	39.0	58.5	52.6	47.1	481
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	28.5	0.0	64.3	64.9	47.2	483
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	37.7	0.0	59.6	61.2	47.4	484
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	30.4	39.0	58.6	54.7	47.4	485
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	25.2	39.0	60.6	59.1	47.5	486
400	6,12,39,42,44,59,66,67,70	74.7	0.0	31.3	63.3	47.6	487
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	38.2	0.0	59.5	61.7	47.6	488
483	18,19,21,29,43,44,59,66,67,70,77,78,79	34.4	39.0	55.9	55.5	47.7	489
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	28.4	0.0	65.0	65.9	47.7	490
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	34.9	39.0	55.7	56.0	47.9	491
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	24.6	39.0	65.6	51.9	47.9	492
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	27.8	0.0	65.1	68.0	48.0	493
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	37.7	0.0	60.7	63.0	48.2	494
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	28.5	0.0	65.8	66.6	48.2	495
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	38.2	0.0	60.5	63.5	48.4	496
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	34.3	39.0	61.2	48.7	48.4	497
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	34.4	39.0	56.9	57.2	48.4	498
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	25.2	39.0	62.1	60.9	48.5	499
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	34.9	39.0	56.8	57.7	48.6	500
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	28.4	0.0	66.5	67.7	48.7	501
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	33.8	39.0	61.4	50.9	48.8	502
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	24.6	39.0	67.1	53.7	48.9	503
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	27.8	0.0	66.7	69.8	49.0	504

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	31.0	0.0	65.6	68.3	49.2	505
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	34.3	39.0	62.3	50.5	49.2	506
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	31.5	0.0	65.4	68.8	49.4	507
404	6,26,40,41,57,58,66,67,70	66.6	0.0	41.8	63.7	49.4	508
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	27.7	39.0	61.9	62.6	49.5	509
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	33.8	39.0	62.5	52.6	49.5	510
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	28.2	39.0	61.7	63.1	49.6	511
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	31.0	0.0	67.1	70.1	50.2	512
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	27.6	39.0	67.2	55.8	50.2	513
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	31.5	0.0	67.0	70.6	50.4	514
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	27.7	39.0	63.4	64.3	50.4	515
397	6,12,27,40,41,57,58,66,67,70	72.8	0.0	41.0	61.3	50.5	516
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	27.1	39.0	67.4	58.0	50.6	517
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	28.2	39.0	63.3	64.8	50.6	518
402	6,26,40,41,42,44,55,67,70,76	76.8	0.0	35.2	70.4	51.2	519
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	27.6	39.0	68.8	57.6	51.2	520
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	27.1	39.0	68.9	59.7	51.5	521
395	6,12,27,40,41,42,44,55,67,70,76	83.0	0.0	34.4	68.0	52.2	522
403	6,26,40,41,42,59,66,67,70	80.2	0.0	39.5	68.4	53.5	523
396	6,12,27,40,41,42,44,59,66,67,70	86.4	0.0	38.7	65.9	54.6	524
405	6,26,40,56,58,66,67,70	78.3	0.0	49.2	65.0	56.1	525
398	6,12,27,40,56,58,66,67,70	84.4	0.0	48.4	62.6	57.2	526
	MIN						
	MAX						
	RANGE						

Appendix E. Corridor Scoring Results

Appendix E: North Corridor Route Scoring

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
382	5,35,36,37,50,69,75,80	1.18	5	0.12	0	2	0	0	0	0	0	6	80	0	0
252	4,17,32,37,50,69,75,80	1.49	7	0.63	15	2	0	0	0	0	0	6	80	0	0
392	5,35,38,64,71,73	2.76	17	0.57	14	2	0	0	0	0	0	2	0	0	0
388	5,35,38,49,50,69,75,80	1.18	5	0.16	1	2	0	0	0	0	0	6	80	0	0
384	5,35,36,37,64,71,72,74,75	2.76	17	0.42	9	2	0	0	0	0	0	2	0	0	0
267	4,17,32,37,64,71,72,74,75	3.07	20	0.92	24	2	0	0	0	0	0	2	0	0	0
378	5,35,36,37,49,64,71,73	2.76	17	0.53	12	2	0	0	0	0	0	2	0	0	0
261	4,17,32,37,49,64,71,73	3.07	20	1.03	28	2	0	0	0	0	0	2	0	0	0
383	5,35,36,37,63,74,75,80	0.69	1	0.82	21	2	0	0	0	1	50	5	60	0	0
266	4,17,32,37,63,74,75,80	1.00	4	1.33	37	2	0	0	0	1	50	5	60	0	0
394	5,60,62,64	6.65	47	0.29	5	2	0	0	0	0	0	2	0	0	0
390	5,35,38,49,64,71,72,74,75	2.76	17	0.46	10	2	0	0	0	0	0	2	0	0	0
393	5,60,61,64	6.65	47	0.28	5	2	0	0	0	0	0	2	0	0	0
259	4,17,32,36,38,64,71,73	3.07	20	1.08	29	2	0	0	0	0	0	2	0	0	0
256	4,17,32,36,38,49,50,69,75,80	1.49	7	0.67	17	2	0	0	0	0	0	6	80	0	0
389	5,35,38,49,63,74,75,80	0.69	1	0.86	22	2	0	0	0	1	50	5	60	0	0
391	5,35,38,63,72,73,80	0.69	1	0.97	26	2	0	0	0	1	50	5	60	0	0
380	5,35,36,37,50,53,65,67,75	7.72	55	0.14	1	2	0	0	0	1	50	3	20	0	0
263	4,17,32,37,50,53,65,67,75	8.03	58	0.65	16	2	0	0	0	1	50	3	20	0	0
241	3,9,17,32,37,50,69,75,80	1.49	7	0.64	16	2	0	1	100	0	0	7	100	0	0
381	5,35,36,37,50,53,67,70,75,76,84	7.83	56	0.14	1	2	0	0	0	0	0	3	20	0	0
413	9,17,32,37,50,69,75,79,80,81	1.81	10	0.64	16	2	0	1	100	0	0	7	100	0	0
264	4,17,32,37,50,53,67,70,75,76,84	8.14	58	0.65	16	2	0	0	0	0	0	3	20	0	0
386	5,35,38,49,50,53,65,67,75	7.72	55	0.18	2	2	0	0	0	1	50	3	20	0	0
258	4,17,32,36,38,49,64,71,72,74,75	3.07	20	0.96	25	2	0	0	0	0	0	2	0	0	0
377	5,35,36,37,49,63,72,73,80	0.69	1	0.93	25	2	0	0	0	1	50	5	60	0	0
260	4,17,32,37,49,63,72,73,80	1.00	4	1.44	40	2	0	0	0	1	50	5	60	0	0
118	2,8,9,17,32,37,50,69,75,80,81	2.98	19	0.80	21	2	0	0	0	0	0	6	80	0	0
387	5,35,38,49,50,53,67,70,75,76,84	7.83	56	0.18	2	2	0	0	0	0	0	3	20	0	0
257	4,17,32,36,38,49,63,34,74,75,80	1.00	4	1.37	38	2	0	0	0	1	50	5	60	0	0
243	3,9,17,32,37,64,71,72,74,75	3.07	20	0.94	25	2	0	1	100	0	0	3	20	0	0
253	4,17,32,36,38,36,34,72,73,80	1.00	4	1.48	41	2	0	0	0	1	50	5	60	0	0
237	3,9,17,32,37,49,64,71,73	3.07	20	1.05	28	2	0	1	100	0	0	3	20	0	0
408	9,17,32,37,64,71,72,74,75,79,81	3.40	22	0.93	25	2	0	1	100	0	0	3	20	0	0
242	3,9,17,32,37,63,74,75,80	1.00	4	1.34	37	2	0	1	100	1	50	6	80	0	0
407	9,17,32,37,49,64,71,73,79,81	3.40	22	1.05	28	2	0	1	100	0	0	3	20	0	0
235	3,9,17,32,36,38,64,71,73	3.07	20	1.09	29	2	0	1	100	0	0	3	20	0	0
410	9,17,32,37,63,74,75,79,80,81	1.33	6	1.34	37	2	0	1	100	1	50	6	80	0	0
254	4,17,32,36,38,49,50,53,65,67,75	8.03	58	0.69	17	2	0	0	0	1	50	3	20	0	0
120	2,8,9,17,32,37,64,71,72,74,75,81	4.56	31	1.10	30	2	0	0	0	0	0	2	0	0	0
232	3,9,17,32,36,38,49,50,69,75,80	1.49	7	0.68	17	2	0	1	100	0	0	7	100	0	0
406	9,17,32,36,38,64,71,73,79,81	3.40	22	1.09	29	2	0	1	100	0	0	3	20	0	0
114	2,8,9,17,32,37,49,64,71,73,81	4.56	31	1.21	33	2	0	0	0	0	0	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
414	9,17,32,36,38,49,50,69,75,71,79,80,81	1.81	10	0.68	17	2	0	1	100	0	0	7	100	0	0
255	4,17,32,36,38,49,50,53,67,70,75,76,84	8.14	58	0.69	17	2	0	0	0	0	0	3	20	0	0
119	2,8,9,17,32,37,63,74,75,80,81	2.50	15	1.50	42	2	0	0	0	1	50	5	60	0	0
240	3,9,17,32,37,50,53,65,67,75	8.03	58	0.66	16	2	0	1	100	1	50	4	40	0	0
112	2,8,9,17,32,36,38,64,71,73,81	4.56	31	1.25	34	2	0	0	0	0	0	2	0	0	0
415	9,17,32,37,50,53,65,67,71,75,79,81	8.36	60	0.66	16	2	0	1	100	1	50	4	40	0	0
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	2.98	19	0.84	22	2	0	0	0	0	0	6	80	0	0
238	3,9,17,32,37,50,35,67,70,75,76,84	8.14	58	0.66	16	2	0	1	100	0	0	4	40	0	0
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	5.98	42	0.46	10	3	50	0	0	2	100	2	0	0	0
233	3,9,17,32,36,38,49,64,71,72,74,75	3.07	20	0.98	26	2	0	1	100	0	0	3	20	0	0
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	8.46	61	0.66	16	2	0	1	100	0	0	4	40	0	0
379	5,35,36,37,50,53,55,59,66,67,70,75,84	7.83	56	0.66	16	2	0	0	0	0	0	3	20	0	0
117	2,8,9,17,32,37,50,53,65,67,71,75,81	9.53	69	0.82	21	2	0	0	0	1	50	3	20	0	0
236	3,9,17,32,37,49,63,72,73,80	1.00	4	1.45	40	2	0	1	100	1	50	6	80	0	0
262	4,17,32,37,50,53,55,59,66,67,70,75,84	8.14	58	1.16	32	2	0	0	0	0	0	3	20	0	0
409	9,17,32,36,38,49,64,71,72,74,75,79,81	3.40	22	0.97	26	2	0	1	100	0	0	3	20	0	0
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	6.07	43	0.46	10	3	50	0	0	1	50	2	0	0	0
412	9,17,32,37,49,63,72,73,79,80,81	1.33	6	1.45	40	2	0	1	100	1	50	6	80	0	0
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	9.63	70	0.82	21	2	0	0	0	0	0	3	20	0	0
234	3,9,17,32,36,38,63,72,73,80	1.00	4	1.49	42	2	0	1	100	1	50	6	80	0	0
385	5,35,38,49,50,53,55,59,66,67,70,75,84	7.83	56	0.70	18	2	0	0	0	0	0	3	20	0	0
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	4.56	31	1.14	31	2	0	0	0	0	0	2	0	0	0
411	9,17,32,36,38,63,72,73,79,80,81	1.33	6	1.49	42	2	0	1	100	1	50	6	80	0	0
113	2,8,9,17,32,37,49,63,72,73,80,81	2.50	15	1.61	45	2	0	0	0	1	50	5	60	0	0
246	4,17,24,25,31,33,45,47,48,52,65,67	7.50	54	0.60	14	4	100	0	0	2	100	2	0	0	0
230	3,9,17,32,36,38,49,50,53,65,67,75	8.03	58	0.70	18	2	0	1	100	1	50	4	40	0	0
111	2,8,9,17,32,36,38,63,72,73,80,81	2.50	15	1.65	46	2	0	0	0	1	50	5	60	0	0
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	8.36	60	0.70	18	2	0	1	100	1	50	4	40	0	0
306	4,9,11,14,20,29,43,44,55,67,70,76,83	2.37	14	2.45	71	4	100	0	0	0	0	2	0	0	0
354	4,9,14,20,29,43,44,55,67,70,76,78,81	2.37	14	2.37	68	4	100	0	0	0	0	2	0	0	0
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	8.14	58	0.70	18	2	0	1	100	0	0	4	40	0	0
247	4,17,24,25,31,33,47,48,52,67,70,76,84	7.59	54	0.60	14	4	100	0	0	1	50	2	0	0	0
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	2.37	14	2.45	71	4	100	0	0	0	0	2	0	0	0
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	8.46	61	0.70	18	2	0	1	100	0	0	4	40	0	0
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	9.53	69	0.86	22	2	0	0	0	1	50	3	20	0	0
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	5.98	42	0.91	24	3	50	0	0	2	100	2	0	0	0
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	5.98	42	0.91	24	3	50	0	0	2	100	2	0	0	0
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	2.37	14	2.37	68	4	100	0	0	0	0	2	0	0	0
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	5.98	42	0.83	21	3	50	0	0	2	100	2	0	0	0
323	4,9,11,16,23,25,34,47,48,52,65,67	7.44	53	0.49	11	3	50	0	0	2	100	2	0	0	0
276	4,7,8,9,13,28,43,44,55,67,70,76,81	3.05	19	2.33	67	4	100	0	0	0	0	2	0	0	0
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	9.63	70	0.86	22	2	0	0	0	0	0	3	20	0	0
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	6.07	43	0.91	24	3	50	0	0	1	50	2	0	0	0
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	8.14	58	1.18	32	2	0	1	100	0	0	4	40	0	0
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	6.07	43	0.83	21	3	50	0	0	1	50	2	0	0	0
307	4,9,11,14,20,29,43,44,59,66,67,70,83	2.37	14	2.97	86	4	100	0	0	0	0	2	0	0	0
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	8.46	61	1.18	32	2	0	1	100	0	0	4	40	0	0
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	7.53	54	0.49	11	3	50	0	0	1	50	2	0	0	0
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	9.08	66	0.72	18	3	50	0	0	1	50	6	80	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	5.98	42	0.55	13	3	50	0	0	2	100	2	0	0	0
355	4,9,14,20,29,43,44,59,66,67,70,78,81	2.37	14	2.89	84	4	100	0	0	0	0	2	0	0	0
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	5.98	42	0.59	14	3	50	0	0	1	50	2	0	0	0
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	0.51	0	2.48	72	4	100	0	0	0	0	2	0	0	0
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	2.37	14	2.97	86	4	100	0	0	0	0	2	0	0	0
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	5.98	42	0.67	17	3	50	0	0	1	50	2	0	0	0
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	6.07	43	0.97	26	3	50	0	0	1	50	2	0	0	0
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	3.05	19	2.33	67	4	100	0	0	0	0	2	0	0	0
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	0.51	0	2.40	69	4	100	0	0	0	0	2	0	0	0
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	2.37	14	2.89	84	4	100	0	0	0	0	2	0	0	0
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	9.63	70	1.34	37	2	0	0	0	0	0	3	20	0	0
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	6.07	43	0.55	13	3	50	0	0	1	50	2	0	0	0
277	4,7,8,9,13,28,43,44,59,66,67,70,81	3.05	19	2.84	83	4	100	0	0	0	0	2	0	0	0
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	0.51	0	2.48	72	4	100	0	0	0	0	2	0	0	0
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	6.07	43	0.67	17	3	50	0	0	0	0	2	0	0	0
250	4,17,24,25,34,47,48,52,65,67	8.96	65	0.63	15	4	100	0	0	2	100	2	0	0	0
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	0.51	0	2.40	69	4	100	0	0	0	0	2	0	0	0
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	6.07	43	0.59	14	3	50	0	0	0	0	2	0	0	0
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	7.83	56	0.61	15	4	100	1	100	2	100	3	20	0	0
224	3,9,17,24,25,31,33,45,47,48,52,65,67	7.50	54	0.61	15	4	100	1	100	2	100	3	20	0	0
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	1.19	5	2.36	68	4	100	0	0	0	0	2	0	0	0
251	4,17,24,25,34,47,48,52,67,70,76,84	9.05	65	0.63	15	4	100	0	0	1	50	2	0	0	0
244	4,17,24,25,31,33,45,47,48,52,53,69,80	10.61	77	0.86	22	4	100	0	0	1	50	6	80	0	0
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	7.59	54	0.61	15	4	100	1	100	1	50	3	20	0	0
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	7.92	57	0.61	15	4	100	1	100	1	50	3	20	0	0
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	9.00	65	0.77	20	4	100	0	0	2	100	2	0	0	0
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	7.44	53	0.94	25	3	50	0	0	2	100	2	0	0	0
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	3.05	19	2.84	83	4	100	0	0	0	0	2	0	0	0
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	6.66	47	0.76	19	4	100	0	0	1	50	2	0	0	0
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	8.14	58	1.22	33	2	0	1	100	0	0	4	40	0	0
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	7.59	54	1.11	30	4	100	0	0	1	50	2	0	0	0
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	7.44	53	0.86	22	3	50	0	0	2	100	2	0	0	0
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	8.46	61	1.22	33	2	0	1	100	0	0	4	40	0	0
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	5.98	42	0.36	7	4	100	0	0	2	100	2	0	0	0
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	1.19	5	2.36	68	4	100	0	0	0	0	2	0	0	0
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	9.08	66	0.77	20	4	100	0	0	1	50	2	0	0	0
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	5.98	42	0.48	11	4	100	0	0	1	50	2	0	0	0
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	7.53	54	0.94	25	3	50	0	0	1	50	2	0	0	0
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	9.08	66	1.17	32	3	50	0	0	1	50	6	80	0	0
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	6.75	48	0.76	19	4	100	0	0	0	0	2	0	0	0
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	7.53	54	0.86	22	3	50	0	0	1	50	2	0	0	0
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	9.63	70	1.38	38	2	0	0	0	0	0	3	20	0	0
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	5.98	42	0.58	14	3	50	0	0	1	50	2	0	0	0
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	9.08	66	1.09	30	3	50	0	0	1	50	6	80	0	0
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	6.07	43	0.36	7	4	100	0	0	1	50	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	6.07	43	1.43	40	3	50	0	0	1	50	2	0	0	0
321	4,9,11,16,23,25,34,47,48,52,53,69,80	10.54	77	0.76	19	3	50	0	0	1	50	6	80	0	0
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	7.44	53	0.58	14	3	50	0	0	2	100	2	0	0	0
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	6.07	43	0.48	11	4	100	0	0	0	0	2	0	0	0
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	6.07	43	1.35	37	3	50	0	0	1	50	2	0	0	0
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	7.44	53	0.50	11	3	50	0	0	2	100	2	0	0	0
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	7.53	54	1.01	27	3	50	0	0	1	50	2	0	0	0
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	6.07	43	0.58	14	3	50	0	0	0	0	2	0	0	0
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	7.53	54	0.58	14	3	50	0	0	1	50	2	0	0	0
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	9.08	66	0.81	21	3	50	0	0	1	50	6	80	0	0
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	7.53	54	0.50	11	3	50	0	0	1	50	2	0	0	0
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	9.08	66	0.93	25	3	50	0	0	0	0	6	80	0	0
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	6.07	43	1.06	29	3	50	0	0	1	50	2	0	0	0
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	9.08	66	0.85	22	3	50	0	0	0	0	6	80	0	0
425	9,17,24,25,34,47,48,52,65,67,71,79,81	9.29	67	0.64	16	4	100	1	100	2	100	3	20	0	0
227	3,9,17,24,25,34,47,48,52,65,67	8.96	65	0.65	16	4	100	1	100	2	100	3	20	0	0
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	6.07	43	1.19	32	3	50	0	0	0	0	2	0	0	0
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	5.98	42	1.03	28	3	50	0	0	1	50	2	0	0	0
228	3,9,17,24,25,34,47,48,52,67,70,76,84	9.05	65	0.65	16	4	100	1	100	1	50	3	20	0	0
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	6.07	43	1.11	30	3	50	0	0	0	0	2	0	0	0
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	9.38	68	0.64	16	4	100	1	100	1	50	3	20	0	0
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	5.98	42	0.95	25	3	50	0	0	1	50	2	0	0	0
248	4,17,24,25,34,47,48,52,53,69,80	12.07	89	0.90	24	4	100	0	0	1	50	6	80	0	0
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	10.45	76	0.81	21	4	100	0	0	2	100	2	0	0	0
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	10.93	80	0.88	23	4	100	1	100	1	50	7	100	0	0
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	10.61	77	0.88	23	4	100	1	100	1	50	7	100	0	0
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	6.07	43	1.03	28	3	50	0	0	0	0	2	0	0	0
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	7.59	54	1.13	31	4	100	1	100	1	50	3	20	0	0
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	9.05	65	1.15	31	4	100	0	0	1	50	2	0	0	0
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	6.07	43	0.95	25	3	50	0	0	0	0	2	0	0	0
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	10.54	77	0.81	21	4	100	0	0	1	50	2	0	0	0
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	7.92	57	1.13	30	4	100	1	100	1	50	3	20	0	0
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	7.44	53	0.39	8	4	100	0	0	2	100	2	0	0	0
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	12.10	89	1.04	28	4	100	0	0	1	50	6	80	0	0
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	10.54	77	1.21	33	3	50	0	0	1	50	6	80	0	0
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	9.76	71	1.03	28	4	100	0	0	0	0	6	80	0	0
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	10.54	77	1.13	31	3	50	0	0	1	50	6	80	0	0
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	9.08	66	1.29	35	4	100	0	0	1	50	2	0	0	0
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	7.53	54	0.39	8	4	100	0	0	1	50	2	0	0	0
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	7.53	54	1.46	41	3	50	0	0	1	50	2	0	0	0
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	9.08	66	0.62	15	4	100	0	0	1	50	6	80	0	0
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	6.75	48	1.28	35	4	100	0	0	0	0	2	0	0	0
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	9.08	66	0.74	19	4	100	0	0	0	0	6	80	0	0
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	7.53	54	1.38	38	3	50	0	0	1	50	2	0	0	0
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	6.07	43	0.87	23	4	100	0	0	1	50	2	0	0	0
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	6.07	43	1.00	26	4	100	0	0	0	0	2	0	0	0
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	9.08	66	0.84	22	3	50	0	0	0	0	6	80	0	0
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	10.54	77	0.85	22	3	50	0	0	1	50	6	80	0	0
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	6.07	43	1.09	29	3	50	0	0	0	0	2	0	0	0
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	10.54	77	0.77	20	3	50	0	0	1	50	6	80	0	0
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	2.37	14	2.44	71	4	100	0	0	0	0	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	7.53	54	1.10	30	3	50	0	0	1	50	2	0	0	0
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	7.53	54	1.02	27	3	50	0	0	1	50	2	0	0	0
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	2.37	14	2.44	71	4	100	0	0	0	0	2	0	0	0
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	12.39	91	0.91	24	4	100	1	100	1	50	7	100	0	0
226	3,9,17,24,25,34,47,48,52,53,69,80	12.07	89	0.91	24	4	100	1	100	1	50	7	100	0	0
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	9.08	66	1.30	36	3	50	0	0	0	0	6	80	0	0
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	9.05	65	1.16	32	4	100	1	100	1	50	3	20	0	0
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	9.38	68	1.16	32	4	100	1	100	1	50	3	20	0	0
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	9.08	66	1.22	33	3	50	0	0	0	0	6	80	0	0
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	6.07	43	1.55	43	3	50	0	0	0	0	2	0	0	0
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	2.37	14	2.96	86	4	100	0	0	0	0	2	0	0	0
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	2.37	14	2.90	84	4	100	0	0	0	0	2	0	0	0
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	13.56	100	1.07	29	4	100	0	0	1	50	6	80	0	0
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	6.07	43	1.47	41	3	50	0	0	0	0	2	0	0	0
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	2.37	14	2.82	82	4	100	0	0	0	0	2	0	0	0
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	10.54	77	1.32	36	4	100	0	0	1	50	2	0	0	0
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0.51	0	2.48	72	4	100	0	0	0	0	2	0	0	0
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	2.37	14	2.96	86	4	100	0	0	0	0	2	0	0	0
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	2.37	14	2.90	84	4	100	0	0	0	0	2	0	0	0
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	10.54	77	0.66	16	4	100	0	0	1	50	6	80	0	0
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	2.37	14	2.82	82	4	100	0	0	0	0	2	0	0	0
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	7.53	54	0.91	24	4	100	0	0	1	50	2	0	0	0
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0.51	0	2.48	72	4	100	0	0	0	0	2	0	0	0
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	2.36	14	3.41	100	4	100	0	0	0	0	2	0	0	0
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	2.37	14	3.34	98	4	100	0	0	0	0	2	0	0	0
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0.51	0	2.93	85	4	100	0	0	0	0	2	0	0	0
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	2.37	14	3.41	100	4	100	0	0	0	0	2	0	0	0
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0.51	0	2.85	83	4	100	0	0	0	0	2	0	0	0
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	2.37	14	3.34	98	4	100	0	0	0	0	2	0	0	0
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0.51	0	2.93	85	4	100	0	0	0	0	2	0	0	0
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0.51	0	2.85	83	4	100	0	0	0	0	2	0	0	0
	MIN	0.51	0	0.12	0	2	0	0	0	0	0	2	0	0	0
	MAX	13.56	100	3.41	100	4	100	1	100	2	100	7	100	0	0
	RANGE	13.05	100	3.29	100	2	100	1	100	2	100	5	100	0	0

Routes	Study Segments	Land Use															
		Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
382	5,35,36,37,50,69,75,80	0	0.00	9	1.97	13	2.22	19	1	35	17	53.99	27	2	67	0	0
252	4,17,32,37,50,69,75,80	0	0.00	7	1.18	7	0.56	15	1	32	7	59.35	32	2	67	0	0
392	5,35,38,64,71,73	4	5.00	6	0.79	11	1.67	17	1	36	20	61.40	34	2	67	0	0
388	5,35,38,49,50,69,75,80	3	3.75	8	1.58	12	1.94	18	1	38	27	50.61	23	2	67	0	0
384	5,35,36,37,64,71,72,74,75	1	1.25	6	0.79	13	2.22	20	1	35	17	57.60	30	2	67	0	0
267	4,17,32,37,64,71,72,74,75	1	1.25	4	0.00	7	0.56	16	1	32	7	62.96	36	2	67	0	0
378	5,35,36,37,49,64,71,73	1	1.25	7	1.18	13	2.22	17	1	36	20	65.63	38	2	67	0	0
261	4,17,32,37,49,64,71,73	1	1.25	5	0.39	7	0.56	13	0	33	10	70.98	44	2	67	0	0
383	5,35,36,37,63,74,75,80	3	3.75	8	1.58	20	4.17	16	1	37	23	61.13	34	2	67	0	0
266	4,17,32,37,63,74,75,80	3	3.75	6	0.79	14	2.50	12	0	34	13	66.49	39	2	67	0	0
394	5,60,62,64	0	0.00	11	2.76	16	3.06	25	1	32	7	69.90	43	1	33	0	0
390	5,35,38,49,64,71,72,74,75	4	5.00	5	0.39	12	1.94	19	1	38	27	54.22	27	2	67	0	0
393	5,60,61,64	2	2.50	12	3.16	14	2.50	24	1	30	0	73.71	47	1	33	0	0
259	4,17,32,36,38,64,71,73	4	5.00	5	0.39	5	0.00	12	0	35	17	69.31	42	2	67	0	0
256	4,17,32,36,38,49,50,69,75,80	3	3.75	7	1.18	6	0.28	13	0	36	20	58.51	31	2	67	0	0
389	5,35,38,49,63,74,75,80	6	7.50	7	1.18	19	3.89	15	1	40	33	57.75	30	2	67	0	0
391	5,35,38,63,72,73,80	6	7.50	8	1.58	18	3.61	13	0	41	37	64.93	38	2	67	0	0
380	5,35,36,37,50,53,65,67,75	0	0.00	8	1.58	13	2.22	19	1	36	20	53.99	27	2	67	0	0
263	4,17,32,37,50,53,65,67,75	0	0.00	6	0.79	7	0.56	15	1	33	10	59.35	32	2	67	0	0
241	3,9,17,32,37,50,69,75,80	4	5.00	14	3.95	14	2.50	22	1	36	20	52.79	25	1	33	0	0
381	5,35,36,37,50,53,67,70,75,76,84	0	0.00	8	1.58	13	2.22	20	1	37	23	59.57	32	2	67	0	0
413	9,17,32,37,50,69,75,79,80,81	0	0.00	9	1.97	16	3.06	23	1	34	13	63.48	36	1	33	0	0
264	4,17,32,37,50,53,67,70,75,76,84	0	0.00	6	0.79	7	0.56	16	1	34	13	64.92	38	2	67	0	0
386	5,35,38,49,50,53,65,67,75	3	3.75	7	1.18	12	1.94	18	1	39	30	50.61	23	2	67	0	0
258	4,17,32,36,38,49,64,71,72,74,75	4	5.00	4	0.00	6	0.28	14	0	36	20	62.12	35	2	67	0	0
377	5,35,36,37,49,63,72,73,80	3	3.75	9	1.97	20	4.17	13	0	41	37	69.16	42	2	67	0	0
260	4,17,32,37,49,63,72,73,80	3	3.75	7	1.18	14	2.50	9	0	38	27	74.51	47	2	67	0	0
118	2,8,9,17,32,37,50,69,75,80,81	1	1.25	12	3.16	13	2.22	20	1	40	33	62.96	36	1	33	0	0
387	5,35,38,49,50,53,67,70,75,76,84	3	3.75	7	1.18	12	1.94	19	1	40	33	56.19	29	2	67	0	0
257	4,17,32,36,38,49,63,34,74,75,80	6	7.50	6	0.79	13	2.22	10	0	38	27	65.65	38	2	67	0	0
243	3,9,17,32,37,64,71,72,74,75	5	6.25	11	2.76	14	2.50	23	1	36	20	56.40	29	1	33	0	0
253	4,17,32,36,38,36,34,72,73,80	6	7.50	7	1.18	12	1.94	8	0	40	33	72.84	46	2	67	0	0
237	3,9,17,32,37,49,64,71,73	5	6.25	12	3.16	14	2.50	20	1	37	23	64.43	37	1	33	0	0
408	9,17,32,37,64,71,72,74,75,79,81	1	1.25	6	0.79	16	3.06	24	1	34	13	67.09	40	1	33	0	0
242	3,9,17,32,37,63,74,75,80	7	8.75	13	3.55	21	4.44	19	1	38	27	59.93	33	1	33	0	0
407	9,17,32,37,49,64,71,73,79,81	1	1.25	7	1.18	16	3.06	21	1	35	17	75.11	48	1	33	0	0
235	3,9,17,32,36,38,64,71,73	8	10.00	12	3.16	12	1.94	19	1	39	30	62.75	36	1	33	0	0
410	9,17,32,37,63,74,75,79,80,81	3	3.75	8	1.58	23	5.00	20	1	36	20	70.62	43	1	33	0	0
254	4,17,32,36,38,49,50,53,65,67,75	3	3.75	6	0.79	6	0.28	13	0	37	23	58.51	31	2	67	0	0
120	2,8,9,17,32,37,64,71,72,74,75,81	2	2.50	9	1.97	13	2.22	21	1	40	33	66.57	39	1	33	0	0
232	3,9,17,32,36,38,49,50,69,75,80	7	8.75	14	3.95	13	2.22	20	1	40	33	51.95	25	1	33	0	0
406	9,17,32,36,38,64,71,73,79,81	4	5.00	7	1.18	14	2.50	20	1	37	23	73.44	46	1	33	0	0
114	2,8,9,17,32,37,49,64,71,73,81	2	2.50	10	2.37	13	2.22	18	1	41	37	74.59	47	1	33	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Routes	Study Segments	Land Use															
		Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
414	9,17,32,36,38,49,50,69,75,71,79,80,81	3	3.75	9	1.97	15	2.78	21	1	38	27	62.64	35	1	33	0	0
255	4,17,32,36,38,49,50,53,67,70,75,76,84	3	3.75	6	0.79	6	0.28	14	0	38	27	64.09	37	2	67	0	0
119	2,8,9,17,32,37,63,74,75,80,81	4	5.00	11	2.76	20	4.17	18	1	42	40	70.10	43	1	33	0	0
240	3,9,17,32,37,50,53,65,67,75	4	5.00	13	3.55	14	2.50	22	1	37	23	52.79	25	1	33	0	0
112	2,8,9,17,32,36,38,64,71,73,81	5	6.25	10	2.37	11	1.67	18	1	43	43	72.92	46	1	33	0	0
415	9,17,32,37,50,53,65,67,71,75,79,81	0	0.00	8	1.58	16	3.06	23	1	34	13	63.48	36	1	33	0	0
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	4	5.00	12	3.16	12	1.94	18	1	44	47	62.12	35	1	33	0	0
238	3,9,17,32,37,50,35,67,70,75,76,84	4	5.00	13	3.55	14	2.50	23	1	38	27	58.37	31	1	33	0	0
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	12	15.00	30	10.26	18	3.61	25	1	43	43	47.83	20	1	33	0	0
233	3,9,17,32,36,38,49,64,71,72,74,75	8	10.00	11	2.76	13	2.22	21	1	40	33	55.57	28	1	33	0	0
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	0	0.00	8	1.58	16	3.06	24	1	35	17	69.06	42	1	33	0	0
379	5,35,36,37,50,53,55,59,66,67,70,75,84	0	0.00	16	4.74	21	4.44	24	1	43	43	77.56	50	3	100	0	0
117	2,8,9,17,32,37,50,53,65,67,71,75,81	1	1.25	11	2.76	13	2.22	21	1	40	33	62.96	36	1	33	0	0
236	3,9,17,32,37,49,63,72,73,80	7	8.75	14	3.95	21	4.44	16	1	42	40	67.96	41	1	33	0	0
262	4,17,32,37,50,53,55,59,66,67,70,75,84	0	0.00	14	3.95	15	2.78	20	1	40	33	82.91	56	3	100	0	0
409	9,17,32,36,38,49,64,71,72,74,75,79,81	4	5.00	6	0.79	15	2.78	22	1	38	27	66.25	39	1	33	0	0
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	12	15.00	30	10.26	18	3.61	26	1	45	50	53.40	26	1	33	0	0
412	9,17,32,37,49,63,72,73,79,80,81	3	3.75	9	1.97	23	5.00	17	1	40	33	78.64	52	1	33	0	0
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	1	1.25	11	2.76	13	2.22	21	1	41	37	68.53	41	1	33	0	0
234	3,9,17,32,36,38,63,72,73,80	10	12.50	14	3.95	19	3.89	15	1	44	47	66.28	39	1	33	0	0
385	5,35,38,49,50,53,55,59,66,67,70,75,84	3	3.75	15	4.34	20	4.17	23	1	46	53	74.18	47	3	100	0	0
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	5	6.25	9	1.97	12	1.94	19	1	44	47	65.73	39	1	33	0	0
411	9,17,32,36,38,63,72,73,79,80,81	6	7.50	9	1.97	21	4.44	16	1	42	40	76.97	50	1	33	0	0
113	2,8,9,17,32,37,49,63,72,73,80,81	4	5.00	12	3.16	20	4.17	15	1	46	53	78.12	51	1	33	0	0
246	4,17,24,25,31,33,45,47,48,52,65,67	4	5.00	10	2.37	13	2.22	21	1	47	57	44.58	17	1	33	0	0
230	3,9,17,32,36,38,49,50,53,65,67,75	7	8.75	13	3.55	13	2.22	20	1	41	37	51.95	25	1	33	0	0
111	2,8,9,17,32,36,38,63,72,73,80,81	7	8.75	12	3.16	18	3.61	14	0	48	60	76.45	49	1	33	0	0
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	3	3.75	8	1.58	15	2.78	21	1	38	27	62.64	35	1	33	0	0
306	4,9,11,14,20,29,43,44,55,67,70,76,83	2	2.50	11	2.76	9	1.11	12	0	41	37	95.09	68	2	67	0	0
354	4,9,14,20,29,43,44,55,67,70,76,78,81	2	2.50	11	2.76	9	1.11	12	0	42	40	87.18	60	2	67	0	0
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	7	8.75	13	3.55	13	2.22	21	1	42	40	57.53	30	1	33	0	0
247	4,17,24,25,31,33,47,48,52,67,70,76,84	4	5.00	10	2.37	13	2.22	22	1	49	63	50.16	23	1	33	0	0
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	4	5.00	9	1.97	10	1.39	14	0	41	37	92.68	66	2	67	0	0
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	3	3.75	8	1.58	15	2.78	22	1	39	30	68.22	41	1	33	0	0
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	4	5.00	11	2.76	12	1.94	19	1	44	47	62.12	35	1	33	0	0
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	16	20.00	33	11.45	16	3.06	21	1	47	57	41.99	15	1	33	0	0
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	16	20.00	33	11.45	16	3.06	21	1	47	57	41.99	15	1	33	0	0
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	4	5.00	9	1.97	10	1.39	14	0	42	40	84.77	58	2	67	0	0
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	16	20.00	33	11.45	16	3.06	21	1	48	60	34.08	7	1	33	0	0
323	4,9,11,16,23,25,34,47,48,52,65,67	13	16.25	47	16.97	47	11.67	67	4	42	40	41.24	14	1	33	0	0
276	4,7,8,9,13,28,43,44,55,67,70,76,81	1	1.25	11	2.76	13	2.22	15	1	39	30	99.01	72	2	67	0	0
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	4	5.00	11	2.76	12	1.94	19	1	45	50	67.70	41	1	33	0	0
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	16	20.00	33	11.45	16	3.06	22	1	49	63	47.57	20	1	33	0	0
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	4	5.00	21	6.71	22	4.72	27	1	43	43	76.36	49	2	67	0	0
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	16	20.00	33	11.45	16	3.06	22	1	50	67	39.66	12	1	33	0	0
307	4,9,11,14,20,29,43,44,59,66,67,70,83	2	2.50	19	5.92	15	2.78	15	1	43	43	94.59	68	2	67	0	0
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	0	0.00	16	4.74	24	5.28	28	1	40	33	87.05	60	2	67	0	0
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	13	16.25	47	16.97	47	11.67	68	4	44	47	46.81	19	1	33	0	0
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	12	15.00	31	10.66	19	3.89	26	1	44	47	47.83	20	1	33	0	0

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Routes	Study Segments	Land Use															
		Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	25	31.25	28	9.47	12	1.94	21	1	47	57	57.82	31	1	33	0	0
355	4,9,14,20,29,43,44,59,66,67,70,78,81	2	2.50	19	5.92	15	2.78	15	1	44	47	86.67	60	2	67	0	0
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	23	28.75	53	19.34	32	7.50	18	1	39	30	58.20	31	1	33	0	0
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	7	8.75	15	4.34	19	3.89	16	1	47	57	112.25	85	2	67	0	0
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	4	5.00	17	5.13	16	3.06	17	1	43	43	92.18	65	2	67	0	0
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	23	28.75	53	19.34	32	7.50	18	1	38	27	70.59	43	1	33	0	0
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	12	15.00	38	13.42	26	5.83	30	2	50	67	71.39	44	2	67	0	0
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	3	3.75	13	3.55	13	2.22	14	0	42	40	105.75	79	2	67	0	0
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	7	8.75	15	4.34	19	3.89	16	1	48	60	104.34	77	2	67	0	0
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	4	5.00	17	5.13	16	3.06	17	1	44	47	84.27	57	2	67	0	0
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	1	1.25	19	5.92	21	4.44	25	1	46	53	86.52	59	2	67	0	0
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	25	31.25	28	9.47	12	1.94	22	1	49	63	63.40	36	1	33	0	0
277	4,7,8,9,13,28,43,44,59,66,67,70,81	1	1.25	19	5.92	19	3.89	18	1	41	37	98.50	72	2	67	0	0
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	9	11.25	13	3.55	20	4.17	18	1	48	60	109.84	83	2	67	0	0
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	23	28.75	53	19.34	32	7.50	19	1	40	33	76.17	49	1	33	0	0
250	4,17,24,25,34,47,48,52,65,67	5	6.25	27	9.08	42	10.28	63	4	46	53	37.99	11	1	33	0	0
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	9	11.25	13	3.55	20	4.17	18	1	49	63	101.93	75	2	67	0	0
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	23	28.75	53	19.34	32	7.50	19	1	41	37	68.26	41	1	33	0	0
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	4	5.00	12	3.16	22	4.72	29	2	47	57	48.72	21	0	0	0	0
224	3,9,17,24,25,31,33,45,47,48,52,65,67	8	10.00	17	5.13	20	4.17	28	1	52	73	38.03	11	0	0	0	0
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	6	7.50	15	4.34	23	5.00	19	1	46	53	116.16	89	2	67	0	0
251	4,17,24,25,34,47,48,52,67,70,76,84	5	6.25	27	9.08	42	10.28	64	4	48	60	43.57	16	1	33	0	0
244	4,17,24,25,31,33,45,47,48,52,53,69,80	4	5.00	11	2.76	14	2.50	22	1	48	60	44.58	17	1	33	0	0
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	8	10.00	17	5.13	20	4.17	29	2	53	77	43.61	16	0	0	0	0
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	4	5.00	12	3.16	22	4.72	30	2	49	63	54.30	27	0	0	0	0
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	5	6.25	15	4.34	19	3.89	27	1	53	77	48.19	21	0	0	0	0
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	17	21.25	50	18.16	45	11.11	63	4	46	53	35.40	8	1	33	0	0
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	3	3.75	21	6.71	19	3.89	17	1	44	47	105.24	78	2	67	0	0
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	10	12.50	33	11.45	38	9.17	44	3	44	47	86.86	60	1	33	0	0
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	7	8.75	21	6.71	21	4.44	25	1	47	57	75.52	48	2	67	0	0
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	4	5.00	18	5.53	21	4.44	26	1	55	83	68.15	41	2	67	0	0
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	17	21.25	50	18.16	45	11.11	63	4	47	57	27.49	0	1	33	0	0
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	3	3.75	16	4.74	23	5.00	26	1	44	47	86.21	59	2	67	0	0
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	26	32.50	27	9.08	13	2.22	23	1	48	60	60.20	33	1	33	0	0
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	8	10.00	17	5.13	23	5.00	18	1	48	60	122.90	96	2	67	0	0
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	5	6.25	15	4.34	19	3.89	28	1	55	83	53.77	26	0	0	0	0
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	24	30.00	52	18.95	33	7.78	20	1	38	27	72.97	46	1	33	0	0
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	17	21.25	50	18.16	45	11.11	64	4	48	60	40.98	14	1	33	0	0
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	16	20.00	34	11.84	17	3.33	22	1	48	60	41.99	15	1	33	0	0
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	10	12.50	33	11.45	38	9.17	45	3	46	53	92.44	65	1	33	0	0
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	17	21.25	50	18.16	45	11.11	64	4	49	63	33.07	6	1	33	0	0
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	4	5.00	19	5.92	20	4.17	23	1	50	67	85.69	59	2	67	0	0
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	37	46.25	71	26.45	32	7.50	20	1	38	27	69.18	42	1	33	0	0
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	16	20.00	34	11.84	17	3.33	22	1	49	63	34.08	7	1	33	0	0
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	26	32.50	27	9.08	13	2.22	24	1	50	67	65.78	39	1	33	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Routes	Study Segments	Land Use															
		Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	16	20.00	41	14.61	24	5.28	26	1	54	80	65.56	38	2	67	0	0
321	4,9,11,16,23,25,34,47,48,52,53,69,80	13	16.25	48	17.37	48	11.94	68	4	43	43	41.24	14	1	33	0	0
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	26	32.50	45	16.18	41	10.00	63	4	46	53	51.23	24	1	33	0	0
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	24	30.00	52	18.95	33	7.78	21	1	40	33	78.55	51	1	33	0	0
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	16	20.00	41	14.61	24	5.28	26	1	55	83	57.65	30	2	67	0	0
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	26	32.50	45	16.18	41	10.00	63	4	47	57	43.32	16	1	33	0	0
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	13	16.25	55	20.13	55	13.89	72	5	49	63	64.80	38	2	67	0	0
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	37	46.25	71	26.45	32	7.50	21	1	40	33	74.76	48	1	33	0	0
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	26	32.50	45	16.18	41	10.00	64	4	48	60	56.81	30	1	33	0	0
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	25	31.25	29	9.87	13	2.22	22	1	48	60	57.82	31	1	33	0	0
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	26	32.50	45	16.18	41	10.00	64	4	49	63	48.90	22	1	33	0	0
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	23	28.75	54	19.74	33	7.78	19	1	39	30	70.59	43	1	33	0	0
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	25	31.25	36	12.63	20	4.17	26	1	54	80	81.39	54	2	67	0	0
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	23	28.75	54	19.74	33	7.78	19	1	40	33	62.68	35	1	33	0	0
425	9,17,24,25,34,47,48,52,65,67,71,79,81	5	6.25	29	9.87	51	12.78	71	5	46	53	42.13	15	0	0	0	0
227	3,9,17,24,25,34,47,48,52,65,67	9	11.25	34	11.84	49	12.22	70	5	51	70	31.44	4	0	0	0	0
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	23	28.75	61	22.50	40	9.72	23	1	45	50	94.16	67	2	67	0	0
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	37	46.25	72	26.84	34	8.06	17	1	40	33	63.35	36	1	33	0	0
228	3,9,17,24,25,34,47,48,52,67,70,76,84	9	11.25	34	11.84	49	12.22	71	5	50	67	37.02	10	0	0	0	0
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	23	28.75	61	22.50	40	9.72	23	1	46	53	86.25	59	2	67	0	0
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	5	6.25	29	9.87	51	12.78	72	5	46	53	47.71	20	0	0	0	0
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	37	46.25	72	26.84	34	8.06	17	1	41	37	55.44	28	1	33	0	0
248	4,17,24,25,34,47,48,52,53,69,80	5	6.25	28	9.47	43	10.56	64	4	47	57	37.99	11	1	33	0	0
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	6	7.50	32	11.05	48	11.94	69	4	52	73	41.60	14	0	0	0	0
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	4	5.00	13	3.55	23	5.00	30	2	48	60	48.72	21	0	0	0	0
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	8	10.00	18	5.53	21	4.44	29	2	53	77	38.03	11	0	0	0	0
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	37	46.25	72	26.84	34	8.06	18	1	42	40	68.93	42	1	33	0	0
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	8	10.00	25	8.29	28	6.39	33	2	58	93	61.60	34	1	33	0	0
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	5	6.25	35	12.24	50	12.50	68	4	54	80	61.56	34	2	67	0	0
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	37	46.25	72	26.84	34	8.06	18	1	43	43	61.02	34	1	33	0	0
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	6	7.50	32	11.05	48	11.94	70	5	52	73	47.18	20	0	0	0	0
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	4	5.00	20	6.32	30	6.94	34	2	54	80	72.29	45	1	33	0	0
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	27	33.75	44	15.79	42	10.28	65	4	47	57	53.61	26	1	33	0	0
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	5	6.25	16	4.74	20	4.17	28	1	54	80	48.19	21	0	0	0	0
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	17	21.25	51	18.55	46	11.39	64	4	47	57	35.40	8	1	33	0	0
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	10	12.50	34	11.84	39	9.44	45	3	45	50	86.86	60	1	33	0	0
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	17	21.25	51	18.55	46	11.39	64	4	48	60	27.49	0	1	33	0	0
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	5	6.25	23	7.50	27	6.11	32	2	60	100	71.76	45	1	33	0	0
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	27	33.75	44	15.79	42	10.28	66	4	49	63	59.19	32	1	33	0	0
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	17	21.25	58	21.32	53	13.33	68	4	53	77	58.97	32	2	67	0	0
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	26	32.50	28	9.47	14	2.50	24	1	49	63	60.20	33	1	33	0	0
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	10	12.50	41	14.61	46	11.39	49	3	50	67	110.43	84	2	67	0	0
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	24	30.00	53	19.34	34	8.06	21	1	39	30	72.97	46	1	33	0	0
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	17	21.25	58	21.32	53	13.33	68	4	54	80	51.06	24	2	67	0	0
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	26	32.50	35	12.24	21	4.44	28	1	55	83	83.77	57	2	67	0	0
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	24	30.00	60	22.11	41	10.00	25	1	45	50	96.54	70	2	67	0	0
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	37	46.25	72	26.84	33	7.78	21	1	39	30	69.18	42	1	33	0	0
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	26	32.50	46	16.58	42	10.28	64	4	47	57	51.23	24	1	33	0	0
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	37	46.25	79	29.61	40	9.72	25	1	45	50	92.75	66	2	67	0	0
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	26	32.50	46	16.58	42	10.28	64	4	48	60	43.32	16	1	33	0	0
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	33	41.25	70	26.05	27	6.11	12	0	38	27	109.57	83	2	67	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Routes	Study Segments	Land Use															
		Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	26	32.50	53	19.34	49	12.22	68	4	53	77	74.80	48	2	67	0	0
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	26	32.50	53	19.34	49	12.22	68	4	54	80	66.89	40	2	67	0	0
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	35	43.75	68	25.26	28	6.39	14	0	38	27	107.17	80	2	67	0	0
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	5	6.25	30	10.26	52	13.06	72	5	47	57	42.13	15	0	0	0	0
226	3,9,17,24,25,34,47,48,52,53,69,80	9	11.25	35	12.24	50	12.50	71	5	52	73	31.44	4	0	0	0	0
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	37	46.25	73	27.24	35	8.33	18	1	41	37	63.35	36	1	33	0	0
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	9	11.25	42	15.00	57	14.44	75	5	57	90	55.01	28	1	33	0	0
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	5	6.25	37	13.03	59	15.00	76	5	53	77	65.70	39	1	33	0	0
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	37	46.25	73	27.24	35	8.33	18	1	42	40	55.44	28	1	33	0	0
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	37	46.25	80	30.00	42	10.28	22	1	47	57	86.92	60	2	67	0	0
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	33	41.25	78	29.21	33	7.78	15	1	40	33	109.06	82	2	67	0	0
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	33	41.25	71	26.45	29	6.67	9	0	40	33	103.74	77	2	67	0	0
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	6	7.50	33	11.45	49	12.22	69	4	53	77	41.60	14	0	0	0	0
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	37	46.25	80	30.00	42	10.28	22	1	48	60	79.01	52	2	67	0	0
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	33	41.25	71	26.45	29	6.67	9	0	41	37	95.82	69	2	67	0	0
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	6	7.50	40	14.21	56	14.17	74	5	59	97	65.17	38	1	33	0	0
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	38	47.50	74	27.63	37	8.89	16	1	44	47	126.72	100	2	67	0	0
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	35	43.75	76	28.42	34	8.06	17	1	40	33	106.67	80	2	67	0	0
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	35	43.75	69	25.66	30	6.94	11	0	40	33	101.34	74	2	67	0	0
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	27	33.75	45	16.18	43	10.56	66	4	48	60	53.61	26	1	33	0	0
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	35	43.75	69	25.66	30	6.94	11	0	41	37	93.43	66	2	67	0	0
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	27	33.75	52	18.95	50	12.50	70	5	54	80	77.18	50	2	67	0	0
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	40	50.00	72	26.84	38	9.17	18	1	45	50	124.33	98	2	67	0	0
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	33	41.25	79	29.61	35	8.33	12	0	42	40	103.22	76	2	67	0	0
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	33	41.25	79	29.61	35	8.33	12	0	43	43	95.32	68	2	67	0	0
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	38	47.50	75	28.03	39	9.44	13	0	46	53	120.89	94	2	67	0	0
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	35	43.75	77	28.82	36	8.61	14	0	42	40	100.83	74	2	67	0	0
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	38	47.50	75	28.03	39	9.44	13	0	47	57	112.98	86	2	67	0	0
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	35	43.75	77	28.82	36	8.61	14	0	43	43	92.92	66	2	67	0	0
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	40	50.00	73	27.24	40	9.72	15	1	47	57	118.50	92	2	67	0	0
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	40	50.00	73	27.24	40	9.72	15	1	48	60	110.59	84	2	67	0	0
	MIN	0	0.00	4	0.00	5	0.00	8	0	30	0	27.49	0	0	0	0	0
	MAX	40	50.00	80	30.00	59	15.00	76	5	60	100	126.72	100	3	100	0	0
	RANGE	40	50.00	76	30.00	54	15.00	68	5	30	100	99.23	100	3	100	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Routes	Study Segments	Technical															
		Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
382	5,35,36,37,50,69,75,80	1	25	8	62	5.79	10	0.00	30	4.44	20	0.23	94	9.43	2	0.07	0
252	4,17,32,37,50,69,75,80	0	0	6	46	5.77	10	0.00	30	0.43	38	0.23	94	9.31	0	0.15	4
392	5,35,38,64,71,73	1	25	1	8	7.83	0	0.00	30	6.16	13	0.00	100	9.86	11	0.07	0
388	5,35,38,49,50,69,75,80	1	25	8	62	5.76	10	0.00	30	5.04	18	0.23	94	9.41	2	0.07	0
384	5,35,36,37,64,71,72,74,75	3	75	5	38	7.91	0	0.00	30	4.01	22	0.00	100	10.14	17	0.07	0
267	4,17,32,37,64,71,72,74,75	2	50	3	23	7.90	0	0.00	30	0.00	40	0.00	100	10.02	14	0.15	4
378	5,35,36,37,49,64,71,73	3	75	5	38	7.90	0	0.00	30	5.55	16	0.00	100	10.12	16	0.07	0
261	4,17,32,37,49,64,71,73	2	50	3	23	7.88	0	0.00	30	1.55	33	0.00	100	10.00	14	0.15	4
383	5,35,36,37,63,74,75,80	1	25	6	46	7.58	2	0.00	30	6.92	9	0.00	100	9.58	6	0.07	0
266	4,17,32,37,63,74,75,80	0	0	4	31	7.56	2	0.00	30	2.91	27	0.00	100	9.47	3	0.15	4
394	5,60,62,64	1	25	0	0	3.61	19	0.00	30	3.61	24	0.00	100	9.89	12	0.07	0
390	5,35,38,49,64,71,72,74,75	3	75	5	38	7.88	0	0.00	30	4.61	20	0.00	100	10.12	16	0.07	0
393	5,60,61,64	1	25	1	8	3.61	19	0.00	30	3.61	24	0.00	100	10.06	15	0.07	0
259	4,17,32,36,38,64,71,73	2	50	3	23	7.87	0	0.00	30	2.15	31	0.00	100	10.00	14	0.15	4
256	4,17,32,36,38,49,50,69,75,80	2	50	10	77	5.80	10	0.00	30	1.04	35	0.23	94	9.55	5	0.15	4
389	5,35,38,49,63,74,75,80	1	25	6	46	7.55	2	0.00	30	7.52	7	0.00	100	9.57	5	0.07	0
391	5,35,38,63,72,73,80	1	25	6	46	7.55	2	0.00	30	9.07	0	0.00	100	9.58	6	0.07	0
380	5,35,36,37,50,53,65,67,75	1	25	6	46	5.79	10	1.73	19	4.01	22	1.73	56	9.59	6	0.07	0
263	4,17,32,37,50,53,65,67,75	0	0	4	31	5.77	10	1.73	19	0.00	40	1.73	56	9.47	3	0.15	4
241	3,9,17,32,37,50,69,75,80	0	0	7	54	3.77	19	1.42	21	0.43	38	1.64	58	10.71	28	1.07	48
381	5,35,36,37,50,53,67,70,75,76,84	1	25	6	46	5.79	10	0.71	26	4.01	22	0.53	86	9.75	9	0.07	0
413	9,17,32,37,50,69,75,79,80,81	0	0	8	62	3.77	19	2.03	17	0.43	38	0.23	94	10.75	29	1.13	51
264	4,17,32,37,50,53,67,70,75,76,84	0	0	4	31	5.77	10	0.71	26	0.00	40	0.53	86	9.63	7	0.15	4
386	5,35,38,49,50,53,65,67,75	1	25	6	46	5.76	10	1.73	19	4.61	20	1.73	56	9.57	5	0.07	0
258	4,17,32,36,38,49,64,71,72,74,75	4	100	7	54	7.92	0	0.00	30	0.61	37	0.00	100	10.26	19	0.15	4
377	5,35,36,37,49,63,72,73,80	3	75	10	77	7.61	1	0.00	30	8.46	3	0.00	100	9.84	11	0.07	0
260	4,17,32,37,49,63,72,73,80	2	50	8	62	7.60	1	0.00	30	4.46	20	0.00	100	9.72	8	0.15	4
118	2,8,9,17,32,37,50,69,75,80,81	0	0	9	69	3.77	19	0.00	30	0.43	38	0.23	94	11.32	40	2.16	100
387	5,35,38,49,50,53,67,70,75,76,84	1	25	6	46	5.76	10	0.71	26	4.61	20	0.53	86	9.74	9	0.07	0
257	4,17,32,36,38,49,63,34,74,75,80	2	50	8	62	7.58	2	0.00	30	3.52	24	0.00	100	9.70	8	0.15	4
243	3,9,17,32,37,64,71,72,74,75	2	50	4	31	5.89	9	1.42	21	0.00	40	1.40	64	11.42	42	1.07	48
253	4,17,32,36,38,36,34,72,73,80	2	50	8	62	7.58	2	0.00	30	5.07	18	0.00	100	9.72	8	0.15	4
237	3,9,17,32,37,49,64,71,73	2	50	4	31	5.88	9	1.42	21	1.55	33	1.40	64	11.40	42	1.07	48
408	9,17,32,37,64,71,72,74,75,79,81	2	50	5	38	5.89	9	2.03	17	0.00	40	0.00	100	11.46	43	1.13	51
242	3,9,17,32,37,63,74,75,80	0	0	5	38	5.56	11	1.42	21	2.91	27	1.40	64	10.86	31	1.07	48
407	9,17,32,37,49,64,71,73,79,81	2	50	5	38	5.88	9	2.03	17	1.55	33	0.00	100	11.44	43	1.13	51
235	3,9,17,32,36,38,64,71,73	2	50	4	31	5.86	9	1.42	21	2.15	31	1.40	64	11.39	42	1.07	48
410	9,17,32,37,63,74,75,79,80,81	0	0	6	46	5.56	11	2.03	17	2.91	27	0.00	100	10.91	32	1.13	51
254	4,17,32,36,38,49,50,53,65,67,75	2	50	8	62	5.80	10	1.73	19	0.61	37	1.73	56	9.71	8	0.15	4
120	2,8,9,17,32,37,64,71,72,74,75,81	2	50	6	46	5.89	9	0.00	30	0.00	40	0.00	100	12.03	55	2.16	100
232	3,9,17,32,36,38,49,50,69,75,80	2	50	11	85	3.79	19	1.42	21	1.04	35	1.64	58	10.94	33	1.07	48
406	9,17,32,36,38,64,71,73,79,81	2	50	5	38	5.86	9	2.03	17	2.15	31	0.00	100	11.44	43	1.13	51
114	2,8,9,17,32,37,49,64,71,73,81	2	50	6	46	5.88	9	0.00	30	1.55	33	0.00	100	12.01	54	2.16	100

Routes	Study Segments	Technical															
		Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
414	9,17,32,36,38,49,50,69,75,71,79,80,81	2	50	12	92	3.79	19	2.03	17	1.04	35	0.23	94	10.99	34	1.13	51
255	4,17,32,36,38,49,50,53,67,70,75,76,84	2	50	8	62	5.80	10	0.71	26	0.61	37	0.53	86	9.87	11	0.15	4
119	2,8,9,17,32,37,63,74,75,80,81	0	0	7	54	5.56	11	0.00	30	2.91	27	0.00	100	11.47	44	2.16	100
240	3,9,17,32,37,50,53,65,67,75	0	0	5	38	3.77	19	3.15	10	0.00	40	3.13	20	10.87	31	1.07	48
112	2,8,9,17,32,36,38,64,71,73,81	2	50	6	46	5.86	9	0.00	30	2.15	31	0.00	100	12.00	54	2.16	100
415	9,17,32,37,50,53,65,67,71,75,79,81	0	0	6	46	3.77	19	3.76	6	0.00	40	1.73	56	10.91	32	1.13	51
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	2	50	13	100	3.79	19	0.00	30	1.04	35	0.23	94	11.55	45	2.16	100
238	3,9,17,32,37,50,35,67,70,75,76,84	0	0	5	38	3.77	19	2.13	17	0.00	40	1.94	50	11.03	35	1.07	48
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	0	0	6	46	2.03	26	3.85	6	0.00	40	3.89	0	9.64	7	0.15	4
233	3,9,17,32,36,38,49,64,71,72,74,75	4	100	8	62	5.92	9	1.42	21	0.61	37	1.40	64	11.65	47	1.07	48
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	0	0	6	46	3.77	19	2.74	13	0.00	40	0.53	86	11.08	36	1.13	51
379	5,35,36,37,50,53,55,59,66,67,70,75,84	1	25	6	46	5.79	10	1.44	21	4.01	22	0.53	86	10.99	34	0.07	0
117	2,8,9,17,32,37,50,53,65,67,71,75,81	0	0	7	54	3.77	19	1.73	19	0.00	40	1.73	56	11.48	44	2.16	100
236	3,9,17,32,37,49,63,72,73,80	2	50	9	69	5.59	10	1.42	21	4.46	20	1.40	64	11.12	36	1.07	48
262	4,17,32,37,50,53,55,59,66,67,70,75,84	0	0	4	31	5.77	10	1.44	21	0.00	40	0.53	86	10.87	32	0.15	4
409	9,17,32,36,38,49,64,71,72,74,75,79,81	4	100	9	69	5.92	9	2.03	17	0.61	37	0.00	100	11.70	48	1.13	51
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	0	0	6	46	2.03	26	2.83	12	0.00	40	2.70	31	9.80	10	0.15	4
412	9,17,32,37,49,63,72,73,79,80,81	2	50	10	77	5.59	10	2.03	17	4.46	20	0.00	100	11.16	37	1.13	51
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	0	0	7	54	3.77	19	0.71	26	0.00	40	0.53	86	11.64	47	2.16	100
234	3,9,17,32,36,38,63,72,73,80	2	50	9	69	5.58	10	1.42	21	5.07	18	1.40	64	11.11	36	1.07	48
385	5,35,38,49,50,53,55,59,66,67,70,75,84	1	25	6	46	5.76	10	1.44	21	4.61	20	0.53	86	10.98	34	0.07	0
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	4	100	10	77	5.92	9	0.00	30	0.61	37	0.00	100	12.26	59	2.16	100
411	9,17,32,36,38,63,72,73,79,80,81	2	50	10	77	5.58	10	2.03	17	5.07	18	0.00	100	11.16	37	1.13	51
113	2,8,9,17,32,37,49,63,72,73,80,81	2	50	11	85	5.59	10	0.00	30	4.46	20	0.00	100	11.73	49	2.16	100
246	4,17,24,25,31,33,45,47,48,52,65,67	0	0	5	38	3.24	21	2.36	15	0.00	40	2.34	40	9.56	5	0.15	4
230	3,9,17,32,36,38,49,50,53,65,67,75	2	50	9	69	3.79	19	3.15	10	0.61	37	3.13	20	11.10	36	1.07	48
111	2,8,9,17,32,36,38,63,72,73,80,81	2	50	11	85	5.58	10	0.00	30	5.07	18	0.00	100	11.72	49	2.16	100
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	2	50	10	77	3.79	19	3.76	6	0.61	37	1.73	56	11.15	37	1.13	51
306	4,9,11,14,20,29,43,44,55,67,70,76,83	0	0	6	46	2.03	26	1.17	23	0.00	40	0.44	89	10.81	30	0.15	4
354	4,9,14,20,29,43,44,55,67,70,76,78,81	0	0	6	46	2.03	26	1.18	23	0.00	40	0.00	100	10.83	31	0.15	4
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	2	50	9	69	3.79	19	2.13	17	0.61	37	1.94	50	11.26	39	1.07	48
247	4,17,24,25,31,33,47,48,52,67,70,76,84	0	0	5	38	3.24	21	1.33	22	0.00	40	1.14	71	9.72	8	0.15	4
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	0	0	7	54	2.03	26	1.17	23	0.00	40	0.44	89	11.07	35	0.15	4
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	2	50	10	77	3.79	19	2.74	13	0.61	37	0.53	86	11.31	40	1.13	51
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	2	50	11	85	3.79	19	1.73	19	0.61	37	1.73	56	11.71	48	2.16	100
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	0	0	9	69	2.03	26	3.83	6	0.00	40	3.33	15	9.73	8	0.15	4
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	0	0	9	69	2.03	26	3.83	6	0.00	40	3.33	15	9.73	8	0.15	4
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	0	0	7	54	2.03	26	1.18	23	0.00	40	0.00	100	11.08	36	0.15	4
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	0	0	9	69	2.03	26	3.85	6	0.00	40	2.89	26	9.75	9	0.15	4
323	4,9,11,16,23,25,34,47,48,52,65,67	0	0	4	31	2.03	26	4.20	3	0.00	40	3.89	0	9.40	2	0.15	4
276	4,7,8,9,13,28,43,44,55,67,70,76,81	0	0	8	62	2.03	26	0.76	25	0.00	40	0.00	100	11.63	47	0.15	4
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	2	50	11	85	3.79	19	0.71	26	0.61	37	0.53	86	11.87	52	2.16	100
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	0	0	9	69	2.03	26	2.81	12	0.00	40	2.13	45	9.89	12	0.15	4
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	0	0	5	38	3.77	19	2.86	12	0.00	40	1.94	50	12.27	60	1.07	48
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	0	0	9	69	2.03	26	2.83	12	0.00	40	1.69	57	9.91	12	0.15	4
307	4,9,11,14,20,29,43,44,59,66,67,70,83	0	0	4	31	2.03	26	0.41	27	0.00	40	0.44	89	10.53	25	0.15	4
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	0	0	6	46	3.77	19	3.47	8	0.00	40	0.53	86	12.32	61	1.13	51
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	0	0	4	31	2.03	26	3.17	10	0.00	40	2.70	31	9.56	5	0.15	4
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	0	0	8	62	2.03	26	3.16	10	0.43	38	3.43	12	10.54	25	0.15	4

Routes	Study Segments	Technical															
		Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	0	0	9	69	2.03	26	3.29	9	0.00	40	3.33	15	10.36	21	0.15	4
355	4,9,14,20,29,43,44,59,66,67,70,78,81	0	0	4	31	2.03	26	0.42	27	0.00	40	0.00	100	10.54	25	0.15	4
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	0	0	6	46	2.03	26	2.78	12	0.00	40	2.34	40	9.69	8	0.15	4
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	0	0	5	38	2.03	26	0.41	27	0.00	40	0.44	89	12.98	74	0.15	4
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	0	0	5	38	2.03	26	0.41	27	0.00	40	0.44	89	10.78	30	0.15	4
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	0	0	7	54	2.03	26	2.76	12	0.00	40	2.78	29	9.97	13	0.15	4
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	6	46	2.03	26	3.56	7	0.00	40	2.70	31	11.04	35	0.15	4
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	0	0	9	69	2.03	26	0.76	25	0.00	40	0.00	100	12.10	56	0.15	4
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	0	0	5	38	2.03	26	0.42	27	0.00	40	0.00	100	12.99	74	0.15	4
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	0	0	5	38	2.03	26	0.42	27	0.00	40	0.00	100	10.79	30	0.15	4
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	0	0	7	54	3.77	19	1.44	21	0.00	40	0.53	86	12.88	72	2.16	100
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	0	0	9	69	2.03	26	2.27	16	0.00	40	2.13	45	10.52	24	0.15	4
277	4,7,8,9,13,28,43,44,59,66,67,70,81	0	0	6	46	2.03	26	0.00	30	0.00	40	0.00	100	11.35	41	0.15	4
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	0	0	6	46	2.03	26	0.41	27	0.00	40	0.44	89	13.23	79	0.15	4
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	0	0	7	54	2.03	26	1.74	19	0.00	40	1.58	59	10.14	17	0.15	4
250	4,17,24,25,34,47,48,52,65,67	0	0	3	23	3.24	21	2.70	13	0.00	40	2.34	40	9.32	0	0.15	4
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	0	0	6	46	2.03	26	0.42	27	0.00	40	0.00	100	13.24	79	0.15	4
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	0	0	7	54	2.03	26	1.76	19	0.00	40	1.14	71	10.15	17	0.15	4
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	0	0	7	54	1.24	30	4.39	2	0.00	40	2.34	40	11.00	34	1.13	51
224	3,9,17,24,25,31,33,45,47,48,52,65,67	0	0	6	46	1.24	30	3.78	6	0.00	40	3.74	4	10.95	33	1.07	48
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	0	0	7	54	2.03	26	0.00	30	0.00	40	0.00	100	13.80	91	0.15	4
251	4,17,24,25,34,47,48,52,67,70,76,84	0	0	3	23	3.24	21	1.68	19	0.00	40	1.14	71	9.49	4	0.15	4
244	4,17,24,25,31,33,45,47,48,52,53,69,80	0	0	7	54	3.24	21	1.66	19	0.43	38	1.88	52	10.46	23	0.15	4
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	0	0	6	46	1.24	30	2.76	13	0.00	40	2.54	35	11.12	36	1.07	48
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	0	0	7	54	1.24	30	3.37	9	0.00	40	1.14	71	11.16	37	1.13	51
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	0	0	8	62	1.24	30	2.36	15	0.00	40	2.34	40	11.56	45	2.16	100
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	0	0	7	54	2.03	26	4.18	4	0.00	40	3.33	15	9.49	4	0.15	4
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	0	0	7	54	2.03	26	0.00	30	0.00	40	0.00	100	11.82	51	0.15	4
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	0	0	9	69	2.03	26	2.36	15	0.00	40	2.34	40	11.98	54	0.15	4
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	2	50	9	69	3.79	19	2.86	12	0.61	37	1.94	50	12.50	64	1.07	48
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	5	38	3.24	21	2.07	17	0.00	40	1.14	71	10.96	33	0.15	4
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	0	0	7	54	2.03	26	4.19	3	0.00	40	2.89	26	9.51	4	0.15	4
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	2	50	10	77	3.79	19	3.47	8	0.61	37	0.53	86	12.55	65	1.13	51
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	0	0	10	77	2.03	26	2.88	12	0.00	40	2.89	26	10.63	27	0.15	4
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	0	0	8	62	2.03	26	0.00	30	0.00	40	0.00	100	14.27	100	0.15	4
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	0	0	8	62	1.24	30	1.33	22	0.00	40	1.14	71	11.73	49	2.16	100
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	0	0	8	62	2.03	26	2.36	15	0.00	40	2.34	40	10.24	19	0.15	4
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	0	0	7	54	2.03	26	3.16	10	0.00	40	2.13	45	9.66	7	0.15	4
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	0	0	11	85	2.03	26	3.14	10	0.43	38	2.87	26	10.64	27	0.15	4
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	0	0	10	77	2.03	26	1.33	22	0.00	40	1.14	71	12.20	58	0.15	4
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	0	0	7	54	2.03	26	3.17	10	0.00	40	1.69	57	9.67	7	0.15	4
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	2	50	11	85	3.79	19	1.44	21	0.61	37	0.53	86	13.11	77	2.16	100
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	0	0	6	46	2.03	26	3.32	9	0.00	40	3.37	13	10.01	14	0.15	4
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	0	0	11	85	2.03	26	3.15	10	0.43	38	2.43	38	10.65	27	0.15	4
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	0	0	10	77	2.03	26	1.86	18	0.00	40	1.69	57	10.79	30	0.15	4

Routes	Study Segments	Technical															
		Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	0	0	9	69	2.03	26	3.55	8	0.00	40	2.13	45	11.13	37	0.15	4
321	4,9,11,16,23,25,34,47,48,52,53,69,80	0	0	6	46	2.03	26	3.50	8	0.43	38	3.43	12	10.30	20	0.15	4
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	0	0	7	54	2.03	26	3.64	7	0.00	40	3.33	15	10.12	16	0.15	4
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	0	0	8	62	2.03	26	1.33	22	0.00	40	1.14	71	10.41	22	0.15	4
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	9	69	2.03	26	3.56	7	0.00	40	1.69	57	11.15	37	0.15	4
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	0	0	7	54	2.03	26	3.65	7	0.00	40	2.89	26	10.14	17	0.15	4
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	0	0	4	31	2.03	26	3.91	5	0.00	40	2.70	31	10.80	30	0.15	4
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	0	0	6	46	2.03	26	2.30	15	0.00	40	2.17	44	10.17	17	0.15	4
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	0	0	7	54	2.03	26	2.61	13	0.00	40	2.13	45	10.28	20	0.15	4
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	0	0	11	85	2.03	26	2.60	14	0.43	38	2.87	26	11.26	39	0.15	4
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	0	0	6	46	2.03	26	2.63	13	0.00	40	1.69	57	10.25	19	0.15	4
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	0	0	9	69	2.03	26	2.07	17	0.43	38	2.32	40	10.88	32	0.15	4
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	0	0	9	69	2.03	26	3.00	11	0.00	40	2.13	45	11.76	49	0.15	4
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	0	0	9	69	2.03	26	2.09	17	0.43	38	1.88	52	10.89	32	0.15	4
425	9,17,24,25,34,47,48,52,65,67,71,79,81	0	0	5	38	1.24	30	4.73	0	0.00	40	2.34	40	10.77	29	1.13	51
227	3,9,17,24,25,34,47,48,52,65,67	0	0	4	31	1.24	30	4.12	4	0.00	40	3.74	4	10.72	28	1.07	48
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	0	0	7	54	2.03	26	2.48	14	0.00	40	1.58	59	11.37	42	0.15	4
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	0	0	7	54	2.03	26	3.31	9	0.00	40	2.78	29	10.00	14	0.15	4
228	3,9,17,24,25,34,47,48,52,67,70,76,84	0	0	4	31	1.24	30	3.10	10	0.00	40	2.54	35	10.74	29	1.07	48
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	0	0	7	54	2.03	26	2.49	14	0.00	40	1.14	71	11.39	42	0.15	4
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	0	0	5	38	1.24	30	3.71	6	0.00	40	1.14	71	10.79	30	1.13	51
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	0	0	7	54	2.03	26	3.32	9	0.00	40	2.34	40	10.01	14	0.15	4
248	4,17,24,25,34,47,48,52,53,69,80	0	0	5	38	3.24	21	2.01	17	0.43	38	1.88	52	10.23	18	0.15	4
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	0	0	6	46	1.24	30	2.70	13	0.00	40	2.34	40	11.33	41	2.16	100
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	0	0	9	69	1.24	30	3.69	7	0.43	38	1.88	52	11.91	52	1.13	51
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	0	0	8	62	1.24	30	3.09	10	0.43	38	3.28	16	11.86	51	1.07	48
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	0	0	7	54	2.03	26	2.29	16	0.00	40	1.58	59	10.16	17	0.15	4
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	6	46	1.24	30	3.49	8	0.00	40	2.54	35	12.36	61	1.07	48
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	0	0	3	23	3.24	21	2.42	15	0.00	40	1.14	71	10.72	29	0.15	4
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	0	0	7	54	2.03	26	2.30	15	0.00	40	1.14	71	10.17	17	0.15	4
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	0	0	6	46	1.24	30	1.68	19	0.00	40	1.14	71	11.35	41	2.16	100
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	0	0	7	54	1.24	30	4.10	4	0.00	40	1.14	71	12.40	62	1.13	51
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	0	0	8	62	2.03	26	3.23	10	0.00	40	2.89	26	10.39	22	0.15	4
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	0	0	10	77	1.24	30	1.66	19	0.43	38	1.88	52	12.47	64	2.16	100
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	0	0	9	69	2.03	26	3.49	8	0.43	38	2.87	26	10.40	22	0.15	4
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	0	0	12	92	2.03	26	1.66	19	0.43	38	1.88	52	12.94	73	0.15	4
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	0	0	9	69	2.03	26	3.50	8	0.43	38	2.43	38	10.41	22	0.15	4
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	0	0	8	62	1.24	30	2.07	17	0.00	40	1.14	71	12.97	74	2.16	100
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	0	0	8	62	2.03	26	2.21	16	0.00	40	1.69	57	10.55	25	0.15	4
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	0	0	7	54	2.03	26	3.89	5	0.00	40	2.13	45	10.90	32	0.15	4
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	0	0	12	92	2.03	26	2.19	16	0.43	38	2.43	38	11.53	45	0.15	4
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	10	77	2.03	26	2.07	17	0.00	40	1.14	71	13.44	83	0.15	4
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	0	0	10	77	2.03	26	1.66	19	0.43	38	1.88	52	11.15	37	0.15	4
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	7	54	2.03	26	3.91	5	0.00	40	1.69	57	10.91	32	0.15	4
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	0	0	10	77	2.03	26	2.60	14	0.00	40	1.69	57	12.03	55	0.15	4
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	8	62	2.03	26	2.07	17	0.00	40	1.14	71	11.64	47	0.15	4
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	0	0	8	62	2.03	26	2.63	13	0.43	38	2.91	25	10.91	32	0.15	4
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	0	0	9	69	2.03	26	2.94	11	0.43	38	2.87	26	11.03	35	0.15	4
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	0	0	6	46	2.03	26	3.04	11	0.00	40	2.17	44	11.41	42	0.15	4
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	0	0	9	69	2.03	26	2.96	11	0.43	38	2.43	38	11.04	35	0.15	4
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	0	0	7	54	2.03	26	1.73	19	0.00	40	1.03	73	11.26	39	0.15	4

Routes	Study Segments	Technical															
		Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	0	0	7	54	2.03	26	3.35	9	0.00	40	2.13	45	11.52	45	0.15	4
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	0	0	7	54	2.03	26	3.36	9	0.00	40	1.69	57	11.54	45	0.15	4
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	0	0	8	62	2.03	26	1.73	19	0.00	40	1.03	73	11.51	44	0.15	4
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	0	0	7	54	1.24	30	4.04	4	0.43	38	1.88	52	11.67	48	1.13	51
226	3,9,17,24,25,34,47,48,52,53,69,80	0	0	6	46	1.24	30	3.43	8	0.43	38	3.28	16	11.62	47	1.07	48
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	0	0	9	69	2.03	26	2.62	13	0.43	38	2.32	40	10.90	32	0.15	4
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	0	0	4	31	1.24	30	3.84	6	0.00	40	2.54	35	12.12	57	1.07	48
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	0	0	5	38	1.24	30	4.45	2	0.00	40	1.14	71	12.17	58	1.13	51
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	0	0	9	69	2.03	26	2.63	13	0.43	38	1.88	52	10.92	32	0.15	4
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	0	0	7	54	2.03	26	3.02	11	0.00	40	1.58	59	11.40	42	0.15	4
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	0	0	5	38	2.03	26	0.97	24	0.00	40	1.03	73	10.97	33	0.15	4
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	0	0	8	62	2.03	26	1.71	19	0.00	40	0.44	89	11.25	39	0.15	4
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	0	0	8	62	1.24	30	2.01	17	0.43	38	1.88	52	12.23	59	2.16	100
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	0	0	7	54	2.03	26	3.04	11	0.00	40	1.14	71	11.41	42	0.15	4
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	0	0	8	62	2.03	26	1.73	19	0.00	40	0.00	100	11.26	39	0.15	4
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	0	0	6	46	1.24	30	2.42	15	0.00	40	1.14	71	12.73	69	2.16	100
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0	0	6	46	2.03	26	0.97	24	0.00	40	1.03	73	13.42	83	0.15	4
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	0	0	6	46	2.03	26	0.97	24	0.00	40	1.03	73	11.22	39	0.15	4
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	0	0	9	69	2.03	26	1.71	19	0.00	40	0.44	89	11.50	44	0.15	4
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	0	0	10	77	2.03	26	2.53	14	0.43	38	2.43	38	11.30	40	0.15	4
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	0	0	9	69	2.03	26	1.73	19	0.00	40	0.00	100	11.51	44	0.15	4
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	0	0	8	62	2.03	26	2.94	11	0.00	40	1.69	57	11.79	50	0.15	4
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0	0	7	54	2.03	26	0.97	24	0.00	40	1.03	73	13.67	88	0.15	4
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	0	0	6	46	2.03	26	0.95	24	0.00	40	0.44	89	10.96	33	0.15	4
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	0	0	6	46	2.03	26	0.96	24	0.00	40	0.00	100	10.97	34	0.15	4
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0	0	7	54	2.03	26	0.95	24	0.00	40	0.44	89	13.41	83	0.15	4
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	0	0	7	54	2.03	26	0.95	24	0.00	40	0.44	89	11.21	38	0.15	4
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0	0	7	54	2.03	26	0.96	24	0.00	40	0.00	100	13.42	83	0.15	4
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	0	0	7	54	2.03	26	0.96	24	0.00	40	0.00	100	11.23	39	0.15	4
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0	0	8	62	2.03	26	0.95	24	0.00	40	0.44	89	13.66	88	0.15	4
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0	0	8	62	2.03	26	0.96	24	0.00	40	0.00	100	13.68	88	0.15	4
	MIN	0	0	0	0	1	0	0.00	0	0.00	0	0.00	0	9.31	0	0.07	0
	MAX	4	100	13	100	8	30	4.73	30	9.07	40	3.89	100	14.27	100	2.16	100
	RANGE	4	100	13	100	7	30	4.73	30	9.07	40	3.89	100	4.96	100	2.08	100

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
382	5,35,36,37,50,69,75,80	2.6	16.0	13.5	51.8	18.1	1
252	4,17,32,37,50,69,75,80	8.4	16.0	10.6	50.0	18.4	2
392	5,35,38,64,71,73	12.7	0.0	16.2	42.4	18.8	3
388	5,35,38,49,50,69,75,80	2.9	16.0	16.6	51.2	19.4	4
384	5,35,36,37,64,71,72,74,75	11.3	0.0	13.8	57.6	20.4	5
267	4,17,32,37,64,71,72,74,75	17.1	0.0	10.9	55.8	20.6	6
378	5,35,36,37,49,64,71,73	12.3	0.0	14.8	55.9	20.8	7
261	4,17,32,37,49,64,71,73	18.1	0.0	11.9	54.1	21.0	8
383	5,35,36,37,63,74,75,80	7.0	27.0	17.9	46.8	21.3	9
266	4,17,32,37,63,74,75,80	12.8	27.0	15.0	45.0	21.6	10
394	5,60,62,64	25.0	0.0	10.7	48.9	21.6	11
390	5,35,38,49,64,71,72,74,75	11.7	0.0	16.9	56.9	21.6	12
393	5,60,61,64	25.0	0.0	11.3	50.5	22.1	13
259	4,17,32,36,38,64,71,73	18.5	0.0	14.7	53.4	22.1	14
256	4,17,32,36,38,49,50,69,75,80	8.7	16.0	14.6	62.2	22.5	15
389	5,35,38,49,63,74,75,80	7.4	27.0	21.0	46.1	22.6	16
391	5,35,38,63,72,73,80	8.4	27.0	21.9	44.4	22.9	17
380	5,35,36,37,50,53,65,67,75	27.8	19.0	13.8	38.1	23.4	18
263	4,17,32,37,50,53,65,67,75	33.6	19.0	10.9	36.3	23.6	19
241	3,9,17,32,37,50,69,75,80	8.5	55.0	15.1	48.6	23.8	20
381	5,35,36,37,50,53,67,70,75,76,84	28.2	4.0	14.6	47.9	24.3	21
413	9,17,32,37,50,69,75,79,80,81	9.7	55.0	10.8	58.1	24.4	22
264	4,17,32,37,50,53,67,70,75,76,84	34.0	4.0	11.7	46.1	24.5	23
386	5,35,38,49,50,53,65,67,75	28.2	19.0	16.9	37.5	24.6	24
258	4,17,32,36,38,49,64,71,72,74,75	17.5	0.0	14.8	67.9	24.8	25
377	5,35,36,37,49,63,72,73,80	8.1	27.0	20.4	57.9	24.9	26
260	4,17,32,37,49,63,72,73,80	13.9	27.0	17.5	56.1	25.1	27
118	2,8,9,17,32,37,50,69,75,80,81	15.7	16.0	14.6	66.6	25.5	28
387	5,35,38,49,50,53,67,70,75,76,84	28.6	4.0	17.7	47.3	25.5	29
257	4,17,32,36,38,49,63,34,74,75,80	13.2	27.0	19.0	57.1	25.7	30
243	3,9,17,32,37,64,71,72,74,75	17.2	39.0	15.4	54.4	26.1	31
253	4,17,32,36,38,36,34,72,73,80	14.2	27.0	20.3	55.4	26.2	32
237	3,9,17,32,37,49,64,71,73	18.2	39.0	16.4	52.6	26.4	33
408	9,17,32,37,64,71,72,74,75,79,81	18.4	39.0	11.1	63.9	26.6	34
242	3,9,17,32,37,63,74,75,80	13.0	66.0	19.5	43.5	27.0	35
407	9,17,32,37,49,64,71,73,79,81	19.5	39.0	12.1	62.1	27.0	36
235	3,9,17,32,36,38,64,71,73	18.6	39.0	19.2	52.0	27.5	37
410	9,17,32,37,63,74,75,79,80,81	14.2	66.0	15.2	53.0	27.6	38
254	4,17,32,36,38,49,50,53,65,67,75	34.0	19.0	14.8	48.5	27.7	39
120	2,8,9,17,32,37,64,71,72,74,75,81	24.4	0.0	14.9	72.4	27.8	40
232	3,9,17,32,36,38,49,50,69,75,80	8.9	55.0	19.0	60.7	27.9	41
406	9,17,32,36,38,64,71,73,79,81	19.8	39.0	14.9	61.5	28.1	42
114	2,8,9,17,32,37,49,64,71,73,81	25.4	0.0	15.9	70.7	28.1	43

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
414	9,17,32,36,38,49,50,69,75,71,79,80,81	10.1	55.0	14.8	70.2	28.5	44
255	4,17,32,36,38,49,50,53,67,70,75,76,84	34.4	4.0	15.7	58.3	28.6	45
119	2,8,9,17,32,37,63,74,75,80,81	20.1	27.0	19.1	61.6	28.7	46
240	3,9,17,32,37,50,53,65,67,75	33.7	58.0	15.4	34.9	29.0	47
112	2,8,9,17,32,36,38,64,71,73,81	25.8	0.0	18.7	70.0	29.2	48
415	9,17,32,37,50,53,65,67,71,75,79,81	35.0	58.0	10.6	44.4	29.4	49
109	2,8,9,17,32,36,38,49,50,69,75,71,80,81	16.0	16.0	18.6	78.8	29.6	50
238	3,9,17,32,37,50,35,67,70,75,76,84	34.1	43.0	16.2	44.7	30.0	51
319	4,9,11,16,23,25,31,33,45,47,48,52,65,67	34.0	30.0	28.9	26.1	30.0	52
233	3,9,17,32,36,38,49,64,71,72,74,75	17.6	39.0	19.3	66.5	30.2	53
417	9,17,32,37,50,35,67,70,75,71,76,79,81,84	35.4	43.0	11.4	54.2	30.3	54
379	5,35,36,37,50,53,55,59,66,67,70,75,84	32.9	4.0	25.2	50.5	30.5	55
117	2,8,9,17,32,37,50,53,65,67,71,75,81	40.9	19.0	14.4	52.9	30.5	56
236	3,9,17,32,37,49,63,72,73,80	14.0	66.0	22.0	54.7	30.5	57
262	4,17,32,37,50,53,55,59,66,67,70,75,84	38.7	4.0	22.4	48.7	30.7	58
409	9,17,32,36,38,49,64,71,72,74,75,79,81	18.8	39.0	15.0	76.0	30.8	59
320	4,9,11,16,23,25,31,33,45,47,48,52,67,70,76,84	34.3	15.0	30.3	35.9	31.1	60
412	9,17,32,37,49,63,72,73,79,80,81	15.2	66.0	17.7	64.2	31.1	61
115	2,8,9,17,32,37,50,35,67,70,75,71,76,81,84	41.3	4.0	15.2	62.7	31.4	62
234	3,9,17,32,36,38,63,72,73,80	14.4	66.0	24.8	54.0	31.6	63
385	5,35,38,49,50,53,55,59,66,67,70,75,84	33.3	4.0	28.4	49.8	31.7	64
110	2,8,9,17,32,36,38,49,64,71,72,74,75,81	24.8	0.0	18.8	84.5	31.9	65
411	9,17,32,36,38,63,72,73,79,80,81	15.6	66.0	20.5	63.5	32.2	66
113	2,8,9,17,32,37,49,63,72,73,80,81	21.2	27.0	21.6	72.7	32.2	67
246	4,17,24,25,31,33,45,47,48,52,65,67	51.1	30.0	19.0	35.7	33.1	68
230	3,9,17,32,36,38,49,50,53,65,67,75	34.1	58.0	19.3	47.0	33.2	69
111	2,8,9,17,32,36,38,63,72,73,80,81	21.5	27.0	24.4	72.0	33.3	70
416	9,17,32,36,38,49,50,53,65,67,71,75,79,81	35.3	58.0	14.5	56.5	33.5	71
306	4,9,11,14,20,29,43,44,55,67,70,76,83	48.3	0.0	19.6	56.1	33.5	72
354	4,9,14,20,29,43,44,55,67,70,76,78,81	47.6	0.0	19.7	58.9	33.9	73
231	3,9,17,32,36,38,49,50,53,67,70,75,76,84	34.5	43.0	20.1	56.8	34.1	74
247	4,17,24,25,31,33,47,48,52,67,70,76,84	51.5	15.0	20.3	45.5	34.2	75
303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	48.3	0.0	20.7	58.0	34.4	76
418	9,17,32,36,38,49,50,53,67,70,71,75,76,79,81,84	35.7	43.0	15.4	66.3	34.4	77
107	2,8,9,17,32,36,38,49,50,53,65,67,71,75,81	41.3	19.0	18.4	65.1	34.7	78
337	4,9,11,23,25,31,33,45,47,48,52,65,67,77,82,83	38.1	30.0	33.8	33.5	34.7	79
338	4,9,11,23,25,31,33,45,47,48,52,65,6777,82,83	38.1	30.0	33.8	33.5	34.7	79
351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	47.6	0.0	20.8	60.9	34.8	81
371	4,9,23,25,31,33,45,47,48,52,65,67,77,78,81,82	37.4	30.0	33.9	36.4	35.1	82
323	4,9,11,16,23,25,34,47,48,52,65,67	39.9	30.0	39.6	22.5	35.3	83
276	4,7,8,9,13,28,43,44,55,67,70,76,81	49.8	0.0	18.8	64.4	35.3	84
108	2,8,9,17,32,36,38,49,50,53,67,70,71,75,76,81,84	41.7	4.0	19.2	74.9	35.5	85
339	4,9,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	38.5	15.0	35.2	43.3	35.8	86
239	3,9,17,32,37,50,53,55,59,66,67,70,75,84	38.9	43.0	26.3	47.3	35.9	87
372	4,9,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	37.7	15.0	35.3	46.2	36.2	88
307	4,9,11,14,20,29,43,44,59,66,67,70,83	53.1	0.0	23.6	54.1	36.2	89
419	9,17,32,37,50,53,55,59,66,67,70,71,75,79,81,84	40.1	43.0	21.6	56.8	36.3	90
324	4,9,11,16,23,25,34,47,48,52,67,70,76,84	40.2	15.0	40.9	32.3	36.4	91
358	4,9,16,23,25,31,33,45,47,48,52,53,69,80	48.3	31.0	29.9	34.7	36.5	92

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
292	4,9,11,14,15,18,23,25,31,33,45,47,48,52,65,67,82,83	34.8	30.0	39.5	36.3	36.5	93
355	4,9,14,20,29,43,44,59,66,67,70,78,81	52.3	0.0	23.7	57.0	36.6	94
356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	35.2	15.0	43.2	38.0	36.9	95
305	4,9,11,14,20,29,42,43,57,58,66,67,70,83	41.5	0.0	30.0	62.7	37.0	96
304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	53.1	0.0	24.7	56.0	37.0	97
300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	35.9	15.0	43.3	37.1	37.0	98
318	4,9,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	39.0	15.0	40.4	38.5	37.1	99
273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	49.8	0.0	22.6	66.9	37.4	100
353	4,9,14,20,29,42,43,57,58,66,67,70,78,81	40.8	0.0	30.1	65.5	37.4	101
352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	52.3	0.0	24.8	58.9	37.4	102
116	2,8,9,17,32,37,50,53,55,59,66,67,70,71,75,81,84	46.0	4.0	25.4	65.3	37.4	103
293	4,9,11,14,15,18,23,25,31,33,47,48,52,67,70,76,82,83,84	35.2	15.0	40.9	46.1	37.6	104
277	4,7,8,9,13,28,43,44,59,66,67,70,81	54.5	0.0	22.8	62.4	38.0	105
302	4,9,11,14,20,22,28,42,43,57,58,66,67,70,83	41.5	0.0	31.6	64.6	38.0	106
301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	36.3	0.0	44.6	46.9	38.1	107
250	4,17,24,25,34,47,48,52,65,67	57.0	30.0	29.7	32.1	38.4	108
350	4,9,14,20,22,28,42,43,57,58,66,67,70,78,81	40.8	0.0	31.7	67.5	38.4	109
349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	35.5	0.0	44.7	49.8	38.5	110
426	9,17,24,25,31,33,45,47,48,52,65,67,71,79,81	52.5	69.0	18.2	43.8	38.7	111
224	3,9,17,24,25,31,33,45,47,48,52,65,67	51.2	69.0	24.0	34.3	38.7	112
275	4,7,8,9,13,28,42,43,57,58,66,67,70,81	43.0	0.0	29.7	71.0	39.0	113
251	4,17,24,25,34,47,48,52,67,70,76,84	57.4	15.0	31.0	41.9	39.5	114
244	4,17,24,25,31,33,45,47,48,52,53,69,80	65.4	31.0	20.0	44.3	39.6	115
225	3,9,17,24,25,31,33,45,47,48,52,67,70,76,84	51.6	54.0	24.8	44.1	39.6	116
427	9,17,24,25,31,33,45,47,48,52,67,70,71,76,79,81,84	52.8	54.0	19.5	53.6	39.8	117
102	2,8,9,17,24,25,31,33,45,47,48,52,65,67,71,81	58.4	30.0	22.1	52.3	39.8	118
342	4,9,11,23,25,34,47,48,52,65,67,77,82,83	44.0	30.0	44.5	29.9	40.0	119
274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	54.5	0.0	26.6	65.0	40.0	120
270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	49.4	15.0	34.8	49.0	40.0	121
229	3,9,17,32,36,38,49,50,53,55,59,66,67,70,75,84	39.2	43.0	30.3	59.4	40.1	122
245	4,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	56.2	15.0	31.0	48.1	40.4	123
375	4,9,23,25,34,47,48,52,65,67,77,78,81,82	43.3	30.0	44.6	32.8	40.4	124
420	9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,79,81,84	40.5	43.0	25.5	68.9	40.4	125
282	4,8,9,10,15,18,23,25,31,33,45,47,48,52,65,67,81,82	43.1	30.0	40.9	41.7	40.6	126
272	4,7,8,9,13,22,29,42,43,57,58,66,67,70,81	43.0	0.0	33.0	73.5	40.8	127
103	2,8,9,17,24,25,31,33,45,47,48,52,67,70,71,76,81,84	58.8	15.0	23.4	62.1	40.9	128
288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	44.2	15.0	44.2	42.6	41.0	129
343	4,9,11,23,25,34,47,48,52,67,70,76,77,82,83,84	44.4	15.0	45.8	39.7	41.1	130
335	4,9,11,23,25,31,33,45,47,48,52,53,69,77,80,82,83	52.4	31.0	34.8	42.1	41.2	131
271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	49.7	0.0	36.1	60.1	41.4	132
376	4,9,23,25,34,47,48,52,67,70,76,77,78,81,82,84	43.6	15.0	45.9	42.6	41.5	133
121	2.8.9,17,32,36,38,49,50,53,55,59,66,67,70,71,75,81,84	46.4	4.0	29.3	77.4	41.5	134
316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	35.1	15.0	58.1	31.4	41.5	135
369	4,9,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	51.7	31.0	34.9	45.0	41.6	136
283	4,8,9,10,15,18,23,25,31,33,45,47,48,52,67,70,76,81,82,84	43.4	15.0	42.2	51.5	41.7	137

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
336	4,9,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	43.2	15.0	45.3	45.9	41.8	138
321	4,9,11,16,23,25,34,47,48,52,53,69,80	54.2	31.0	40.5	31.2	41.8	139
296	4,9,11,14,15,18,23,25,34,47,48,52,65,67,82,83	40.7	30.0	50.2	32.7	41.8	140
289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	44.5	0.0	45.5	52.4	42.0	141
370	4,9,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	42.4	15.0	45.4	48.8	42.1	142
357	4,9,15,18,23,34,47,48,52,62,67,78,81,82	40.0	30.0	50.3	35.6	42.2	143
322	4,9,11,16,23,25,34,47,48,52,55,59,66,67,70,84	44.9	15.0	51.0	34.9	42.4	144
317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	35.4	0.0	59.4	41.2	42.6	145
297	4,9,11,14,15,18,23,25,34,47,48,52,67,70,76,82,83,84	41.1	15.0	51.5	42.5	42.9	146
290	4,9,11,14,15,18,23,25,31,33,45,47,48,52,53,69,80,82,83	49.1	31.0	40.5	44.9	43.0	147
346	4,9,14,15,18,23,25,34,48,52,67,70,76,78,81,84	40.3	15.0	51.6	44.0	43.0	148
298	4,9,11,14,15,19,30,33,45,47,48,52,53,69,80,83	50.2	16.0	44.2	45.8	43.5	149
291	4,9,11,14,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,82,83,84	39.9	15.0	51.0	48.6	43.6	150
347	4,9,14,15,19,30,33,45,47,48,52,53,69,78,80,81	49.5	16.0	44.4	48.6	43.9	151
425	9,17,24,25,34,47,48,52,65,67,71,79,81	58.4	69.0	28.9	40.2	44.0	152
227	3,9,17,24,25,34,47,48,52,65,67	57.1	69.0	34.6	30.7	44.0	153
299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	41.0	0.0	54.8	49.5	44.1	154
333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	39.2	15.0	59.2	36.4	44.2	155
228	3,9,17,24,25,34,47,48,52,67,70,76,84	57.5	54.0	34.4	40.1	44.4	156
348	4,9,14,15,19,30,33,45,47,48,52,55,59,66,57,70,78,81,84	40.3	0.0	54.9	52.4	44.5	157
424	9,17,24,25,34,47,48,52,67,70,71,76,79,81,84	58.7	54.0	29.2	49.6	44.6	158
366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	38.5	15.0	59.3	39.2	44.6	159
248	4,17,24,25,34,47,48,52,53,69,80	71.3	31.0	30.6	40.8	44.9	160
105	2,8,9,17,24,25,34,47,48,52,65,67,71,81	64.3	30.0	32.7	48.7	45.1	161
422	9,14,24,25,34,33,45,47,48,52,53,69,71,79,80,81	66.8	70.0	19.2	52.4	45.2	162
221	3,9,14,24,25,34,33,45,47,48,52,53,69,80	65.6	70.0	24.9	42.9	45.2	163
334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	39.6	0.0	60.6	46.2	45.3	164
223	3,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,84	56.3	54.0	35.0	46.7	45.6	165
249	4,17,24,25,34,47,48,52,55,59,66,67,70,84	62.1	15.0	41.6	44.5	45.7	166
367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	38.8	0.0	60.7	49.0	45.7	167
106	2,8,9,17,24,25,34,47,48,52,67,70,71,76,81,84	64.7	15.0	33.0	58.1	45.7	168
428	9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,79,81,84	57.5	54.0	29.7	56.1	45.8	169
284	4,8,9,10,15,18,23,25,34,47,48,52,65,67,81,82	49.0	30.0	51.6	38.2	45.9	170
99	2,8,9,14,24,25,34,33,45,47,48,52,53,69,71,80,81	72.7	31.0	23.0	60.9	46.3	171
340	4,9,11,23,25,34,47,48,52,53,69,77,80,82,83	58.3	31.0	45.4	38.6	46.5	172
268	4,7,8,9,13,21,22,30,33,45,47,48,52,53,69,80,81	63.7	16.0	35.7	59.0	46.8	173
373	4,9,23,25,34,47,48,52,53,69,77,78,80,81,82	57.6	31.0	45.5	41.4	46.9	174
101	2,8,9,17,24,25,31,33,45,47,48,52,55,59,66,67,70,71,81,84	63.5	15.0	33.5	64.7	46.9	175
285	4,8,9,10,15,18,23,25,34,47,48,52,67,70,76,81,82,84	49.3	15.0	52.9	47.9	47.0	176
341	4,9,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	49.1	15.0	55.9	42.3	47.1	177
280	4,8,9,10,15,18,23,25,31,33,45,47,48,52,53,69,80,81,82	57.4	31.0	41.9	50.4	47.1	178
269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	54.4	0.0	45.8	62.7	47.2	179
287	4,8,9,10,15,19,30,33,45,47,48,52,53,69,80,81	58.5	16.0	45.1	51.2	47.5	180
374	4,9,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	48.4	15.0	56.0	45.2	47.5	181
281	4,8,9,10,15,18,23,25,31,33,45,47,48,52,55,59,66,67,70,81,82,84	48.1	15.0	52.4	54.1	47.7	182
278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	49.2	0.0	55.7	55.0	48.0	183
314	4,9,11,16,18,19,30,33,45,47,48,52,53,69,80,82	49.4	16.0	59.0	40.0	48.0	184
294	4,9,11,14,15,18,23,25,34,47,48,52,53,69,80,82,83	55.0	31.0	51.1	41.3	48.3	185
315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	40.1	0.0	69.6	43.8	48.6	186
345	4,9,14,15,18,23,25,34,47,48,52,69,78,80,81,82	54.3	31.0	51.2	44.2	48.7	187
312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	48.3	0.0	59.0	53.9	48.9	188

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
295	4,9,11,14,15,18,23,25,34,47,48,52,55,59,66,67,70,82,83,84	45.8	15.0	61.6	45.1	48.9	189
344	4,9,14,15,18,23,25,34,47,48,52,55,59,66,67,70,78,81,82,84	45.1	15.0	61.7	47.9	49.3	190
309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	48.3	0.0	60.2	55.8	49.7	191
421	9,17,24,25,34,47,48,52,53,69,71,79,80,81	72.7	70.0	29.8	48.8	50.5	192
226	3,9,17,24,25,34,47,48,52,53,69,80	71.5	70.0	35.6	39.3	50.5	193
331	4,9,11,18,19,30,33,45,47,48,52,53,69,77,80,83	53.5	16.0	60.2	45.0	50.7	194
222	3,9,14,2425,34,47,48,52,55,59,66,67,70,84	62.2	54.0	45.6	43.1	50.9	195
423	9,14,2425,34,47,48,52,55,59,66,67,70,71,79,81,84	63.4	54.0	40.3	52.6	51.1	196
365	4,9,18,19,30,33,45,47,48,52,53,69,77,78,80,81	52.8	16.0	60.3	47.8	51.1	197
332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	44.3	0.0	70.7	48.7	51.3	198
313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	53.0	0.0	63.0	51.9	51.5	199
329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	52.4	0.0	60.2	58.8	51.6	200
104	2,8,9,17,24,25,34,47,48,52,53,69,71,80,81	78.6	31.0	33.6	57.4	51.6	201
368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	43.6	0.0	70.8	51.6	51.7	202
363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	51.7	0.0	60.3	61.7	52.0	203
100	2,8,9,14,2425,34,47,48,52,55,59,66,67,70,71,81,84	69.4	15.0	44.2	61.1	52.2	204
311	4,9,11,16,18,19,21,29,42,43,57,58,66,67,70,82	41.5	0.0	69.4	60.5	52.3	205
310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	53.0	0.0	64.2	53.8	52.3	206
326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	52.4	0.0	61.3	60.7	52.4	207
286	4,8,9,10,15,18,23,25,34,47,48,52,69,80,81,82	63.3	31.0	52.5	46.8	52.4	208
360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	51.7	0.0	61.4	63.6	52.8	209
279	4,8,9,10,15,18,23,25,,34,47,48,52,55,59,66,67,70,81,82,84	54.0	15.0	63.0	50.5	53.0	210
308	4,9,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	41.5	0.0	71.1	62.4	53.4	211
330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	57.1	0.0	64.2	56.9	54.2	212
364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	56.4	0.0	64.3	59.7	54.6	213
328	4,9,11,18,19,21,29,42,43,57,58,66,67,70,77,83	45.6	0.0	70.6	65.4	55.0	214
327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	57.1	0.0	65.3	58.8	55.0	215
362	4,9,18,19,21,29,42,43,57,58,66,67,70,77,78,81	44.9	0.0	70.7	68.3	55.4	216
361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	56.4	0.0	65.4	61.6	55.4	217
325	4,9,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	45.6	0.0	72.2	67.3	56.0	218
359	4,9,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	44.9	0.0	72.3	70.2	56.4	219
	MIN						
	MAX						
	RANGE						

Appendix E: Central Corridor Route Scoring

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	6.31	50	0.33	0	3	0	1	100	2	100	3	20	0	0
149	3,11,16,23,25,31,33,45,47,48,52,65,67	5.98	47	0.33	0	3	0	1	100	2	100	3	20	0	0
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	6.39	51	0.33	0	3	0	1	100	1	50	3	20	0	0
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	6.07	48	0.33	0	3	0	1	100	1	50	3	20	0	0
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	7.47	60	0.49	5	3	0	0	0	2	100	2	0	0	0
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	7.56	61	0.49	5	3	0	0	0	1	50	2	0	0	0
500	14,20,29,43,44,55,67,70,76,78,79	2.70	19	2.25	61	4	50	1	100	0	0	3	20	0	0
450	23,25,31,33,45,47,48,52,65,67,77,78,82	6.31	50	0.71	12	3	0	1	100	2	100	3	20	0	0
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	6.31	50	0.78	15	3	0	1	100	2	100	3	20	0	0
497	11,14,20,29,43,44,55,67,70,76,79,81,83	2.70	19	2.33	64	4	50	1	100	0	0	3	20	0	0
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	9.41	77	0.60	9	3	0	1	100	1	50	7	100	0	0
18	2,7,13,28,43,44,55,67,70,76	4.54	35	2.23	61	4	50	0	0	0	0	2	0	0	0
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	6.39	51	0.71	12	3	0	1	100	1	50	3	20	0	0
430	11,16,23,25,34,47,48,52,65,67,79,81	7.76	63	0.37	1	3	0	1	100	2	100	3	20	0	0
136	3,11,14,20,29,43,44,55,67,70,76,83	2.37	16	2.33	64	4	50	1	100	0	0	3	20	0	0
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	6.39	51	0.78	15	3	0	1	100	1	50	3	20	0	0
506	14,20,22,28,43,44,55,67,70,76,78,79	2.70	19	2.25	61	4	50	1	100	0	0	3	20	0	0
151	3,11,16,23,25,31,33,45,47,52,53,69,80	9.08	74	0.60	9	3	0	1	100	1	50	7	100	0	0
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	5.98	47	0.79	15	3	0	1	100	2	100	3	20	0	0
181	3,14,20,29,43,44,55,67,70,76,78,81	2.37	16	2.25	61	4	50	1	100	0	0	3	20	0	0
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	2.70	19	2.33	64	4	50	1	100	0	0	3	20	0	0
154	3,11,16,23,25,34,47,48,52,65,67	7.44	60	0.37	1	3	0	1	100	2	100	3	20	0	0
470	14,15,19,30,33,45,47,48,52,65,67,78,79	6.31	50	0.47	4	3	0	1	100	1	50	3	20	0	0
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	6.07	48	0.79	15	3	0	1	100	1	50	3	20	0	0
525	7,8,13,28,43,44,55,67,70,76,79	3.37	25	2.20	60	4	50	1	100	0	0	3	20	0	0
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	6.31	50	0.54	7	3	0	1	100	1	50	3	20	0	0
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	5.98	47	0.71	12	3	0	1	100	2	100	3	20	0	0
133	3,11,14,20,22,28,43,44,55,67,70,76,83	2.37	16	2.33	64	4	50	1	100	0	0	3	20	0	0
155	3,11,16,23,25,34,47,48,52,67,70,76,84	7.53	61	0.37	1	3	0	1	100	1	50	3	20	0	0
431	11,16,23,25,34,47,48,52,67,70,76,84	7.53	61	0.37	1	3	0	1	100	1	50	3	20	0	0
80	2,8,14,20,29,43,44,55,67,70,76,78	3.86	29	2.41	67	4	50	0	0	0	0	2	0	0	0
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	6.07	48	0.71	12	3	0	1	100	1	50	3	20	0	0
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	7.47	60	0.87	17	3	0	0	0	2	100	2	0	0	0
178	3,14,20,22,28,43,44,55,67,70,76,78,81	2.37	16	2.25	61	4	50	1	100	0	0	3	20	0	0
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	6.39	51	0.47	4	3	0	1	100	0	0	3	20	0	0
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	7.47	60	0.95	20	3	0	0	0	2	100	2	0	0	0
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	6.39	51	0.54	7	3	0	1	100	0	0	3	20	0	0
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	5.98	47	0.55	7	3	0	1	100	1	50	3	20	0	0
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	3.86	29	2.49	69	4	50	0	0	0	0	2	0	0	0
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	10.58	87	0.76	14	3	0	0	0	1	50	6	80	0	0
203	3,7,8,13,28,43,44,55,67,70,76,81	3.05	22	2.21	60	4	50	1	100	0	0	3	20	0	0
15	2,10,20,29,43,44,55,67,70,76	3.86	29	2.16	59	5	100	0	0	0	0	2	0	0	0
501	14,20,29,43,44,59,66,67,70,78,79	2.70	19	2.77	78	4	50	1	100	0	0	3	20	0	0
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	6.07	48	0.55	7	3	0	1	100	0	0	3	20	0	0
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	7.56	61	0.87	17	3	0	0	0	1	50	2	0	0	0
53	2,8,11,16,23,25,34,47,48,52,65,67,81	8.93	73	0.53	6	3	0	0	0	2	100	2	0	0	0
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	5.98	47	0.47	4	3	0	1	100	1	50	3	20	0	0
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	7.56	61	0.95	20	3	0	0	0	1	50	2	0	0	0
77	2,8,14,20,22,28,43,44,55,67,70,76,78	3.86	29	2.41	67	4	50	0	0	0	0	2	0	0	0
498	11,14,20,29,43,44,59,66,67,70,79,81,83	2.70	19	2.84	80	4	50	1	100	0	0	3	20	0	0
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	3.86	29	2.49	69	4	50	0	0	0	0	2	0	0	0
502	14,20,29,42,43,57,58,66,67,70,78,79	0.84	3	2.28	62	4	50	1	100	0	0	3	20	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	6.07	48	0.47	4	3	0	1	100	0	0	3	20	0	0
19	2,7,13,28,43,44,59,66,67,70	4.54	35	2.75	77	4	50	0	0	0	0	2	0	0	0
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	7.47	60	0.63	9	3	0	0	0	1	50	2	0	0	0
519	8,10,20,29,43,44,55,67,70,76,79	2.70	19	2.14	58	5	100	1	100	0	0	3	20	0	0
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	7.47	60	0.71	12	3	0	0	0	1	50	2	0	0	0
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	9.02	74	0.53	6	3	0	0	0	1	50	2	0	0	0
137	3,11,14,20,29,43,44,59,66,67,70,83	2.37	16	2.85	81	4	50	1	100	0	0	3	20	0	0
12	2,10,20,22,28,43,44,55,67,70,76	3.86	29	2.16	59	5	100	0	0	0	0	2	0	0	0
507	14,20,22,28,43,44,59,66,67,70,78,79	2.70	19	2.77	78	4	50	1	100	0	0	3	20	0	0
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	0.84	3	2.36	65	4	50	1	100	0	0	3	20	0	0
9	2,10,15,19,30,33,45,47,48,52,65,67	7.47	60	0.38	2	4	50	0	0	1	50	2	0	0	0
182	3,14,20,29,43,44,59,66,67,70,78,81	2.37	16	2.77	78	4	50	1	100	0	0	3	20	0	0
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	2.70	19	2.84	80	4	50	1	100	0	0	3	20	0	0
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	7.56	61	0.63	9	3	0	0	0	0	0	2	0	0	0
526	7,8,13,28,43,44,59,66,67,70,79	3.37	25	2.72	77	4	50	1	100	0	0	3	20	0	0
135	3,11,14,20,29,42,43,57,58,66,67,70,83	0.51	0	2.36	65	4	50	1	100	0	0	3	20	0	0
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	7.56	61	0.71	12	3	0	0	0	0	0	2	0	0	0
17	2,7,13,28,42,43,57,58,66,67,70	2.68	19	2.26	62	4	50	0	0	0	0	2	0	0	0
522	8,10,20,22,28,43,44,55,67,70,76,79	2.70	19	2.14	58	5	100	1	100	0	0	3	20	0	0
219	3,8,10,20,29,43,44,55,67,70,76,81	2.37	16	2.14	58	5	100	1	100	0	0	3	20	0	0
134	3,11,14,20,22,28,43,44,59,66,67,70,83	2.37	16	2.85	81	4	50	1	100	0	0	3	20	0	0
508	14,20,22,28,42,43,57,58,66,67,70,78,79	0.84	3	2.28	62	4	50	1	100	0	0	3	20	0	0
180	3,14,20,29,42,43,57,58,66,67,70,78,81	0.51	0	2.28	63	4	50	1	100	0	0	3	20	0	0
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	7.56	61	0.38	2	4	50	0	0	0	0	2	0	0	0
81	2,8,14,20,29,43,44,59,66,67,70,78	3.86	29	2.93	83	4	50	0	0	0	0	2	0	0	0
510	8,10,15,19,30,33,45,47,48,52,65,67,79	6.31	50	0.36	1	4	50	1	100	1	50	3	20	0	0
179	3,14,20,22,28,43,44,59,66,67,70,78,81	2.37	16	2.77	78	4	50	1	100	0	0	3	20	0	0
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	0.84	3	2.36	65	4	50	1	100	0	0	3	20	0	0
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	3.86	29	3.01	86	4	50	0	0	0	0	2	0	0	0
527	7,8,13,28,42,43,57,58,66,67,70,79	1.51	9	2.24	61	4	50	1	100	0	0	3	20	0	0
204	3,7,8,13,28,43,44,59,66,67,70,81	3.05	22	2.72	77	4	50	1	100	0	0	3	20	0	0
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	9.41	77	0.97	20	3	0	1	100	1	50	7	100	0	0
79	2,8,14,20,29,42,43,57,58,66,67,70,78	2.00	13	2.44	68	4	50	0	0	0	0	2	0	0	0
216	3,8,10,20,22,28,43,44,55,67,70,76,81	2.37	16	2.14	58	5	100	1	100	0	0	3	20	0	0
16	2,10,20,29,43,44,59,66,67,70	3.86	29	2.68	75	5	100	0	0	0	0	2	0	0	0
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	0.51	0	2.36	65	4	50	1	100	0	0	3	20	0	0
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	9.41	77	1.05	23	3	0	1	100	1	50	7	100	0	0
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	6.39	51	0.36	1	4	50	1	100	0	0	3	20	0	0
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	6.39	51	0.85	17	3	0	1	100	1	50	3	20	0	0
78	2,8,14,20,22,28,43,44,59,66,67,70,78	3.86	29	2.93	83	4	50	0	0	0	0	2	0	0	0
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	6.07	48	0.85	17	3	0	1	100	1	50	3	20	0	0
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	2.00	13	2.52	70	4	50	0	0	0	0	2	0	0	0
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	0.51	0	2.28	63	4	50	1	100	0	0	3	20	0	0
438	23,25,34,47,48,52,65,67,78,79,82	7.76	63	0.74	13	3	0	1	100	2	100	3	20	0	0
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	7.76	63	0.82	16	3	0	1	100	2	100	3	20	0	0
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	5.98	47	0.36	1	4	50	1	100	1	50	3	20	0	0
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	3.86	29	3.01	86	4	50	0	0	0	0	2	0	0	0
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	6.31	50	0.45	4	3	0	1	100	1	50	3	20	0	0
14	2,10,20,29,42,43,57,58,66,67,70	2.00	13	2.20	60	5	100	0	0	0	0	2	0	0	0
202	3,7,8,13,28,42,43,57,58,66,67,70,81	1.19	6	2.24	61	4	50	1	100	0	0	3	20	0	0
429	11,16,23,25,34,47,48,52,53,69,79,80,81	10.87	90	0.63	10	3	0	1	100	1	50	7	100	0	0
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	9.08	74	1.05	23	3	0	1	100	1	50	7	100	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
520	8,10,20,29,43,44,59,66,67,70,79	2.70	19	2.65	74	5	100	1	100	0	0	3	20	0	0
13	2,10,20,22,28,43,44,59,66,67,70	3.86	29	2.68	75	5	100	0	0	0	0	2	0	0	0
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	6.07	48	0.36	1	4	50	1	100	0	0	3	20	0	0
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	7.85	64	0.74	13	3	0	1	100	1	50	3	20	0	0
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	2.00	13	2.44	68	4	50	0	0	0	0	2	0	0	0
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	5.98	47	0.46	4	3	0	1	100	1	50	3	20	0	0
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	7.85	64	0.82	16	3	0	1	100	1	50	3	20	0	0
152	3,11,16,23,25,34,47,48,52,53,69,80	10.54	87	0.64	10	3	0	1	100	1	50	7	100	0	0
172	3,11,23,25,34,47,48,52,65,67,77,82,83	7.44	60	0.82	16	3	0	1	100	2	100	3	20	0	0
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	9.41	77	0.73	13	3	0	1	100	0	0	7	100	0	0
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	6.39	51	0.45	4	3	0	1	100	0	0	3	20	0	0
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	9.41	77	0.81	15	3	0	1	100	0	0	7	100	0	0
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	9.08	74	0.97	21	3	0	1	100	1	50	7	100	0	0
521	8,10,20,29,42,43,57,58,66,67,70,79	0.84	3	2.17	59	5	100	1	100	0	0	3	20	0	0
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	2.00	13	2.52	70	4	50	0	0	0	0	2	0	0	0
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	6.07	48	0.46	4	3	0	1	100	0	0	3	20	0	0
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	7.53	61	0.82	16	3	0	1	100	1	50	3	20	0	0
523	8,10,20,22,28,43,44,59,66,67,70,79	2.70	19	2.65	74	5	100	1	100	0	0	3	20	0	0
220	3,8,10,20,29,43,44,59,66,67,70,81	2.37	16	2.66	74	5	100	1	100	0	0	3	20	0	0
11	2,10,20,22,28,42,43,57,58,66,67,70	2.00	13	2.20	60	5	100	0	0	0	0	2	0	0	0
199	3,23,25,34,47,48,52,65,67,78,81,82	7.44	60	0.74	13	3	0	1	100	2	100	3	20	0	0
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	10.58	87	1.13	26	3	0	0	0	1	50	6	80	0	0
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	10.58	87	1.21	28	3	0	0	0	1	50	6	80	0	0
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	7.56	61	1.01	22	3	0	0	0	1	50	2	0	0	0
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	9.08	74	0.81	15	3	0	1	100	0	0	7	100	0	0
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	7.53	61	0.74	13	3	0	1	100	1	50	3	20	0	0
218	3,8,10,20,29,42,43,57,58,66,67,70,81	0.51	0	2.17	59	5	100	1	100	0	0	3	20	0	0
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	8.93	73	0.98	21	3	0	0	0	2	100	2	0	0	0
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	7.47	60	0.62	9	3	0	0	0	1	50	2	0	0	0
524	8,10,20,22,28,42,43,57,58,66,67,70,79	0.84	3	2.17	59	5	100	1	100	0	0	3	20	0	0
217	3,8,10,20,22,28,43,44,59,66,67,70,81	2.37	16	2.66	74	5	100	1	100	0	0	3	20	0	0
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	12.03	100	0.80	15	3	0	0	0	1	50	6	80	0	0
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	9.08	74	0.73	13	3	0	1	100	0	0	7	100	0	0
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	9.02	74	0.90	18	3	0	0	0	1	50	2	0	0	0
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	9.02	74	0.98	21	3	0	0	0	1	50	2	0	0	0
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	10.58	87	0.89	18	3	0	0	0	0	0	6	80	0	0
462	18,19,30,33,45,47,48,52,65,67,77,78,79	6.31	50	0.83	16	3	0	1	100	1	50	3	20	0	0
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	7.56	61	0.62	9	3	0	0	0	0	0	2	0	0	0
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	10.58	87	0.97	21	3	0	0	0	0	0	6	80	0	0
458	11,18,19,30,33,45,47,48,52,65,67,77,83	6.31	50	0.91	18	3	0	1	100	1	50	3	20	0	0
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	0.51	0	2.17	59	5	100	1	100	0	0	3	20	0	0
7	2,10,15,19,30,33,45,47,48,52,53,69,80	10.58	87	0.65	10	4	50	0	0	0	0	6	80	0	0
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	6.39	51	0.83	16	3	0	1	100	0	0	3	20	0	0
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	6.39	51	0.91	18	3	0	1	100	0	0	3	20	0	0
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	5.98	47	0.91	18	3	0	1	100	1	50	3	20	0	0
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	9.41	77	0.62	9	4	50	1	100	0	0	7	100	0	0
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	6.07	48	0.91	18	3	0	1	100	0	0	3	20	0	0
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	6.39	51	1.22	29	3	0	1	100	1	50	3	20	0	0
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	5.98	47	0.83	16	3	0	1	100	1	50	3	20	0	0
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	6.39	51	1.30	31	3	0	1	100	1	50	3	20	0	0
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	6.07	48	0.83	16	3	0	1	100	0	0	3	20	0	0
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	7.47	60	0.99	21	3	0	0	0	1	50	2	0	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	7.47	60	1.07	24	3	0	0	0	1	50	2	0	0	0
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	6.07	48	1.30	31	3	0	1	100	1	50	3	20	0	0
437	23,25,34,47,48,52,53,69,77,78,79,80,82	10.87	90	1.01	22	3	0	1	100	1	50	7	100	0	0
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	10.87	90	1.09	24	3	0	1	100	1	50	7	100	0	0
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	7.85	64	0.88	18	3	0	1	100	1	50	3	20	0	0
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	2.70	19	2.41	67	4	50	1	100	0	0	3	20	0	0
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	9.08	74	0.62	9	4	50	1	100	0	0	7	100	0	0
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	9.41	77	0.72	12	3	0	1	100	0	0	7	100	0	0
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	6.07	48	1.22	29	3	0	1	100	1	50	3	20	0	0
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	7.53	61	0.89	18	3	0	1	100	1	50	3	20	0	0
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	6.39	51	0.98	21	3	0	1	100	0	0	3	20	0	0
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	7.56	61	0.99	21	3	0	0	0	0	0	2	0	0	0
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	7.56	61	1.07	24	3	0	0	0	0	0	2	0	0	0
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	2.37	16	2.41	67	4	50	1	100	0	0	3	20	0	0
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	9.08	74	0.72	12	3	0	1	100	0	0	7	100	0	0
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	6.39	51	1.06	23	3	0	1	100	0	0	3	20	0	0
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	10.54	87	1.09	24	3	0	1	100	1	50	7	100	0	0
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	2.70	19	2.41	67	4	50	1	100	0	0	3	20	0	0
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	7.56	61	1.38	34	3	0	0	0	1	50	2	0	0	0
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	6.07	48	1.06	23	3	0	1	100	0	0	3	20	0	0
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	10.54	87	1.01	22	3	0	1	100	1	50	7	100	0	0
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	7.56	61	1.46	36	3	0	0	0	1	50	2	0	0	0
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	2.37	16	2.41	67	4	50	1	100	0	0	3	20	0	0
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	6.07	48	0.99	21	3	0	1	100	0	0	3	20	0	0
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	12.03	100	1.17	27	3	0	0	0	1	50	6	80	0	0
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	12.03	100	1.25	29	3	0	0	0	1	50	6	80	0	0
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	9.02	74	1.05	23	3	0	0	0	1	50	2	0	0	0
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	3.86	29	2.57	72	4	50	0	0	0	0	2	0	0	0
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	10.58	87	0.88	18	3	0	0	0	0	0	6	80	0	0
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	7.56	61	1.15	26	3	0	0	0	0	0	2	0	0	0
5	2,10,15,19,21,29,43,44,55,67,70,76	3.86	29	2.25	61	5	100	0	0	0	0	2	0	0	0
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	7.56	61	1.22	29	3	0	0	0	0	0	2	0	0	0
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	2.70	19	2.93	83	4	50	1	100	0	0	3	20	0	0
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	9.41	77	1.09	24	3	0	1	100	0	0	7	100	0	0
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	3.86	29	2.57	72	4	50	0	0	0	0	2	0	0	0
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	9.41	77	1.17	27	3	0	1	100	0	0	7	100	0	0
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	7.56	61	0.90	18	4	50	0	0	0	0	2	0	0	0
513	8,10,15,19,21,29,43,44,55,67,70,76,79	2.70	19	2.22	61	5	100	1	100	0	0	3	20	0	0
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	2.37	16	2.93	83	4	50	1	100	0	0	3	20	0	0
2	2,10,15,19,21,22,28,43,44,55,67,70,76	3.86	29	2.25	61	5	100	0	0	0	0	2	0	0	0
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	0.84	3	2.45	68	4	50	1	100	0	0	3	20	0	0
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	2.70	19	2.93	83	4	50	1	100	0	0	3	20	0	0
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	9.08	74	1.17	27	3	0	1	100	0	0	7	100	0	0
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	0.51	0	2.45	68	4	50	1	100	0	0	3	20	0	0
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	6.39	51	0.87	17	4	50	1	100	0	0	3	20	0	0
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	2.70	19	2.22	61	5	100	1	100	0	0	3	20	0	0
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	2.37	16	2.93	83	4	50	1	100	0	0	3	20	0	0
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	2.37	16	2.22	61	5	100	1	100	0	0	3	20	0	0
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	9.08	74	1.10	24	3	0	1	100	0	0	7	100	0	0
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	2.70	19	2.32	64	4	50	1	100	0	0	3	20	0	0
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	0.84	3	2.45	68	4	50	1	100	0	0	3	20	0	0
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	7.85	64	1.26	30	3	0	1	100	1	50	3	20	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	3.86	29	3.09	88	4	50	0	0	0	0	2	0	0	0
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	2.37	16	2.32	64	4	50	1	100	0	0	3	20	0	0
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	6.07	48	0.87	17	4	50	1	100	0	0	3	20	0	0
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	10.58	87	1.26	30	3	0	0	0	0	0	6	80	0	0
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	10.58	87	1.33	32	3	0	0	0	0	0	6	80	0	0
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	7.85	64	1.34	32	3	0	1	100	1	50	3	20	0	0
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	0.51	0	2.45	68	4	50	1	100	0	0	3	20	0	0
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	2.37	16	2.22	61	5	100	1	100	0	0	3	20	0	0
6	2,10,15,19,21,29,43,44,59,66,67,70	3.86	29	2.76	78	5	100	0	0	0	0	2	0	0	0
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	6.39	51	0.97	20	3	0	1	100	0	0	3	20	0	0
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	2.00	13	2.61	73	4	50	0	0	0	0	2	0	0	0
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	2.70	19	2.32	64	4	50	1	100	0	0	3	20	0	0
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	6.07	48	0.97	21	3	0	1	100	0	0	3	20	0	0
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	7.53	61	1.34	32	3	0	1	100	1	50	3	20	0	0
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	3.86	29	3.09	88	4	50	0	0	0	0	2	0	0	0
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	2.37	16	2.32	64	4	50	1	100	0	0	3	20	0	0
4	2,10,15,19,21,29,42,43,57,58,66,67,70	2.00	13	2.28	62	5	100	0	0	0	0	2	0	0	0
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	7.53	61	1.26	30	3	0	1	100	1	50	3	20	0	0
514	8,10,15,19,21,29,43,44,59,66,67,70,79	2.70	19	2.74	77	5	100	1	100	0	0	3	20	0	0
3	2,10,15,19,21,22,28,43,44,59,66,67,70	3.86	29	2.76	78	5	100	0	0	0	0	2	0	0	0
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	3.86	29	2.48	69	4	50	0	0	0	0	2	0	0	0
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	2.00	13	2.61	73	4	50	0	0	0	0	2	0	0	0
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	0.84	3	2.26	62	5	100	1	100	0	0	3	20	0	0
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	9.02	74	1.42	35	3	0	0	0	1	50	2	0	0	0
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	2.70	19	2.74	77	5	100	1	100	0	0	3	20	0	0
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	2.37	16	2.74	77	5	100	1	100	0	0	3	20	0	0
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	2.00	13	2.28	62	5	100	0	0	0	0	2	0	0	0
482	18,19,21,29,43,44,55,67,70,76,77,78,79	2.70	19	2.70	76	4	50	1	100	0	0	3	20	0	0
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	9.02	74	1.50	37	3	0	0	0	1	50	2	0	0	0
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	7.56	61	1.13	26	3	0	0	0	0	0	2	0	0	0
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	2.70	19	2.84	80	4	50	1	100	0	0	3	20	0	0
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	2.70	19	2.77	78	4	50	1	100	0	0	3	20	0	0
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	3.86	29	2.48	69	4	50	0	0	0	0	2	0	0	0
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	2.37	16	2.84	80	4	50	1	100	0	0	3	20	0	0
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	0.51	0	2.26	62	5	100	1	100	0	0	3	20	0	0
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	6.39	51	1.34	32	3	0	1	100	0	0	3	20	0	0
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	0.84	3	2.26	62	5	100	1	100	0	0	3	20	0	0
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	2.37	16	2.74	77	5	100	1	100	0	0	3	20	0	0
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	2.37	16	2.78	78	4	50	1	100	0	0	3	20	0	0
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	0.84	3	2.36	65	4	50	1	100	0	0	3	20	0	0
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	2.70	19	2.70	76	4	50	1	100	0	0	3	20	0	0
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	6.39	51	1.42	35	3	0	1	100	0	0	3	20	0	0
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0.51	0	2.36	65	4	50	1	100	0	0	3	20	0	0

		Ecology						Cultural							
Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI + hydric soils within ROW (in acres)	Normalized Score for Area of NWI + hydric soils within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	2.70	19	2.84	80	4	50	1	100	0	0	3	20	0	0
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	2.37	16	2.70	76	4	50	1	100	0	0	3	20	0	0
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	2.37	16	2.84	80	4	50	1	100	0	0	3	20	0	0
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	6.07	48	1.43	35	3	0	1	100	0	0	3	20	0	0
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	0.51	0	2.26	62	5	100	1	100	0	0	3	20	0	0
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	2.37	16	2.78	78	4	50	1	100	0	0	3	20	0	0
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	2.37	16	2.78	78	4	50	1	100	0	0	3	20	0	0
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	6.07	48	1.35	32	3	0	1	100	0	0	3	20	0	0
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	3.86	29	2.86	81	4	50	0	0	0	0	2	0	0	0
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	0.84	3	2.36	65	4	50	1	100	0	0	3	20	0	0
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	2.37	16	2.70	76	4	50	1	100	0	0	3	20	0	0
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	3.86	29	3.00	86	4	50	0	0	0	0	2	0	0	0
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0.51	0	2.36	65	4	50	1	100	0	0	3	20	0	0
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	3.86	29	2.94	83	4	50	0	0	0	0	2	0	0	0
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	7.56	61	1.51	38	3	0	0	0	0	0	2	0	0	0
483	18,19,21,29,43,44,59,66,67,70,77,78,79	2.70	19	3.21	92	4	50	1	100	0	0	3	20	0	0
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	2.00	13	2.52	70	4	50	0	0	0	0	2	0	0	0
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	3.86	29	2.86	81	4	50	0	0	0	0	2	0	0	0
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	7.56	61	1.59	40	3	0	0	0	0	0	2	0	0	0
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	2.70	19	3.29	95	4	50	1	100	0	0	3	20	0	0
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	3.86	29	3.00	86	4	50	0	0	0	0	2	0	0	0
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	3.86	29	2.94	83	4	50	0	0	0	0	2	0	0	0
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	0.84	3	2.73	77	4	50	1	100	0	0	3	20	0	0
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	2.37	16	3.29	95	4	50	1	100	0	0	3	20	0	0
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	2.70	19	3.21	92	4	50	1	100	0	0	3	20	0	0
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	0.84	3	2.81	79	4	50	1	100	0	0	3	20	0	0
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	2.37	16	3.21	92	4	50	1	100	0	0	3	20	0	0
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	2.70	19	3.29	95	4	50	1	100	0	0	3	20	0	0
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	2.00	13	2.52	70	4	50	0	0	0	0	2	0	0	0
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0.51	0	2.81	79	4	50	1	100	0	0	3	20	0	0
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	2.37	16	3.29	95	4	50	1	100	0	0	3	20	0	0
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	0.84	3	2.73	77	4	50	1	100	0	0	3	20	0	0
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0.51	0	2.73	77	4	50	1	100	0	0	3	20	0	0
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	3.86	29	3.37	97	4	50	0	0	0	0	2	0	0	0
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	2.37	16	3.21	92	4	50	1	100	0	0	3	20	0	0
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	0.84	3	2.81	79	4	50	1	100	0	0	3	20	0	0
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	3.86	29	3.45	100	4	50	0	0	0	0	2	0	0	0
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	2.00	13	2.89	82	4	50	0	0	0	0	2	0	0	0
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0.51	0	2.81	79	4	50	1	100	0	0	3	20	0	0
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	3.86	29	3.37	97	4	50	0	0	0	0	2	0	0	0
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	2.00	13	2.97	85	4	50	0	0	0	0	2	0	0	0
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0.51	0	2.73	77	4	50	1	100	0	0	3	20	0	0
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	3.86	29	3.45	100	4	50	0	0	0	0	2	0	0	0
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	2.00	13	2.89	82	4	50	0	0	0	0	2	0	0	0
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	2.00	13	2.97	85	4	50	0	0	0	0	2	0	0	0
	MIN	0.51	0	0.33	0	3	0	0	0	0	0	2	0	0	0
	MAX	12.03	100	3.45	100	5	100	1	100	2	100	7	100	0	0
	RANGE	11.52	100	3.12	100	2	100	1	100	2	100	5	100	0	0

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	12	12.79	30	8.57	25	3.90	31	1	37	21	44.53	27	0	0	0	0
149	3,11,16,23,25,31,33,45,47,48,52,65,67	16	17.44	35	10.52	23	3.30	30	1	42	42	33.85	18	0	0	0	0
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	12	12.79	30	8.57	25	3.90	32	2	39	29	50.11	32	0	0	0	0
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	16	17.44	35	10.52	23	3.30	31	1	43	46	39.42	23	0	0	0	0
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	13	13.95	33	9.74	22	3.00	28	1	43	46	44.01	27	0	0	0	0
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	13	13.95	33	9.74	22	3.00	29	1	45	54	49.59	32	0	0	0	0
500	14,20,29,43,44,55,67,70,76,78,79	2	1.16	11	1.17	16	1.20	18	0	38	25	83.89	62	1	100	0	0
450	23,25,31,33,45,47,48,52,65,67,77,78,82	16	17.44	33	9.74	23	3.30	27	1	43	46	30.79	15	0	0	0	0
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	16	17.44	33	9.74	23	3.30	27	1	41	38	38.70	22	0	0	0	0
497	11,14,20,29,43,44,55,67,70,76,79,81,83	2	1.16	11	1.17	16	1.20	18	0	37	21	91.80	69	1	100	0	0
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	12	12.79	31	8.96	26	4.20	32	2	38	25	44.53	27	0	0	0	0
18	2,7,13,28,43,44,55,67,70,76	2	1.16	12	1.56	15	0.90	16	0	39	29	85.35	63	1	100	0	0
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	16	17.44	33	9.74	23	3.30	28	1	45	54	36.37	20	0	0	0	0
430	11,16,23,25,34,47,48,52,65,67,79,81	13	13.95	47	15.19	54	12.60	73	5	36	17	37.94	21	0	0	0	0
136	3,11,14,20,29,43,44,55,67,70,76,83	6	5.81	16	3.12	14	0.60	17	0	42	42	81.11	59	1	100	0	0
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	16	17.44	33	9.74	23	3.30	28	1	43	46	44.28	27	0	0	0	0
506	14,20,22,28,43,44,55,67,70,76,78,79	4	3.49	9	0.39	17	1.50	20	1	38	25	81.48	60	1	100	0	0
151	3,11,16,23,25,31,33,45,47,52,53,69,80	16	17.44	36	10.91	24	3.60	31	1	43	46	33.85	18	0	0	0	0
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	20	22.09	38	11.69	21	2.70	26	1	47	63	28.01	13	0	0	0	0
181	3,14,20,29,43,44,55,67,70,76,78,81	6	5.81	16	3.12	14	0.60	17	0	43	46	73.20	52	1	100	0	0
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	4	3.49	9	0.39	17	1.50	20	1	37	21	89.39	67	1	100	0	0
154	3,11,16,23,25,34,47,48,52,65,67	17	18.60	52	17.14	52	12.00	72	5	41	38	27.26	12	0	0	0	0
470	14,15,19,30,33,45,47,48,52,65,67,78,79	23	25.58	53	17.53	39	8.10	24	1	34	8	59.39	40	0	0	0	0
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	20	22.09	38	11.69	21	2.70	27	1	48	67	33.59	18	0	0	0	0
525	7,8,13,28,43,44,55,67,70,76,79	1	0.00	11	1.17	20	2.40	21	1	35	13	95.71	72	1	100	0	0
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	23	25.58	53	17.53	39	8.10	24	1	32	0	67.30	47	0	0	0	0
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	20	22.09	38	11.69	21	2.70	26	1	49	71	20.10	6	0	0	0	0
133	3,11,14,20,22,28,43,44,55,67,70,76,83	8	8.14	14	2.34	15	0.90	19	1	42	42	78.70	57	1	100	0	0
155	3,11,16,23,25,34,47,48,52,67,70,76,84	17	18.60	52	17.14	52	12.00	73	5	42	42	32.84	17	0	0	0	0
431	11,16,23,25,34,47,48,52,67,70,76,84	17	18.60	52	17.14	52	12.00	73	5	42	42	32.84	17	0	0	0	0
80	2,8,14,20,29,43,44,55,67,70,76,78	3	2.33	14	2.34	13	0.30	15	0	44	50	83.37	61	1	100	0	0
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	20	22.09	38	11.69	21	2.70	27	1	50	75	25.68	11	0	0	0	0
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	17	18.60	36	10.91	20	2.40	24	1	49	71	30.27	15	0	0	0	0
178	3,14,20,22,28,43,44,55,67,70,76,78,81	8	8.14	14	2.34	15	0.90	19	1	43	46	70.79	50	1	100	0	0
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	23	25.58	53	17.53	39	8.10	25	1	36	17	64.97	45	0	0	0	0
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	17	18.60	36	10.91	20	2.40	24	1	47	63	38.18	22	0	0	0	0
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	23	25.58	53	17.53	39	8.10	25	1	34	8	72.88	52	0	0	0	0
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	27	30.23	58	19.48	37	7.50	23	1	38	25	56.61	38	0	0	0	0
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	3	2.33	14	2.34	13	0.30	15	0	43	46	91.28	68	1	100	0	0
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	13	13.95	34	10.13	23	3.30	29	1	44	50	44.01	27	0	0	0	0
203	3,7,8,13,28,43,44,55,67,70,76,81	5	4.65	16	3.12	18	1.80	20	1	39	29	85.02	63	1	100	0	0
15	2,10,20,29,43,44,55,67,70,76	4	3.49	11	1.17	12	0.00	13	0	41	38	83.86	62	1	100	0	0
501	14,20,29,43,44,59,66,67,70,78,79	2	1.16	19	4.29	22	3.00	21	1	40	33	83.38	61	1	100	0	0
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	27	30.23	58	19.48	37	7.50	24	1	39	29	62.19	43	0	0	0	0
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	17	18.60	36	10.91	20	2.40	25	1	51	79	35.85	20	0	0	0	0
53	2,8,11,16,23,25,34,47,48,52,65,67,81	14	15.12	50	16.36	51	11.70	70	4	42	42	37.42	21	0	0	0	0
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	27	30.23	58	19.48	37	7.50	23	1	40	33	48.70	31	0	0	0	0
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	17	18.60	36	10.91	20	2.40	25	1	49	71	43.76	27	0	0	0	0
77	2,8,14,20,22,28,43,44,55,67,70,76,78	5	4.65	12	1.56	14	0.60	17	0	44	50	80.96	59	1	100	0	0
498	11,14,20,29,43,44,59,66,67,70,79,81,83	2	1.16	19	4.29	22	3.00	21	1	39	29	91.30	68	1	100	0	0
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	5	4.65	12	1.56	14	0.60	17	0	43	46	88.87	66	1	100	0	0
502	14,20,29,42,43,57,58,66,67,70,78,79	7	6.98	15	2.73	26	4.20	22	1	44	50	101.05	77	1	100	0	0

**Institutional land use includes schools, churches, and hospitals
**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	27	30.23	58	19.48	37	7.50	24	1	41	38	54.28	36	0	0	0	0
19	2,7,13,28,43,44,59,66,67,70	2	1.16	20	4.68	21	2.70	19	1	41	38	84.84	63	1	100	0	0
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	24	26.74	56	18.70	36	7.20	21	1	40	33	58.87	40	0	0	0	0
519	8,10,20,29,43,44,55,67,70,76,79	3	2.33	10	0.78	17	1.50	18	0	37	21	94.16	71	1	100	0	0
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	24	26.74	56	18.70	36	7.20	21	1	38	25	66.78	47	0	0	0	0
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	14	15.12	50	16.36	51	11.70	71	4	44	50	43.00	26	0	0	0	0
137	3,11,14,20,29,43,44,59,66,67,70,83	6	5.81	24	6.23	20	2.40	20	1	44	50	80.61	59	1	100	0	0
12	2,10,20,22,28,43,44,55,67,70,76	6	5.81	9	0.39	13	0.30	15	0	41	38	81.45	60	1	100	0	0
507	14,20,22,28,43,44,59,66,67,70,78,79	4	3.49	17	3.51	23	3.30	23	1	40	33	80.98	59	1	100	0	0
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	7	6.98	15	2.73	26	4.20	22	1	43	46	108.96	84	1	100	0	0
9	2,10,15,19,30,33,45,47,48,52,65,67	25	27.91	53	17.53	35	6.90	21	1	36	17	59.38	40	0	0	0	0
182	3,14,20,29,43,44,59,66,67,70,78,81	6	5.81	24	6.23	20	2.40	20	1	45	54	72.70	52	1	100	0	0
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	4	3.49	17	3.51	23	3.30	23	1	39	29	88.89	66	1	100	0	0
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	24	26.74	56	18.70	36	7.20	22	1	42	42	64.45	45	0	0	0	0
526	7,8,13,28,43,44,59,66,67,70,79	1	0.00	19	4.29	26	4.20	24	1	37	21	95.21	72	1	100	0	0
135	3,11,14,20,29,42,43,57,58,66,67,70,83	11	11.63	20	4.68	24	3.60	21	1	48	67	98.27	75	1	100	0	0
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	24	26.74	56	18.70	36	7.20	22	1	40	33	72.36	52	0	0	0	0
17	2,7,13,28,42,43,57,58,66,67,70	7	6.98	16	3.12	25	3.90	20	1	46	58	102.50	78	1	100	0	0
522	8,10,20,22,28,43,44,55,67,70,76,79	5	4.65	8	0.00	18	1.80	20	1	37	21	91.75	69	1	100	0	0
219	3,8,10,20,29,43,44,55,67,70,76,81	7	6.98	15	2.73	15	0.90	17	0	41	38	83.47	62	1	100	0	0
134	3,11,14,20,22,28,43,44,59,66,67,70,83	8	8.14	22	5.45	21	2.70	22	1	44	50	78.20	57	1	100	0	0
508	14,20,22,28,42,43,57,58,66,67,70,78,79	9	9.30	13	1.95	27	4.50	24	1	45	54	98.64	75	1	100	0	0
180	3,14,20,29,42,43,57,58,66,67,70,78,81	11	11.63	20	4.68	24	3.60	21	1	49	71	90.36	68	1	100	0	0
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	25	27.91	53	17.53	35	6.90	22	1	38	25	64.96	45	0	0	0	0
81	2,8,14,20,29,43,44,59,66,67,70,78	3	2.33	22	5.45	19	2.10	18	0	46	58	82.86	61	1	100	0	0
510	8,10,15,19,30,33,45,47,48,52,65,67,79	24	26.74	52	17.14	40	8.40	26	1	32	0	69.68	49	0	0	0	0
179	3,14,20,22,28,43,44,59,66,67,70,78,81	8	8.14	22	5.45	21	2.70	22	1	45	54	70.29	50	1	100	0	0
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	9	9.30	13	1.95	27	4.50	24	1	44	50	106.55	82	1	100	0	0
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	3	2.33	22	5.45	19	2.10	18	0	45	54	90.77	68	1	100	0	0
527	7,8,13,28,42,43,57,58,66,67,70,79	6	5.81	15	2.73	30	5.40	25	1	42	42	112.87	87	1	100	0	0
204	3,7,8,13,28,43,44,59,66,67,70,81	5	4.65	24	6.23	24	3.60	23	1	41	38	84.52	62	1	100	0	0
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	16	17.44	34	10.13	24	3.60	28	1	44	50	30.79	15	0	0	0	0
79	2,8,14,20,29,42,43,57,58,66,67,70,78	8	8.14	18	3.90	23	3.30	19	1	50	75	100.52	77	1	100	0	0
216	3,8,10,20,22,28,43,44,55,67,70,76,81	9	9.30	13	1.95	16	1.20	19	1	41	38	81.06	59	1	100	0	0
16	2,10,20,29,43,44,59,66,67,70	4	3.49	19	4.29	18	1.80	16	0	43	46	83.35	61	1	100	0	0
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	13	13.95	18	3.90	25	3.90	23	1	49	71	95.86	72	1	100	0	0
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	16	17.44	34	10.13	24	3.60	28	1	42	42	38.70	22	0	0	0	0
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	24	26.74	52	17.14	40	8.40	27	1	34	8	75.26	54	0	0	0	0
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	12	12.79	38	11.69	33	6.30	36	2	45	54	68.10	48	1	100	0	0
78	2,8,14,20,22,28,43,44,59,66,67,70,78	5	4.65	20	4.68	20	2.40	20	1	46	58	80.46	59	1	100	0	0
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	16	17.44	43	13.64	31	5.70	35	2	49	71	57.41	39	1	100	0	0
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	8	8.14	18	3.90	23	3.30	19	1	49	71	108.43	83	1	100	0	0
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	13	13.95	18	3.90	25	3.90	23	1	50	75	87.95	65	1	100	0	0
438	23,25,34,47,48,52,65,67,78,79,82	17	18.60	50	16.36	52	12.00	69	4	42	42	24.20	9	0	0	0	0
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	17	18.60	50	16.36	52	12.00	69	4	40	33	32.11	16	0	0	0	0
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	28	31.40	57	19.09	38	7.80	25	1	37	21	59.00	40	0	0	0	0
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	5	4.65	20	4.68	20	2.40	20	1	45	54	88.37	66	1	100	0	0
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	37	41.86	71	24.55	39	8.10	26	1	32	0	65.89	46	0	0	0	0
14	2,10,20,29,42,43,57,58,66,67,70	9	9.30	15	2.73	22	3.00	17	0	47	63	101.01	77	1	100	0	0
202	3,7,8,13,28,42,43,57,58,66,67,70,81	10	10.47	20	4.68	28	4.80	24	1	46	58	102.18	78	1	100	0	0
429	11,16,23,25,34,47,48,52,53,69,79,80,81	13	13.95	48	15.58	55	12.90	74	5	37	21	37.94	21	0	0	0	0
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	20	22.09	39	12.08	22	3.00	27	1	48	67	28.01	13	0	0	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
520	8,10,20,29,43,44,59,66,67,70,79	3	2.33	18	3.90	23	3.30	21	1	39	29	93.65	70	1	100	0	0
13	2,10,20,22,28,43,44,59,66,67,70	6	5.81	17	3.51	19	2.10	18	0	43	46	80.94	59	1	100	0	0
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	28	31.40	57	19.09	38	7.80	26	1	38	25	64.57	45	0	0	0	0
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	17	18.60	50	16.36	52	12.00	70	4	44	50	29.78	14	0	0	0	0
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	10	10.47	16	3.12	24	3.60	21	1	51	79	98.12	74	1	100	0	0
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	41	46.51	76	26.49	37	7.50	25	1	37	21	55.20	37	0	0	0	0
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	17	18.60	50	16.36	52	12.00	70	4	42	42	37.69	21	0	0	0	0
152	3,11,16,23,25,34,47,48,52,53,69,80	17	18.60	53	17.53	53	12.30	73	5	42	42	27.26	12	0	0	0	0
172	3,11,23,25,34,47,48,52,65,67,77,82,83	21	23.26	55	18.31	50	11.40	68	4	46	58	21.43	7	0	0	0	0
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	23	25.58	54	17.92	40	8.40	25	1	35	13	59.39	40	0	0	0	0
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	37	41.86	71	24.55	39	8.10	27	1	34	8	71.47	51	0	0	0	0
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	23	25.58	54	17.92	40	8.40	25	1	33	4	67.30	47	0	0	0	0
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	20	22.09	39	12.08	22	3.00	27	1	50	75	20.10	6	0	0	0	0
521	8,10,20,29,42,43,57,58,66,67,70,79	8	8.14	14	2.34	27	4.50	22	1	43	46	111.31	86	1	100	0	0
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	10	10.47	16	3.12	24	3.60	21	1	50	75	106.03	81	1	100	0	0
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	41	46.51	76	26.49	37	7.50	26	1	38	25	60.78	42	0	0	0	0
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	21	23.26	55	18.31	50	11.40	69	4	47	63	27.00	12	0	0	0	0
523	8,10,20,22,28,43,44,59,66,67,70,79	5	4.65	16	3.12	24	3.60	23	1	39	29	91.24	68	1	100	0	0
220	3,8,10,20,29,43,44,59,66,67,70,81	7	6.98	23	5.84	21	2.70	20	1	43	46	82.96	61	1	100	0	0
11	2,10,20,22,28,42,43,57,58,66,67,70	11	11.63	13	1.95	23	3.30	19	1	48	67	98.60	75	1	100	0	0
199	3,23,25,34,47,48,52,65,67,78,81,82	21	23.26	55	18.31	50	11.40	68	4	48	67	13.51	0	0	0	0	0
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	17	18.60	37	11.30	21	2.70	25	1	50	75	30.27	15	0	0	0	0
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	17	18.60	37	11.30	21	2.70	25	1	48	67	38.18	22	0	0	0	0
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	13	13.95	41	12.86	30	5.40	33	2	51	79	67.58	48	1	100	0	0
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	27	30.23	59	19.87	38	7.80	24	1	39	29	56.61	38	0	0	0	0
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	21	23.26	55	18.31	50	11.40	69	4	49	71	19.09	5	0	0	0	0
218	3,8,10,20,29,42,43,57,58,66,67,70,81	12	12.79	19	4.29	25	3.90	21	1	47	63	100.62	77	1	100	0	0
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	18	19.77	53	17.53	49	11.10	66	4	46	58	31.59	16	0	0	0	0
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	38	43.02	74	25.71	36	7.20	23	1	38	25	65.37	46	0	0	0	0
524	8,10,20,22,28,42,43,57,58,66,67,70,79	10	10.47	12	1.56	28	4.80	24	1	44	50	108.91	84	1	100	0	0
217	3,8,10,20,22,28,43,44,59,66,67,70,81	9	9.30	21	5.06	22	3.00	22	1	43	46	80.55	59	1	100	0	0
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	14	15.12	51	16.75	52	12.00	71	4	43	46	37.42	21	0	0	0	0
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	27	30.23	59	19.87	38	7.80	24	1	41	38	48.70	31	0	0	0	0
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	18	19.77	53	17.53	49	11.10	67	4	50	75	29.26	14	0	0	0	0
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	18	19.77	53	17.53	49	11.10	67	4	48	67	37.17	21	0	0	0	0
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	24	26.74	57	19.09	37	7.50	22	1	41	38	58.87	40	0	0	0	0
462	18,19,30,33,45,47,48,52,65,67,77,78,79	37	41.86	72	24.94	41	8.70	23	1	36	17	52.15	34	0	0	0	0
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	38	43.02	74	25.71	36	7.20	24	1	40	33	70.95	51	0	0	0	0
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	24	26.74	57	19.09	37	7.50	22	1	39	29	66.78	47	0	0	0	0
458	11,18,19,30,33,45,47,48,52,65,67,77,83	37	41.86	72	24.94	41	8.70	23	1	34	8	60.06	41	0	0	0	0
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	14	15.12	17	3.51	26	4.20	23	1	48	67	98.22	74	1	100	0	0
7	2,10,15,19,30,33,45,47,48,52,53,69,80	25	27.91	54	17.92	36	7.20	22	1	37	21	59.38	40	0	0	0	0
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	37	41.86	72	24.94	41	8.70	24	1	38	25	57.73	39	0	0	0	0
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	37	41.86	72	24.94	41	8.70	24	1	36	17	65.64	46	0	0	0	0
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	41	46.51	77	26.88	39	8.10	22	1	40	33	49.37	32	0	0	0	0
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	24	26.74	53	17.53	41	8.70	27	1	33	4	69.69	49	0	0	0	0
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	41	46.51	77	26.88	39	8.10	23	1	41	38	54.95	36	0	0	0	0
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	16	17.44	41	12.86	31	5.70	32	2	50	75	54.36	36	1	100	0	0
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	41	46.51	77	26.88	39	8.10	22	1	42	42	41.46	25	0	0	0	0
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	16	17.44	41	12.86	31	5.70	32	2	49	71	62.27	43	1	100	0	0
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	41	46.51	77	26.88	39	8.10	23	1	43	46	47.04	29	0	0	0	0
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	38	43.02	75	26.10	38	7.80	20	1	42	42	51.63	34	0	0	0	0

**Institutional land use includes schools, churches, and hospitals
**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	38	43.02	75	26.10	38	7.80	20	1	40	33	59.54	40	0	0	0	0
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	20	22.09	46	14.81	29	5.10	31	1	54	92	51.58	33	1	100	0	0
437	23,25,34,47,48,52,53,69,77,78,79,80,82	17	18.60	51	16.75	53	12.30	70	4	43	46	24.20	9	0	0	0	0
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	17	18.60	51	16.75	53	12.30	70	4	41	38	32.11	16	0	0	0	0
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	13	13.95	55	18.31	62	15.00	78	5	44	50	61.51	42	1	100	0	0
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	19	20.93	52	17.14	34	6.60	16	0	34	8	107.69	83	1	100	0	0
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	28	31.40	58	19.48	39	8.10	26	1	38	25	59.00	40	0	0	0	0
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	37	41.86	72	24.94	40	8.40	27	1	33	4	65.89	46	0	0	0	0
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	20	22.09	46	14.81	29	5.10	31	1	55	96	43.67	27	1	100	0	0
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	17	18.60	60	20.26	60	14.40	77	5	48	67	50.82	33	1	100	0	0
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	23	25.58	61	20.65	47	10.50	29	1	41	38	82.96	61	1	100	0	0
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	38	43.02	75	26.10	38	7.80	21	1	44	50	57.21	38	0	0	0	0
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	38	43.02	75	26.10	38	7.80	21	1	42	42	65.12	45	0	0	0	0
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	23	25.58	57	19.09	32	6.00	15	0	39	29	97.00	73	1	100	0	0
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	41	46.51	77	26.88	38	7.80	26	1	38	25	55.20	37	0	0	0	0
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	23	25.58	61	20.65	47	10.50	29	1	40	33	90.87	68	1	100	0	0
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	21	23.26	56	18.70	51	11.70	69	4	47	63	21.43	7	0	0	0	0
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	21	23.26	50	16.36	35	6.90	18	0	34	8	105.29	81	1	100	0	0
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	17	18.60	44	14.03	28	4.80	29	1	56	100	53.84	35	1	100	0	0
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	27	30.23	66	22.60	45	9.90	28	1	45	54	80.18	59	1	100	0	0
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	21	23.26	56	18.70	51	11.70	69	4	49	71	13.51	0	0	0	0	0
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	17	18.60	44	14.03	28	4.80	29	1	55	96	61.75	42	1	100	0	0
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	25	27.91	55	18.31	33	6.30	17	0	39	29	94.61	71	1	100	0	0
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	27	30.23	66	22.60	45	9.90	28	1	46	58	72.27	52	1	100	0	0
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	18	19.77	54	17.92	50	11.40	67	4	49	71	23.68	9	0	0	0	0
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	18	19.77	54	17.92	50	11.40	67	4	47	63	31.59	16	0	0	0	0
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	14	15.12	58	19.48	59	14.10	75	5	50	75	60.99	42	1	100	0	0
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	20	22.09	55	18.31	31	5.70	13	0	40	33	107.17	82	1	100	0	0
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	38	43.02	75	26.10	37	7.50	24	1	39	29	65.37	46	0	0	0	0
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	24	26.74	64	21.82	44	9.60	26	1	47	63	82.44	61	1	100	0	0
5	2,10,15,19,21,29,43,44,55,67,70,76	21	23.26	52	17.14	30	5.40	13	0	38	25	99.77	76	1	100	0	0
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	24	26.74	64	21.82	44	9.60	26	1	46	58	90.35	68	1	100	0	0
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	19	20.93	60	20.26	40	8.40	19	1	36	17	107.18	82	1	100	0	0
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	37	41.86	73	25.32	42	9.00	24	1	37	21	52.15	34	0	0	0	0
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	22	24.42	53	17.53	32	6.00	15	0	40	33	104.77	80	1	100	0	0
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	37	41.86	73	25.32	42	9.00	24	1	35	13	60.06	41	0	0	0	0
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	25	27.91	61	20.65	43	9.30	26	1	44	50	82.95	61	1	100	0	0
513	8,10,15,19,21,29,43,44,55,67,70,76,79	20	22.09	51	16.75	35	6.90	18	0	34	8	110.07	85	1	100	0	0
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	23	25.58	65	22.21	38	7.80	18	0	41	38	96.49	73	1	100	0	0
2	2,10,15,19,21,22,28,43,44,55,67,70,76	23	25.58	50	16.36	31	5.70	15	0	38	25	97.37	74	1	100	0	0
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	24	26.74	56	18.70	44	9.60	20	1	40	33	124.84	98	1	100	0	0
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	21	23.26	58	19.48	41	8.70	21	1	36	17	104.79	80	1	100	0	0
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	41	46.51	78	27.27	40	8.40	23	1	41	38	49.37	32	0	0	0	0
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	28	31.40	61	20.65	42	9.00	19	1	45	54	114.16	89	1	100	0	0
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	24	26.74	60	20.26	48	10.80	31	1	40	33	93.25	70	1	100	0	0
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	22	24.42	49	15.97	36	7.20	20	1	34	8	107.68	83	1	100	0	0
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	25	27.91	63	21.43	39	8.10	20	1	41	38	94.10	71	1	100	0	0
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	24	26.74	56	18.70	33	6.30	17	0	38	25	99.38	76	1	100	0	0
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	41	46.51	78	27.27	40	8.40	23	1	43	46	41.46	25	0	0	0	0
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	33	37.21	70	24.16	34	6.60	18	0	34	8	106.28	82	1	100	0	0
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	26	29.07	54	17.92	45	9.90	22	1	41	38	122.45	96	1	100	0	0
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	17	18.60	58	19.48	60	14.40	74	5	49	71	47.77	30	1	100	0	0

**Institutional land use includes schools, churches, and hospitals
**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	20	22.09	63	21.43	37	7.50	16	0	42	42	106.66	82	1	100	0	0
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	37	41.86	75	26.10	32	6.00	17	0	38	25	95.59	72	1	100	0	0
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	28	31.40	65	22.21	46	10.20	30	1	44	50	82.56	61	1	100	0	0
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	38	43.02	76	26.49	39	8.10	21	1	43	46	51.63	34	0	0	0	0
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	38	43.02	76	26.49	39	8.10	21	1	41	38	59.54	40	0	0	0	0
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	17	18.60	58	19.48	60	14.40	74	5	48	67	55.68	37	1	100	0	0
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	30	33.72	59	19.87	43	9.30	21	1	46	58	111.76	86	1	100	0	0
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	26	29.07	54	17.92	34	6.60	19	1	38	25	96.99	73	1	100	0	0
6	2,10,15,19,21,29,43,44,59,66,67,70	21	23.26	60	20.26	36	7.20	16	0	40	33	99.26	75	1	100	0	0
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	37	41.86	79	27.66	47	10.50	31	1	40	33	89.46	67	1	100	0	0
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	25	27.91	59	19.87	41	8.70	17	0	46	58	124.32	97	1	100	0	0
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	35	39.53	68	23.38	35	6.90	20	1	34	8	103.88	79	1	100	0	0
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	41	46.51	84	29.61	45	9.90	30	1	44	50	78.77	57	1	100	0	0
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	21	23.26	63	21.43	58	13.80	73	5	53	88	44.99	28	1	100	0	0
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	22	24.42	61	20.65	38	7.80	18	0	42	42	104.27	80	1	100	0	0
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	39	44.19	73	25.32	33	6.30	19	1	38	25	93.19	70	1	100	0	0
4	2,10,15,19,21,29,42,43,57,58,66,67,70	26	29.07	56	18.70	40	8.40	17	0	44	50	116.92	91	1	100	0	0
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	21	23.26	63	21.43	58	13.80	73	5	54	92	37.08	21	1	100	0	0
514	8,10,15,19,21,29,43,44,59,66,67,70,79	20	22.09	59	19.87	41	8.70	21	1	36	17	109.56	84	1	100	0	0
3	2,10,15,19,21,22,28,43,44,59,66,67,70	23	25.58	58	19.48	37	7.50	18	0	40	33	96.87	73	1	100	0	0
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	34	38.37	73	25.32	31	5.70	15	0	40	33	105.75	81	1	100	0	0
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	27	30.23	57	19.09	42	9.00	19	1	47	63	121.93	95	1	100	0	0
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	25	27.91	55	18.31	45	9.90	22	1	40	33	127.22	100	1	100	0	0
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	18	19.77	61	20.65	57	13.50	71	4	55	96	47.25	30	1	100	0	0
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	22	24.42	57	19.09	42	9.00	23	1	36	17	107.17	82	1	100	0	0
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	24	26.74	64	21.82	39	8.10	20	1	40	33	98.87	75	1	100	0	0
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	28	31.40	54	17.92	41	8.70	19	1	45	54	114.53	89	1	100	0	0
482	18,19,21,29,43,44,55,67,70,76,77,78,79	33	37.21	71	24.55	36	7.20	15	0	37	21	92.54	69	1	100	0	0
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	18	19.77	61	20.65	57	13.50	71	4	54	92	55.16	37	1	100	0	0
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	38	43.02	82	28.83	44	9.60	28	1	46	58	88.94	66	1	100	0	0
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	33	37.21	78	27.27	40	8.40	21	1	36	17	105.77	81	1	100	0	0
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	33	37.21	71	24.55	36	7.20	15	0	36	17	100.44	76	1	100	0	0
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	36	40.70	71	24.55	32	6.00	17	0	40	33	103.36	79	1	100	0	0
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	37	41.86	83	29.22	38	7.80	20	1	40	33	95.08	72	1	100	0	0
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	29	32.56	60	20.26	43	9.30	21	1	44	50	116.54	91	1	100	0	0
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	37	41.86	80	28.05	49	11.10	28	1	43	46	75.72	55	1	100	0	0
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	27	30.23	53	17.53	46	10.20	24	1	41	38	124.83	98	1	100	0	0
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	26	29.07	62	21.04	40	8.40	22	1	40	33	96.48	73	1	100	0	0
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	37	41.86	76	26.49	34	6.60	14	0	41	38	89.76	67	1	100	0	0
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	38	43.02	74	25.71	44	9.60	22	1	40	33	123.43	97	1	100	0	0
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	35	39.53	69	23.77	37	7.50	17	0	37	21	90.14	67	1	100	0	0
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	37	41.86	80	28.05	49	11.10	28	1	42	42	83.63	62	1	100	0	0
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	42	47.67	79	27.66	42	9.00	21	1	44	50	112.74	87	1	100	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Land Use															
Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000-ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	35	39.53	76	26.49	41	8.70	23	1	36	17	103.38	79	1	100	0	0
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	37	41.86	76	26.49	34	6.60	14	0	42	42	81.84	60	1	100	0	0
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	39	44.19	81	28.44	39	8.10	22	1	40	33	92.69	70	1	100	0	0
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	41	46.51	85	30.00	47	10.50	27	1	47	63	72.94	52	1	100	0	0
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	31	34.88	58	19.48	44	9.60	23	1	45	54	114.14	88	1	100	0	0
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	39	44.19	74	25.71	35	6.90	16	0	41	38	87.36	65	1	100	0	0
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	39	44.19	74	25.71	35	6.90	16	0	41	38	87.36	65	1	100	0	0
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	41	46.51	85	30.00	47	10.50	27	1	48	67	65.03	45	1	100	0	0
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	34	38.37	74	25.71	33	6.30	12	0	43	46	92.01	69	1	100	0	0
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	40	45.35	72	24.94	45	9.90	24	1	41	38	121.04	95	1	100	0	0
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	39	44.19	74	25.71	35	6.90	16	0	42	42	79.45	58	1	100	0	0
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	34	38.37	81	28.44	37	7.50	18	0	42	42	105.25	81	1	100	0	0
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	44	50.00	77	26.88	43	9.30	23	1	45	54	110.35	85	1	100	0	0
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	34	38.37	74	25.71	33	6.30	12	0	42	42	99.92	76	1	100	0	0
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	38	43.02	83	29.22	46	10.20	25	1	49	71	75.20	54	1	100	0	0
483	18,19,21,29,43,44,59,66,67,70,77,78,79	33	37.21	79	27.66	42	9.00	18	0	39	29	92.03	69	1	100	0	0
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	39	44.19	77	26.88	41	8.70	19	1	46	58	122.91	96	1	100	0	0
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	36	40.70	72	24.94	34	6.60	14	0	43	46	89.62	67	1	100	0	0
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	38	43.02	83	29.22	46	10.20	25	1	48	67	83.11	61	1	100	0	0
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	33	37.21	79	27.66	42	9.00	18	0	38	25	99.94	76	1	100	0	0
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	36	40.70	79	27.66	38	7.80	20	1	42	42	102.85	79	1	100	0	0
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	36	40.70	72	24.94	34	6.60	14	0	42	42	97.53	74	1	100	0	0
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	38	43.02	75	26.10	46	10.20	19	1	43	46	109.69	85	1	100	0	0
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	37	41.86	84	29.61	40	8.40	17	0	43	46	89.25	67	1	100	0	0
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	35	39.53	77	26.88	43	9.30	20	1	39	29	89.63	67	1	100	0	0
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	38	43.02	75	26.10	46	10.20	19	1	42	42	117.60	92	1	100	0	0
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	37	41.86	84	29.61	40	8.40	17	0	44	50	81.34	60	1	100	0	0
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	35	39.53	77	26.88	43	9.30	20	1	38	25	97.54	74	1	100	0	0
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	41	46.51	75	26.10	42	9.00	21	1	47	63	120.52	94	1	100	0	0
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	42	47.67	80	28.05	44	9.60	18	0	47	63	106.91	82	1	100	0	0
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	39	44.19	82	28.83	41	8.70	19	1	43	46	86.86	64	1	100	0	0
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	40	45.35	73	25.32	47	10.50	21	1	44	50	107.29	82	1	100	0	0
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	42	47.67	80	28.05	44	9.60	18	0	48	67	99.00	75	1	100	0	0
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	34	38.37	82	28.83	39	8.10	15	0	45	54	91.51	69	1	100	0	0
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	39	44.19	82	28.83	41	8.70	19	1	44	50	78.94	58	1	100	0	0
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	40	45.35	73	25.32	47	10.50	21	1	43	46	115.21	89	1	100	0	0
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	34	38.37	82	28.83	39	8.10	15	0	44	50	99.42	76	1	100	0	0
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	39	44.19	78	27.27	43	9.30	16	0	49	71	109.17	84	1	100	0	0
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	44	50.00	78	27.27	45	9.90	20	1	48	67	104.52	80	1	100	0	0
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	36	40.70	80	28.05	40	8.40	17	0	45	54	89.11	66	1	100	0	0
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	39	44.19	78	27.27	43	9.30	16	0	48	67	117.08	91	1	100	0	0
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	44	50.00	78	27.27	45	9.90	20	1	49	71	96.61	73	1	100	0	0
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	36	40.70	80	28.05	40	8.40	17	0	44	50	97.02	73	1	100	0	0
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	41	46.51	76	26.49	44	9.60	18	0	50	75	106.77	82	1	100	0	0
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	41	46.51	76	26.49	44	9.60	18	0	49	71	114.68	89	1	100	0	0
	MIN	1	0.00	8	0.00	12	0.00	12	0	32	0	13.51	0	0	0	0	0
	MAX	44	50.00	85	30.00	62	15.00	78	5	56	100	127.22	100	1	100	0	0
	RANGE	43	50.00	77	30.00	50	15.00	66	5	24	100	113.71	100	1	100	0	0

**Institutional land use includes schools, churches, and hospitals
**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	0	0	6	40	0.00	0	5.88	2	0.00	40	3.89	26	8.37	6	1.13	5
149	3,11,16,23,25,31,33,45,47,48,52,65,67	0	0	5	30	0.00	0	5.27	5	0.00	40	5.30	0	8.33	5	1.07	0
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	0	0	6	40	0.00	0	4.86	7	0.00	40	2.70	49	8.54	9	1.13	5
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	0	0	5	30	0.00	0	4.25	10	0.00	40	4.10	23	8.49	8	1.07	0
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	0	0	7	50	0.00	0	3.85	11	0.00	40	3.89	26	8.94	17	2.16	100
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	0	0	7	50	0.00	0	2.83	16	0.00	40	2.70	49	9.10	21	2.16	100
500	14,20,29,43,44,55,67,70,76,78,79	0	0	4	20	0.00	0	3.21	15	0.00	40	0.00	100	9.45	28	1.13	5
450	23,25,31,33,45,47,48,52,65,67,77,78,82	0	0	7	50	0.00	0	5.88	2	0.00	40	2.89	46	8.37	6	1.13	5
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	0	0	9	70	0.00	0	5.86	2	0.00	40	3.33	37	8.47	8	1.13	5
497	11,14,20,29,43,44,55,67,70,76,79,81,83	0	0	6	40	0.00	0	3.20	15	0.00	40	0.44	92	9.55	30	1.13	5
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	0	0	8	60	0.00	0	5.19	5	0.43	0	3.43	35	9.28	24	1.13	5
18	2,7,13,28,43,44,55,67,70,76	0	0	5	30	0.00	0	0.76	26	0.00	40	0.00	100	9.66	32	2.16	100
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	0	0	7	50	0.00	0	4.86	7	0.00	40	1.69	68	8.53	9	1.13	5
430	11,16,23,25,34,47,48,52,65,67,79,81	0	0	4	20	0.00	0	6.23	0	0.00	40	3.89	26	8.14	1	1.13	5
136	3,11,14,20,29,43,44,55,67,70,76,83	0	0	5	30	0.00	0	2.59	18	0.00	40	1.85	65	9.50	29	1.07	0
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	0	0	9	70	0.00	0	4.84	7	0.00	40	2.13	60	8.63	11	1.13	5
506	14,20,22,28,43,44,55,67,70,76,78,79	0	0	5	30	0.00	0	3.21	15	0.00	40	0.00	100	9.71	33	1.13	5
151	3,11,16,23,25,31,33,45,47,52,53,69,80	0	0	7	50	0.00	0	4.58	8	0.43	0	4.84	9	9.23	23	1.07	0
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	0	0	8	60	0.00	0	5.26	5	0.00	40	4.73	11	8.42	7	1.07	0
181	3,14,20,29,43,44,55,67,70,76,78,81	0	0	5	30	0.00	0	2.60	17	0.00	40	1.40	74	9.52	29	1.07	0
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	0	0	7	50	0.00	0	3.20	15	0.00	40	0.44	92	9.80	35	1.13	5
154	3,11,16,23,25,34,47,48,52,65,67	0	0	3	10	0.00	0	5.62	3	0.00	40	5.30	0	8.09	0	1.07	0
470	14,15,19,30,33,45,47,48,52,65,67,78,79	0	0	5	30	0.00	0	4.81	7	0.00	40	2.34	56	8.61	11	1.13	5
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	0	0	8	60	0.00	0	4.23	10	0.00	40	3.53	33	8.58	10	1.07	0
525	7,8,13,28,43,44,55,67,70,76,79	0	0	6	40	0.00	0	2.79	17	0.00	40	0.00	100	10.26	44	1.13	5
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	0	0	7	50	0.00	0	4.80	7	0.00	40	2.78	48	8.71	13	1.13	5
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	0	0	8	60	0.00	0	5.27	5	0.00	40	4.29	19	8.43	7	1.07	0
133	3,11,14,20,22,28,43,44,55,67,70,76,83	0	0	6	40	0.00	0	2.59	18	0.00	40	1.85	65	9.75	34	1.07	0
155	3,11,16,23,25,34,47,48,52,67,70,76,84	0	0	3	10	0.00	0	4.59	8	0.00	40	4.10	23	8.25	3	1.07	0
431	11,16,23,25,34,47,48,52,67,70,76,84	0	0	3	10	0.00	0	4.59	8	0.00	40	4.10	23	8.25	3	1.07	0
80	2,8,14,20,29,43,44,55,67,70,76,78	0	0	5	30	0.00	0	1.18	24	0.00	40	0.00	100	10.02	39	2.16	100
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	0	0	8	60	0.00	0	4.25	10	0.00	40	3.09	42	8.60	10	1.07	0
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	0	0	8	60	0.00	0	3.85	11	0.00	40	2.89	46	8.93	17	2.16	100
178	3,14,20,22,28,43,44,55,67,70,76,78,81	0	0	6	40	0.00	0	2.60	17	0.00	40	1.40	74	9.77	34	1.07	0
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	0	0	5	30	0.00	0	3.79	12	0.00	40	1.14	78	8.78	14	1.13	5
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	0	0	10	80	0.00	0	3.83	12	0.00	40	3.33	37	9.03	19	2.16	100
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	0	0	7	50	0.00	0	3.77	12	0.00	40	1.58	70	8.87	16	1.13	5
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	0	0	6	40	0.00	0	4.19	10	0.00	40	4.18	21	8.66	12	1.07	0
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	0	0	7	50	0.00	0	1.17	24	0.00	40	0.44	92	10.11	41	2.16	100
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	0	0	9	70	0.00	0	3.16	15	0.43	0	3.43	35	9.84	36	2.16	100
203	3,7,8,13,28,43,44,55,67,70,76,81	0	0	7	50	0.00	0	2.18	19	0.00	40	1.40	74	10.32	46	1.07	0
15	2,10,20,29,43,44,55,67,70,76	0	0	4	20	0.00	0	0.76	26	0.00	40	0.00	100	9.10	21	2.16	100
501	14,20,29,43,44,59,66,67,70,78,79	0	0	2	0	0.00	0	2.45	18	0.00	40	0.00	100	9.17	22	1.13	5
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	0	0	6	40	0.00	0	3.16	15	0.00	40	2.99	44	8.82	15	1.07	0
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	0	0	8	60	0.00	0	2.83	16	0.00	40	1.69	68	9.10	21	2.16	100
53	2,8,11,16,23,25,34,47,48,52,65,67,81	0	0	5	30	0.00	0	4.20	10	0.00	40	3.89	26	8.70	13	2.16	100
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	0	0	6	40	0.00	0	4.20	10	0.00	40	3.74	29	8.68	12	1.07	0
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	0	0	10	80	0.00	0	2.81	16	0.00	40	2.13	60	9.19	23	2.16	100
77	2,8,14,20,22,28,43,44,55,67,70,76,78	0	0	6	40	0.00	0	1.18	24	0.00	40	0.00	100	10.27	45	2.16	100
498	11,14,20,29,43,44,59,66,67,70,79,81,83	0	0	4	20	0.00	0	2.44	18	0.00	40	0.44	92	9.26	24	1.13	5
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	0	0	8	60	0.00	0	1.17	24	0.00	40	0.44	92	10.36	47	2.16	100
502	14,20,29,42,43,57,58,66,67,70,78,79	0	0	3	10	0.00	0	2.45	18	0.00	40	0.00	100	11.62	72	1.13	5

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	0	0	6	40	0.00	0	3.18	15	0.00	40	2.54	52	8.84	15	1.07	0
19	2,7,13,28,43,44,59,66,67,70	0	0	3	10	0.00	0	0.00	30	0.00	40	0.00	100	9.37	26	2.16	100
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	0	0	6	40	0.00	0	2.78	17	0.00	40	2.34	56	9.17	22	2.16	100
519	8,10,20,29,43,44,55,67,70,76,79	0	0	5	30	0.00	0	2.79	17	0.00	40	0.00	100	9.71	33	1.13	5
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	0	0	8	60	0.00	0	2.76	17	0.00	40	2.78	48	9.27	24	2.16	100
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	0	0	5	30	0.00	0	3.17	15	0.00	40	2.70	49	8.86	16	2.16	100
137	3,11,14,20,29,43,44,59,66,67,70,83	0	0	3	10	0.00	0	1.83	21	0.00	40	1.85	65	9.22	23	1.07	0
12	2,10,20,22,28,43,44,55,67,70,76	0	0	5	30	0.00	0	0.76	26	0.00	40	0.00	100	9.36	26	2.16	100
507	14,20,22,28,43,44,59,66,67,70,78,79	0	0	3	10	0.00	0	2.45	18	0.00	40	0.00	100	9.42	27	1.13	5
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	0	0	5	30	0.00	0	2.44	18	0.00	40	0.44	92	11.71	74	1.13	5
9	2,10,15,19,30,33,45,47,48,52,65,67	0	0	5	30	0.00	0	2.36	19	0.00	40	2.34	56	8.26	4	2.16	100
182	3,14,20,29,43,44,59,66,67,70,78,81	0	0	3	10	0.00	0	1.84	21	0.00	40	1.40	74	9.23	23	1.07	0
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	0	0	5	30	0.00	0	2.44	18	0.00	40	0.44	92	9.52	29	1.13	5
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	0	0	6	40	0.00	0	1.76	22	0.00	40	1.14	78	9.34	26	2.16	100
526	7,8,13,28,43,44,59,66,67,70,79	0	0	4	20	0.00	0	2.03	20	0.00	40	0.00	100	9.97	39	1.13	5
135	3,11,14,20,29,42,43,57,58,66,67,70,83	0	0	4	20	0.00	0	1.83	21	0.00	40	1.85	65	11.67	73	1.07	0
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	0	0	8	60	0.00	0	1.74	22	0.00	40	1.58	70	9.43	28	2.16	100
17	2,7,13,28,42,43,57,58,66,67,70	0	0	4	20	0.00	0	0.00	30	0.00	40	0.00	100	11.82	76	2.16	100
522	8,10,20,22,28,43,44,55,67,70,76,79	0	0	6	40	0.00	0	2.79	17	0.00	40	0.00	100	9.96	38	1.13	5
219	3,8,10,20,29,43,44,55,67,70,76,81	0	0	6	40	0.00	0	2.18	19	0.00	40	1.40	74	9.77	34	1.07	0
134	3,11,14,20,22,28,43,44,59,66,67,70,83	0	0	4	20	0.00	0	1.83	21	0.00	40	1.85	65	9.47	28	1.07	0
508	14,20,22,28,42,43,57,58,66,67,70,78,79	0	0	4	20	0.00	0	2.45	18	0.00	40	0.00	100	11.87	77	1.13	5
180	3,14,20,29,42,43,57,58,66,67,70,78,81	0	0	4	20	0.00	0	1.84	21	0.00	40	1.40	74	11.68	74	1.07	0
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	0	0	5	30	0.00	0	1.33	24	0.00	40	1.14	78	8.43	7	2.16	100
81	2,8,14,20,29,43,44,59,66,67,70,78	0	0	3	10	0.00	0	0.42	28	0.00	40	0.00	100	9.73	34	2.16	100
510	8,10,15,19,30,33,45,47,48,52,65,67,79	0	0	6	40	0.00	0	4.39	9	0.00	40	2.34	56	8.87	16	1.13	5
179	3,14,20,22,28,43,44,59,66,67,70,78,81	0	0	4	20	0.00	0	1.84	21	0.00	40	1.40	74	9.48	29	1.07	0
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	0	0	6	40	0.00	0	2.44	18	0.00	40	0.44	92	11.97	79	1.13	5
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	0	0	5	30	0.00	0	0.41	28	0.00	40	0.44	92	9.83	36	2.16	100
527	7,8,13,28,42,43,57,58,66,67,70,79	0	0	5	30	0.00	0	2.03	20	0.00	40	0.00	100	12.42	89	1.13	5
204	3,7,8,13,28,43,44,59,66,67,70,81	0	0	5	30	0.00	0	1.42	23	0.00	40	1.40	74	10.04	40	1.07	0
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	0	0	9	70	0.00	0	5.19	5	0.43	0	2.43	54	9.28	24	1.13	5
79	2,8,14,20,29,42,43,57,58,66,67,70,78	0	0	4	20	0.00	0	0.42	28	0.00	40	0.00	100	12.18	84	2.16	100
216	3,8,10,20,22,28,43,44,55,67,70,76,81	0	0	7	50	0.00	0	2.18	19	0.00	40	1.40	74	10.02	40	1.07	0
16	2,10,20,29,43,44,59,66,67,70	0	0	2	0	0.00	0	0.00	30	0.00	40	0.00	100	8.82	15	2.16	100
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	0	0	5	30	0.00	0	1.83	21	0.00	40	1.85	65	11.92	78	1.07	0
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	0	0	11	90	0.00	0	5.17	5	0.43	0	2.87	46	9.37	26	1.13	5
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	0	0	6	40	0.00	0	3.37	14	0.00	40	1.14	78	9.03	19	1.13	5
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	0	0	6	40	0.00	0	5.59	3	0.00	40	2.70	49	9.78	35	1.13	5
78	2,8,14,20,22,28,43,44,59,66,67,70,78	0	0	4	20	0.00	0	0.42	28	0.00	40	0.00	100	9.98	39	2.16	100
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	0	0	5	30	0.00	0	4.99	6	0.00	40	4.10	23	9.73	34	1.07	0
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	0	0	6	40	0.00	0	0.41	28	0.00	40	0.44	92	12.28	86	2.16	100
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	0	0	5	30	0.00	0	1.84	21	0.00	40	1.40	74	11.93	79	1.07	0
438	23,25,34,47,48,52,65,67,78,79,82	0	0	5	30	0.00	0	6.22	0	0.00	40	2.89	46	8.13	1	1.13	5
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	0	0	7	50	0.00	0	6.21	0	0.00	40	3.33	37	8.23	3	1.13	5
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	0	0	7	50	0.00	0	3.78	12	0.00	40	3.74	29	8.93	17	1.07	0
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	0	0	6	40	0.00	0	0.41	28	0.00	40	0.44	92	10.08	41	2.16	100
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	0	0	6	40	0.00	0	5.36	4	0.00	40	3.37	36	8.75	13	1.13	5
14	2,10,20,29,42,43,57,58,66,67,70	0	0	3	10	0.00	0	0.00	30	0.00	40	0.00	100	11.27	65	2.16	100
202	3,7,8,13,28,42,43,57,58,66,67,70,81	0	0	6	40	0.00	0	1.42	23	0.00	40	1.40	74	12.49	90	1.07	0
429	11,16,23,25,34,47,48,52,53,69,79,80,81	0	0	6	40	0.00	0	5.53	3	0.43	0	3.43	35	9.04	20	1.13	5
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	0	0	10	80	0.00	0	4.56	8	0.43	0	4.27	19	9.32	25	1.07	0

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
520	8,10,20,29,43,44,59,66,67,70,79	0	0	3	10	0.00	0	2.03	20	0.00	40	0.00	100	9.42	27	1.13	5
13	2,10,20,22,28,43,44,59,66,67,70	0	0	3	10	0.00	0	0.00	30	0.00	40	0.00	100	9.07	20	2.16	100
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	0	0	7	50	0.00	0	2.76	17	0.00	40	2.54	52	9.09	21	1.07	0
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	0	0	5	30	0.00	0	5.20	5	0.00	40	1.69	68	8.30	4	1.13	5
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	0	0	5	30	0.00	0	0.42	28	0.00	40	0.00	100	12.43	89	2.16	100
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	0	0	5	30	0.00	0	4.75	7	0.00	40	4.78	10	8.70	12	1.07	0
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	0	0	7	50	0.00	0	5.19	5	0.00	40	2.13	60	8.39	6	1.13	5
152	3,11,16,23,25,34,47,48,52,53,69,80	0	0	5	30	0.00	0	4.92	6	0.43	0	4.84	9	8.99	19	1.07	0
172	3,11,23,25,34,47,48,52,65,67,77,82,83	0	0	6	40	0.00	0	5.60	3	0.00	40	4.73	11	8.18	2	1.07	0
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	0	0	7	50	0.00	0	4.12	10	0.43	0	1.88	65	9.52	29	1.13	5
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	0	0	6	40	0.00	0	4.33	9	0.00	40	2.17	59	8.91	17	1.13	5
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	0	0	9	70	0.00	0	4.10	10	0.43	0	2.32	56	9.61	31	1.13	5
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	0	0	10	80	0.00	0	4.58	8	0.43	0	3.83	28	9.34	26	1.07	0
521	8,10,20,29,42,43,57,58,66,67,70,79	0	0	4	20	0.00	0	2.03	20	0.00	40	0.00	100	11.87	78	1.13	5
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	0	0	7	50	0.00	0	0.41	28	0.00	40	0.44	92	12.53	91	2.16	100
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	0	0	5	30	0.00	0	3.72	12	0.00	40	3.58	32	8.86	16	1.07	0
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	0	0	6	40	0.00	0	4.58	8	0.00	40	3.53	33	8.35	5	1.07	0
523	8,10,20,22,28,43,44,59,66,67,70,79	0	0	4	20	0.00	0	2.03	20	0.00	40	0.00	100	9.67	32	1.13	5
220	3,8,10,20,29,43,44,59,66,67,70,81	0	0	4	20	0.00	0	1.42	23	0.00	40	1.40	74	9.49	29	1.07	0
11	2,10,20,22,28,42,43,57,58,66,67,70	0	0	4	20	0.00	0	0.00	30	0.00	40	0.00	100	11.52	70	2.16	100
199	3,23,25,34,47,48,52,65,67,78,81,82	0	0	6	40	0.00	0	5.61	3	0.00	40	4.29	19	8.20	2	1.07	0
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	0	0	10	80	0.00	0	3.15	15	0.43	0	2.43	54	9.84	36	2.16	100
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	0	0	12	100	0.00	0	3.14	15	0.43	0	2.87	46	9.93	38	2.16	100
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	0	0	7	50	0.00	0	3.56	13	0.00	40	2.70	49	10.34	46	2.16	100
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	0	0	8	60	0.00	0	3.49	13	0.43	0	3.72	30	9.57	30	1.07	0
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	0	0	6	40	0.00	0	4.59	8	0.00	40	3.09	42	8.36	6	1.07	0
218	3,8,10,20,29,42,43,57,58,66,67,70,81	0	0	5	30	0.00	0	1.42	23	0.00	40	1.40	74	11.94	79	1.07	0
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	0	0	8	60	0.00	0	4.18	10	0.00	40	3.33	37	8.79	14	2.16	100
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	0	0	7	50	0.00	0	3.32	14	0.00	40	3.37	36	9.31	25	2.16	100
524	8,10,20,22,28,42,43,57,58,66,67,70,79	0	0	5	30	0.00	0	2.03	20	0.00	40	0.00	100	12.12	83	1.13	5
217	3,8,10,20,22,28,43,44,59,66,67,70,81	0	0	5	30	0.00	0	1.42	23	0.00	40	1.40	74	9.74	34	1.07	0
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	0	0	7	50	0.00	0	3.50	13	0.43	0	3.43	35	9.60	31	2.16	100
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	0	0	8	60	0.00	0	3.51	13	0.43	0	3.28	38	9.58	31	1.07	0
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	0	0	6	40	0.00	0	3.17	15	0.00	40	1.69	68	8.86	16	2.16	100
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	0	0	8	60	0.00	0	3.16	15	0.00	40	2.13	60	8.96	18	2.16	100
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	0	0	8	60	0.00	0	2.09	20	0.43	0	1.88	65	10.08	41	2.16	100
462	18,19,30,33,45,47,48,52,65,67,77,78,79	0	0	5	30	0.00	0	5.35	4	0.00	40	2.34	56	8.64	11	1.13	5
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	0	0	7	50	0.00	0	2.30	19	0.00	40	2.17	59	9.47	28	2.16	100
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	0	0	10	80	0.00	0	2.07	20	0.43	0	2.32	56	10.18	43	2.16	100
458	11,18,19,30,33,45,47,48,52,65,67,77,83	0	0	7	50	0.00	0	5.34	4	0.00	40	2.78	48	8.74	13	1.13	5
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	0	0	6	40	0.00	0	1.42	23	0.00	40	1.40	74	12.19	84	1.07	0
7	2,10,15,19,30,33,45,47,48,52,53,69,80	0	0	7	50	0.00	0	1.66	22	0.43	0	1.88	65	9.17	22	2.16	100
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	0	0	5	30	0.00	0	4.33	9	0.00	40	1.14	78	8.80	15	1.13	5
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	0	0	7	50	0.00	0	4.32	9	0.00	40	1.58	70	8.90	17	1.13	5
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	0	0	6	40	0.00	0	4.73	7	0.00	40	4.18	21	8.69	12	1.07	0
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	0	0	8	60	0.00	0	3.69	12	0.43	0	1.88	65	9.77	34	1.13	5
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	0	0	6	40	0.00	0	3.71	12	0.00	40	2.99	44	8.85	16	1.07	0
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	0	0	7	50	0.00	0	5.59	3	0.00	40	1.69	68	9.77	35	1.13	5
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	0	0	6	40	0.00	0	4.74	7	0.00	40	3.74	29	8.70	13	1.07	0
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	0	0	9	70	0.00	0	5.58	3	0.00	40	2.13	60	9.87	36	1.13	5
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	0	0	6	40	0.00	0	3.72	12	0.00	40	2.54	52	8.86	16	1.07	0
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	0	0	6	40	0.00	0	3.32	14	0.00	40	2.34	56	9.20	23	2.16	100

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	0	0	8	60	0.00	0	3.31	14	0.00	40	2.78	48	9.30	25	2.16	100
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	0	0	8	60	0.00	0	4.97	6	0.00	40	3.53	33	9.82	35	1.07	0
437	23,25,34,47,48,52,53,69,77,78,79,80,82	0	0	7	50	0.00	0	5.53	3	0.43	0	2.43	54	9.04	19	1.13	5
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	0	0	9	70	0.00	0	5.52	3	0.43	0	2.87	46	9.14	21	1.13	5
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	0	0	4	20	0.00	0	5.94	1	0.00	40	2.70	49	9.54	30	1.13	5
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	0	0	8	60	0.00	0	3.20	15	0.00	40	0.44	92	9.96	38	1.13	5
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	0	0	9	70	0.00	0	3.09	15	0.43	0	3.28	38	9.84	36	1.07	0
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	0	0	8	60	0.00	0	4.66	8	0.43	0	2.91	45	9.65	32	1.13	5
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	8	60	0.00	0	4.98	6	0.00	40	3.09	42	9.84	36	1.07	0
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	0	0	3	10	0.00	0	5.33	4	0.00	40	4.10	23	9.49	29	1.07	0
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	0	0	5	30	0.00	0	4.52	8	0.00	40	1.14	78	10.01	39	1.13	5
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	0	0	6	40	0.00	0	2.30	19	0.00	40	1.14	78	9.36	26	2.16	100
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	0	0	8	60	0.00	0	2.29	19	0.00	40	1.58	70	9.46	28	2.16	100
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	0	0	7	50	0.00	0	2.59	18	0.00	40	1.85	65	9.91	37	1.07	0
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	0	0	7	50	0.00	0	4.05	10	0.43	0	4.31	19	9.60	31	1.07	0
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	0	0	7	50	0.00	0	4.51	8	0.00	40	1.58	70	10.11	41	1.13	5
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	0	0	8	60	0.00	0	4.91	6	0.43	0	4.27	19	9.09	20	1.07	0
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	0	0	9	70	0.00	0	3.20	15	0.00	40	0.44	92	10.21	43	1.13	5
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	0	0	8	60	0.00	0	3.56	13	0.00	40	1.69	68	10.33	46	2.16	100
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	0	0	6	40	0.00	0	3.90	11	0.00	40	2.99	44	10.06	40	1.07	0
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	0	0	8	60	0.00	0	4.92	6	0.43	0	3.83	28	9.10	21	1.07	0
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	0	0	10	80	0.00	0	3.55	13	0.00	40	2.13	60	10.43	48	2.16	100
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	0	0	8	60	0.00	0	2.59	18	0.00	40	1.85	65	10.16	42	1.07	0
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	0	0	6	40	0.00	0	3.91	11	0.00	40	2.54	52	10.08	41	1.07	0
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	0	0	8	60	0.00	0	3.50	13	0.43	0	2.43	54	9.60	31	2.16	100
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	0	0	10	80	0.00	0	3.49	13	0.43	0	2.87	46	9.70	33	2.16	100
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	0	0	5	30	0.00	0	3.91	11	0.00	40	2.70	49	10.10	41	2.16	100
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	0	0	9	70	0.00	0	1.17	24	0.00	40	0.44	92	10.52	50	2.16	100
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	0	0	9	70	0.00	0	2.63	17	0.43	0	2.91	45	10.21	44	2.16	100
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	0	0	6	40	0.00	0	2.49	18	0.00	40	1.14	78	10.58	51	2.16	100
5	2,10,15,19,21,29,43,44,55,67,70,76	0	0	6	40	0.00	0	0.76	26	0.00	40	0.00	100	9.51	29	2.16	100
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	0	0	8	60	0.00	0	2.48	18	0.00	40	1.58	70	10.67	53	2.16	100
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	0	0	6	40	0.00	0	2.44	18	0.00	40	0.44	92	9.67	32	1.13	5
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	0	0	7	50	0.00	0	4.66	8	0.43	0	1.88	65	9.54	30	1.13	5
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	0	0	10	80	0.00	0	1.17	24	0.00	40	0.44	92	10.77	55	2.16	100
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	0	0	9	70	0.00	0	4.65	8	0.43	0	2.32	56	9.64	32	1.13	5
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	0	0	5	30	0.00	0	2.07	20	0.00	40	1.14	78	9.67	32	2.16	100
513	8,10,15,19,21,29,43,44,55,67,70,76,79	0	0	7	50	0.00	0	2.79	17	0.00	40	0.00	100	10.12	42	1.13	5
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	0	0	5	30	0.00	0	1.83	21	0.00	40	1.85	65	9.62	31	1.07	0
2	2,10,15,19,21,22,28,43,44,55,67,70,76	0	0	7	50	0.00	0	0.76	26	0.00	40	0.00	100	9.76	34	2.16	100
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	0	0	7	50	0.00	0	2.44	18	0.00	40	0.44	92	12.12	83	1.13	5
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	0	0	7	50	0.00	0	2.44	18	0.00	40	0.44	92	9.92	38	1.13	5
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	0	0	8	60	0.00	0	4.04	11	0.43	0	3.72	30	9.59	31	1.07	0
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	0	0	6	40	0.00	0	1.83	21	0.00	40	1.85	65	12.07	82	1.07	0
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	0	0	6	40	0.00	0	4.10	10	0.00	40	1.14	78	10.27	45	1.13	5
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	0	0	8	60	0.00	0	2.79	17	0.00	40	0.00	100	10.37	47	1.13	5
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	0	0	6	40	0.00	0	1.83	21	0.00	40	1.85	65	9.87	37	1.07	0
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	0	0	8	60	0.00	0	2.18	19	0.00	40	1.40	74	10.18	43	1.07	0
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	0	0	8	60	0.00	0	4.05	10	0.43	0	3.28	38	9.61	31	1.07	0
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	0	0	7	50	0.00	0	3.76	12	0.00	40	1.03	80	9.99	39	1.13	5
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	0	0	8	60	0.00	0	2.44	18	0.00	40	0.44	92	12.37	88	1.13	5
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	0	0	5	30	0.00	0	5.94	1	0.00	40	1.69	68	9.54	30	1.13	5

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	0	0	7	50	0.00	0	0.41	28	0.00	40	0.44	92	10.23	44	2.16	100
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	0	0	6	40	0.00	0	3.15	15	0.00	40	2.44	54	9.95	38	1.07	0
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	7	50	0.00	0	3.49	13	0.00	40	2.54	52	10.33	46	1.07	0
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	0	0	8	60	0.00	0	2.63	17	0.43	0	1.88	65	10.10	41	2.16	100
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	0	0	10	80	0.00	0	2.62	17	0.43	0	2.32	56	10.20	43	2.16	100
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	0	0	7	50	0.00	0	5.92	1	0.00	40	2.13	60	9.63	32	1.13	5
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	0	0	7	50	0.00	0	1.83	21	0.00	40	1.85	65	12.32	87	1.07	0
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	0	0	9	70	0.00	0	2.18	19	0.00	40	1.40	74	10.43	48	1.07	0
6	2,10,15,19,21,29,43,44,59,66,67,70	0	0	4	20	0.00	0	0.00	30	0.00	40	0.00	100	9.23	23	2.16	100
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	0	0	6	40	0.00	0	5.07	6	0.00	40	2.17	59	10.15	42	1.13	5
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	0	0	8	60	0.00	0	0.41	28	0.00	40	0.44	92	12.68	94	2.16	100
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	0	0	8	60	0.00	0	3.76	12	0.00	40	1.03	80	10.25	44	1.13	5
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	0	0	5	30	0.00	0	4.46	9	0.00	40	3.58	32	10.10	41	1.07	0
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	0	0	6	40	0.00	0	5.31	4	0.00	40	3.53	33	9.58	31	1.07	0
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	0	0	8	60	0.00	0	0.41	28	0.00	40	0.44	92	10.49	49	2.16	100
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	0	0	7	50	0.00	0	3.15	15	0.00	40	2.44	54	10.20	43	1.07	0
4	2,10,15,19,21,29,42,43,57,58,66,67,70	0	0	5	30	0.00	0	0.00	30	0.00	40	0.00	100	11.68	73	2.16	100
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	0	0	6	40	0.00	0	5.33	4	0.00	40	3.09	42	9.60	31	1.07	0
514	8,10,15,19,21,29,43,44,59,66,67,70,79	0	0	5	30	0.00	0	2.03	20	0.00	40	0.00	100	9.83	36	1.13	5
3	2,10,15,19,21,22,28,43,44,59,66,67,70	0	0	5	30	0.00	0	0.00	30	0.00	40	0.00	100	9.48	28	2.16	100
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	0	0	8	60	0.00	0	1.73	22	0.00	40	1.03	80	10.56	51	2.16	100
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	0	0	9	70	0.00	0	0.41	28	0.00	40	0.44	92	12.93	99	2.16	100
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	0	0	6	40	0.00	0	2.03	20	0.00	40	0.00	100	12.28	86	1.13	5
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	0	0	6	40	0.00	0	3.91	11	0.00	40	1.69	68	10.10	41	2.16	100
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	0	0	6	40	0.00	0	2.03	20	0.00	40	0.00	100	10.08	41	1.13	5
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	0	0	6	40	0.00	0	1.42	23	0.00	40	1.40	74	9.89	37	1.07	0
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	0	0	6	40	0.00	0	0.00	30	0.00	40	0.00	100	11.93	79	2.16	100
482	18,19,21,29,43,44,55,67,70,76,77,78,79	0	0	6	40	0.00	0	3.76	12	0.00	40	0.00	100	9.89	37	1.13	5
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	0	0	8	60	0.00	0	3.89	11	0.00	40	2.13	60	10.19	43	2.16	100
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	0	0	7	50	0.00	0	3.04	15	0.00	40	2.17	59	10.71	54	2.16	100
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	0	0	5	30	0.00	0	3.00	16	0.00	40	1.03	80	9.71	33	1.13	5
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	0	0	8	60	0.00	0	3.74	12	0.00	40	0.44	92	9.98	39	1.13	5
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	0	0	9	70	0.00	0	1.73	22	0.00	40	1.03	80	10.81	56	2.16	100
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	0	0	4	20	0.00	0	2.39	18	0.00	40	2.44	54	9.66	32	1.07	0
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	0	0	7	50	0.00	0	1.42	23	0.00	40	1.40	74	12.34	87	1.07	0
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	0	0	5	30	0.00	0	5.07	6	0.00	40	1.14	78	10.04	40	1.13	5
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	0	0	7	50	0.00	0	2.03	20	0.00	40	0.00	100	12.53	91	1.13	5
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	0	0	7	50	0.00	0	1.42	23	0.00	40	1.40	74	10.14	42	1.07	0
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	0	0	7	50	0.00	0	3.13	15	0.00	40	1.85	65	9.93	38	1.07	0
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	0	0	6	40	0.00	0	3.00	16	0.00	40	1.03	80	12.16	83	1.13	5
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	0	0	7	50	0.00	0	3.76	12	0.00	40	0.00	100	10.14	42	1.13	5
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	0	0	7	50	0.00	0	5.05	6	0.00	40	1.58	70	10.14	42	1.13	5
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	0	0	5	30	0.00	0	2.39	18	0.00	40	2.44	54	12.11	82	1.07	0

		Technical															
Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	0	0	6	40	0.00	0	3.00	16	0.00	40	1.03	80	9.96	38	1.13	5
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	0	0	7	50	0.00	0	3.15	15	0.00	40	1.40	74	9.95	38	1.07	0
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	0	0	5	30	0.00	0	2.39	18	0.00	40	2.44	54	9.91	37	1.07	0
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	0	0	6	40	0.00	0	4.44	9	0.00	40	2.99	44	10.09	41	1.07	0
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	0	0	8	60	0.00	0	1.42	23	0.00	40	1.40	74	12.59	92	1.07	0
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	0	0	8	60	0.00	0	3.13	15	0.00	40	1.85	65	10.19	43	1.07	0
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	0	0	8	60	0.00	0	3.13	15	0.00	40	1.85	65	10.19	43	1.07	0
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	0	0	6	40	0.00	0	4.46	9	0.00	40	2.54	52	10.10	41	1.07	0
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	0	0	7	50	0.00	0	1.73	22	0.00	40	0.00	100	10.45	48	2.16	100
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	0	0	7	50	0.00	0	3.00	16	0.00	40	1.03	80	12.41	89	1.13	5
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	0	0	8	60	0.00	0	3.15	15	0.00	40	1.40	74	10.20	43	1.07	0
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	0	0	6	40	0.00	0	0.97	25	0.00	40	1.03	80	10.27	45	2.16	100
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	0	0	6	40	0.00	0	2.39	18	0.00	40	2.44	54	12.36	87	1.07	0
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	0	0	9	70	0.00	0	1.71	22	0.00	40	0.44	92	10.54	50	2.16	100
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	0	0	6	40	0.00	0	3.04	15	0.00	40	1.14	78	10.60	51	2.16	100
483	18,19,21,29,43,44,59,66,67,70,77,78,79	0	0	4	20	0.00	0	3.00	16	0.00	40	0.00	100	9.60	31	1.13	5
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	0	0	7	50	0.00	0	0.97	25	0.00	40	1.03	80	12.72	95	2.16	100
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	0	0	8	60	0.00	0	1.73	22	0.00	40	0.00	100	10.70	53	2.16	100
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	0	0	8	60	0.00	0	3.02	15	0.00	40	1.58	70	10.70	53	2.16	100
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	0	0	6	40	0.00	0	2.98	16	0.00	40	0.44	92	9.70	33	1.13	5
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	0	0	7	50	0.00	0	0.97	25	0.00	40	1.03	80	10.52	50	2.16	100
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	0	0	10	80	0.00	0	1.71	22	0.00	40	0.44	92	10.80	55	2.16	100
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	0	0	5	30	0.00	0	3.00	16	0.00	40	0.00	100	12.05	81	1.13	5
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	0	0	5	30	0.00	0	2.37	19	0.00	40	1.85	65	9.65	32	1.07	0
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	0	0	5	30	0.00	0	3.00	16	0.00	40	0.00	100	9.85	36	1.13	5
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	0	0	7	50	0.00	0	2.98	16	0.00	40	0.44	92	12.15	83	1.13	5
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	0	0	5	30	0.00	0	2.39	18	0.00	40	1.40	74	9.66	32	1.07	0
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	0	0	7	50	0.00	0	2.98	16	0.00	40	0.44	92	9.95	38	1.13	5
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	0	0	8	60	0.00	0	0.97	25	0.00	40	1.03	80	12.97	100	2.16	100
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	0	0	6	40	0.00	0	2.37	19	0.00	40	1.85	65	12.10	82	1.07	0
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	0	0	6	40	0.00	0	2.37	19	0.00	40	1.85	65	9.90	37	1.07	0
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	0	0	6	40	0.00	0	3.00	16	0.00	40	0.00	100	12.30	86	1.13	5
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	0	0	6	40	0.00	0	2.39	18	0.00	40	1.40	74	12.11	82	1.07	0
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	0	0	5	30	0.00	0	0.96	25	0.00	40	0.00	100	10.16	42	2.16	100
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	0	0	6	40	0.00	0	2.39	18	0.00	40	1.40	74	9.91	37	1.07	0
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	0	0	8	60	0.00	0	2.98	16	0.00	40	0.44	92	12.40	88	1.13	5
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	0	0	7	50	0.00	0	0.95	25	0.00	40	0.44	92	10.26	44	2.16	100
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	0	0	6	40	0.00	0	0.96	25	0.00	40	0.00	100	12.61	93	2.16	100
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	0	0	7	50	0.00	0	2.37	19	0.00	40	1.85	65	12.35	87	1.07	0
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	0	0	6	40	0.00	0	0.96	25	0.00	40	0.00	100	10.41	48	2.16	100
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	0	0	8	60	0.00	0	0.95	25	0.00	40	0.44	92	12.71	95	2.16	100
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	0	0	7	50	0.00	0	2.39	18	0.00	40	1.40	74	12.36	88	1.07	0
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	0	0	8	60	0.00	0	0.95	25	0.00	40	0.44	92	10.51	50	2.16	100
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	0	0	7	50	0.00	0	0.96	25	0.00	40	0.00	100	12.86	98	2.16	100
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	0	0	9	70	0.00	0	0.95	25	0.00	40	0.44	92	12.96	100	2.16	100
	MIN	0	0	2	0	0	0	0.00	0	0.00	0	0.00	0	8.09	0	1.07	0
	MAX	0	0	12	100	0	0	6.23	30	0.43	40	5.30	100	12.97	100	2.16	100
	RANGE	0	0	10	100	0	0	6.23	30	0.43	40	5.30	100	4.88	100	1.09	100

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
442	11,16,23,25,31,33,45,47,48,52,65,67,79,81	25.1	69.0	20.5	24.2	27.5	1
149	3,11,16,23,25,31,33,45,47,48,52,65,67	23.8	69.0	26.7	16.4	28.0	2
443	11,16,23,25,31,33,45,47,48,52,67,70,76,79,81,84	25.5	54.0	22.1	31.6	28.2	3
150	3,11,16,23,25,31,33,45,47,48,52,67,70,76,84	24.1	54.0	27.6	23.8	28.4	4
48	2,8,11,16,23,25,31,33,45,47,48,52,65,67	31.8	30.0	25.0	34.6	29.4	5
49	2,8,11,16,23,25,31,33,45,47,48,52,67,70,76,81,84	32.1	15.0	26.5	42.0	30.1	6
500	14,20,29,43,44,55,67,70,76,78,79	37.9	39.0	19.2	46.1	32.2	7
450	23,25,31,33,45,47,48,52,65,67,77,78,82	28.7	69.0	26.6	30.4	32.2	8
446	11,23,25,31,33,45,47,48,52,65,67,77,79,81,82,83	29.5	69.0	25.7	31.7	32.4	9
497	11,14,20,29,43,44,55,67,70,76,79,81,83	38.7	39.0	19.0	47.3	32.5	10
441	11,16,23,25,31,33,45,47,52,53,69,79,80,81	41.2	70.0	21.6	23.0	32.6	11
18	2,7,13,28,43,44,55,67,70,76	45.7	0.0	19.9	55.9	32.8	12
451	23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	29.1	54.0	28.1	37.8	33.0	13
430	11,16,23,25,34,47,48,52,65,67,79,81	31.8	69.0	31.4	20.0	33.0	14
136	3,11,14,20,29,43,44,55,67,70,76,83	37.3	39.0	25.2	39.5	33.0	15
447	11,23,25,31,33,45,47,48,52,67,70,76,77,79,81,82,83,84	29.9	54.0	27.2	39.0	33.1	16
506	14,20,22,28,43,44,55,67,70,76,78,79	37.9	39.0	20.3	48.4	33.1	17
151	3,11,16,23,25,31,33,45,47,52,53,69,80	39.8	70.0	27.8	15.2	33.1	18
168	3,11,23,25,31,33,45,47,48,52,65,67,77,82,83	28.1	69.0	32.5	23.9	33.1	19
181	3,14,20,29,43,44,55,67,70,76,78,81	36.5	39.0	25.4	41.6	33.4	20
503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	38.7	39.0	20.1	49.6	33.4	21
154	3,11,16,23,25,34,47,48,52,65,67	30.4	69.0	37.6	12.2	33.5	22
470	14,15,19,30,33,45,47,48,52,65,67,78,79	26.4	54.0	34.5	32.1	33.6	23
169	3,11,23,25,31,33,45,47,48,52,67,70,76,77,82,83,84	28.5	54.0	33.5	31.2	33.6	24
525	7,8,13,28,43,44,55,67,70,76,79	40.4	39.0	18.0	52.1	33.7	25
466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	27.2	54.0	33.6	33.3	33.7	26
195	3,23,25,31,33,45,47,48,52,65,67,77,78,81,82	27.3	69.0	33.4	26.0	33.7	27
133	3,11,14,20,22,28,43,44,55,67,70,76,83	37.3	39.0	26.3	41.8	33.9	28
155	3,11,16,23,25,34,47,48,52,67,70,76,84	30.8	54.0	38.5	19.6	34.0	29
431	11,16,23,25,34,47,48,52,67,70,76,84	30.8	54.0	38.5	19.6	34.0	29
80	2,8,14,20,29,43,44,55,67,70,76,78	44.5	0.0	23.7	56.5	34.1	31
196	3,23,25,31,33,45,47,48,52,67,70,76,77,78,81,82,84	27.7	54.0	34.4	33.3	34.1	32
20	2,8,,23,25,31,33,45,47,48,52,65,67,77,78,82	35.4	30.0	31.1	40.8	34.2	33
178	3,14,20,22,28,43,44,55,67,70,76,78,81	36.5	39.0	26.5	43.9	34.2	34
471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	26.8	39.0	36.1	39.4	34.3	35
67	2,8,11,23,25,31,33,45,47,48,52,65,67,77,81,82,83	36.1	30.0	30.2	42.1	34.3	36
467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	27.6	39.0	35.2	40.7	34.4	37
130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	25.8	54.0	40.5	25.5	34.4	38
35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	45.3	0.0	23.4	57.7	34.5	39
50	2,8,11,16,23,25,31,33,45,47,52,53,69,80,81	47.8	31.0	26.0	33.4	34.5	40
203	3,7,8,13,28,43,44,55,67,70,76,81	39.0	39.0	23.6	47.6	34.6	41
15	2,10,20,29,43,44,55,67,70,76	52.1	0.0	21.6	52.7	34.8	42
501	14,20,29,43,44,59,66,67,70,78,79	42.9	39.0	23.6	43.1	34.8	43
131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	26.2	39.0	41.4	32.9	34.9	44
94	2,8,23,25,31,33,45,47,48,52,67,70,76,77,78,82,84	35.7	15.0	32.6	48.2	34.9	45
53	2,8,11,16,23,25,34,47,48,52,65,67,81	38.4	30.0	35.8	30.4	35.0	46
175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	25.0	54.0	41.4	27.6	35.0	47
68	2,8,11,23,25,31,33,45,47,48,52,67,70,76,77,81,82,83,84	36.5	15.0	31.7	49.4	35.0	48
77	2,8,14,20,22,28,43,44,55,67,70,76,78	44.5	0.0	24.8	58.8	35.0	49
498	11,14,20,29,43,44,59,66,67,70,79,81,83	43.6	39.0	23.3	44.4	35.2	50
32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	45.3	0.0	24.5	60.0	35.4	51
502	14,20,29,42,43,57,58,66,67,70,78,79	30.1	39.0	30.1	52.2	35.4	52

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	25.4	39.0	42.3	35.0	35.4	53
19	2,7,13,28,43,44,59,66,67,70	50.7	0.0	24.2	52.9	35.5	54
74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	33.0	15.0	39.0	42.5	35.5	55
519	8,10,20,29,43,44,55,67,70,76,79	46.8	39.0	19.7	48.9	35.6	56
29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	33.8	15.0	38.1	43.7	35.6	57
54	2,8,11,16,23,25,34,47,48,52,67,70,76,81,84	38.8	15.0	37.4	37.8	35.7	58
137	3,11,14,20,29,43,44,59,66,67,70,83	42.2	39.0	29.5	36.5	35.7	59
12	2,10,20,22,28,43,44,55,67,70,76	52.1	0.0	22.7	55.0	35.7	60
507	14,20,22,28,43,44,59,66,67,70,78,79	42.9	39.0	24.6	45.4	35.7	61
499	11,14,20,29,42,43,57,58,66,67,70,79,81,83	30.9	39.0	29.9	53.4	35.8	62
9	2,10,15,19,30,33,45,47,48,52,65,67	40.7	15.0	36.3	38.7	36.0	63
182	3,14,20,29,43,44,59,66,67,70,78,81	41.5	39.0	29.8	38.7	36.0	64
504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	43.6	39.0	24.4	46.6	36.1	65
75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	33.4	0.0	40.5	49.8	36.2	66
526	7,8,13,28,43,44,59,66,67,70,79	45.4	39.0	22.4	49.1	36.3	67
135	3,11,14,20,29,42,43,57,58,66,67,70,83	29.5	39.0	36.1	45.6	36.3	68
30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	34.2	0.0	39.6	51.1	36.3	69
17	2,7,13,28,42,43,57,58,66,67,70	38.0	0.0	31.4	62.0	36.3	70
522	8,10,20,22,28,43,44,55,67,70,76,79	46.8	39.0	20.8	51.2	36.5	71
219	3,8,10,20,29,43,44,55,67,70,76,81	45.4	39.0	25.3	44.4	36.5	72
134	3,11,14,20,22,28,43,44,59,66,67,70,83	42.2	39.0	30.6	38.8	36.6	73
508	14,20,22,28,42,43,57,58,66,67,70,78,79	30.1	39.0	31.9	54.4	36.6	74
180	3,14,20,29,42,43,57,58,66,67,70,78,81	28.8	39.0	36.4	47.7	36.6	75
10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	41.0	0.0	37.9	46.0	36.7	76
81	2,8,14,20,29,43,44,59,66,67,70,78	49.5	0.0	28.0	53.5	36.8	77
510	8,10,15,19,30,33,45,47,48,52,65,67,79	35.4	54.0	34.5	34.8	36.8	78
179	3,14,20,22,28,43,44,59,66,67,70,78,81	41.5	39.0	30.9	40.9	36.9	79
505	11,14,20,22,28,42,43,57,58,66,67,70,79,81,83	30.9	39.0	31.6	55.7	36.9	80
36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	50.3	0.0	27.7	54.8	37.1	81
527	7,8,13,28,42,43,57,58,66,67,70,79	32.6	39.0	29.6	58.1	37.2	82
204	3,7,8,13,28,43,44,59,66,67,70,81	44.0	39.0	27.9	44.6	37.2	83
449	23,25,31,33,45,47,48,52,53,69,77,78,79,80,82	44.8	70.0	27.7	29.2	37.3	84
79	2,8,14,20,29,42,43,57,58,66,67,70,78	36.8	0.0	34.6	62.6	37.4	85
216	3,8,10,20,22,28,43,44,55,67,70,76,81	45.4	39.0	26.4	46.7	37.4	86
16	2,10,20,29,43,44,59,66,67,70	57.1	0.0	25.9	49.7	37.4	87
132	3,11,14,20,22,28,42,43,57,58,66,67,70,83	29.5	39.0	37.8	47.8	37.4	88
445	11,23,25,3,31,33,45,47,48,52,53,69,77,79,80,81,82,83	45.5	70.0	26.8	30.5	37.5	89
511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	35.7	39.0	36.0	42.2	37.5	90
444	11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,79,81,84	30.5	54.0	40.1	34.5	37.5	91
78	2,8,14,20,22,28,43,44,59,66,67,70,78	49.5	0.0	29.1	55.8	37.6	92
148	3,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,84	29.1	54.0	45.7	26.7	37.7	93
34	2,8,11,14,20,29,42,43,57,58,66,67,70,81,83	37.5	0.0	34.3	63.8	37.7	94
177	3,14,20,22,28,42,43,57,58,66,67,70,78,81	28.8	39.0	38.1	50.0	37.7	95
438	23,25,34,47,48,52,65,67,78,79,82	35.4	69.0	37.5	26.3	37.8	96
434	11,23,25,34,47,48,52,65,67,77,79,81,82,83	36.2	69.0	36.6	27.5	37.9	97
213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	34.0	54.0	40.7	30.4	37.9	98
33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	50.2	0.0	28.8	57.0	38.0	99
454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	26.3	54.0	47.6	28.4	38.0	100
14	2,10,20,29,42,43,57,58,66,67,70	44.4	0.0	32.5	58.8	38.1	101
202	3,7,8,13,28,42,43,57,58,66,67,70,81	31.3	39.0	35.2	53.7	38.1	102
429	11,16,23,25,34,47,48,52,53,69,79,80,81	47.8	70.0	32.5	18.8	38.1	103
166	3,11,23,25,3,31,33,45,47,48,52,53,69,77,80,82,83	44.1	70.0	33.6	22.6	38.2	104

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
520	8,10,20,29,43,44,59,66,67,70,79	51.8	39.0	24.0	45.9	38.2	105
13	2,10,20,22,28,43,44,59,66,67,70	57.1	0.0	27.0	52.0	38.3	106
214	3,8,10,15,19,30,33,45,47,48,52,67,70,76,81,84	34.4	39.0	41.6	37.8	38.4	107
439	23,25,34,47,48,52,67,70,76,77,78,79,82,84	35.8	54.0	39.0	33.7	38.5	108
76	2,8,14,20,22,28,42,43,57,58,66,67,70,78	36.8	0.0	36.3	64.8	38.5	109
146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	24.9	54.0	53.9	20.6	38.5	110
435	23,25,34,47,48,52,67,70,76,77,79,81,82,83,84	36.5	54.0	38.1	34.9	38.6	111
152	3,11,16,23,25,34,47,48,52,53,69,80	46.4	70.0	38.7	11.0	38.6	112
172	3,11,23,25,34,47,48,52,65,67,77,82,83	34.8	69.0	43.4	19.7	38.6	113
469	14,15,19,30,33,45,47,48,52,53,69,78,79,80	42.4	55.0	35.6	30.8	38.7	114
455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	26.7	39.0	49.2	35.8	38.7	115
465	11,14,15,19,30,33,45,47,48,52,53,69,79,80,81,83	43.2	55.0	34.7	32.1	38.8	116
193	3,23,25,31,33,45,47,48,52,53,69,77,78,80,81,82	43.4	70.0	34.5	24.8	38.8	117
521	8,10,20,29,42,43,57,58,66,67,70,79	39.1	39.0	30.6	54.9	38.9	118
31	2,8,11,14,20,22,28,42,43,57,58,66,67,70,81,83	37.5	0.0	36.0	66.1	38.9	119
147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	25.3	39.0	54.8	28.0	39.0	120
201	3,23,25,34,47,48,52,67,70,76,77,82,83,84	35.2	54.0	44.3	27.1	39.1	121
523	8,10,20,22,28,43,44,59,66,67,70,79	51.8	39.0	25.1	48.2	39.1	122
220	3,8,10,20,29,43,44,59,66,67,70,81	50.4	39.0	29.6	41.5	39.2	123
11	2,10,20,22,28,42,43,57,58,66,67,70	44.4	0.0	34.2	61.0	39.2	124
199	3,23,25,34,47,48,52,65,67,78,81,82	34.0	69.0	44.3	21.8	39.2	125
92	2,8,23,25,31,33,45,47,48,52,53,69,77,78,80,82	51.4	31.0	32.1	39.6	39.3	126
65	2,8,11,23,25,3,31,33,45,47,48,52,53,69,77,80,81,82,83	52.1	31.0	31.2	40.9	39.4	127
47	2,8,11,16,23,25,31,33,45,47,48,52,55,59,66,67,70,81,84	37.1	15.0	44.5	44.9	39.4	128
128	3,11,14,15,19,30,33,45,47,48,52,53,69,80,83	41.8	55.0	41.6	24.3	39.5	129
200	3,23,25,34,47,48,52,67,70,76,77,78,81,82,84	34.4	54.0	45.2	29.2	39.7	130
218	3,8,10,20,29,42,43,57,58,66,67,70,81	37.7	39.0	36.2	50.5	39.8	131
71	2,8,11,23,25,34,47,48,52,65,67,77,81,82,83	42.8	30.0	41.0	37.9	39.8	132
45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	32.9	15.0	52.1	38.8	40.0	133
524	8,10,20,22,28,42,43,57,58,66,67,70,79	39.1	39.0	32.3	57.2	40.0	134
217	3,8,10,20,22,28,43,44,59,66,67,70,81	50.4	39.0	30.7	43.7	40.0	135
51	2,8,11,16,23,25,34,47,48,52,53,69,80,81	54.5	31.0	36.9	29.2	40.1	136
173	3,14,15,19,30,33,45,47,48,52,53,69,78,80,81	41.1	55.0	42.5	26.4	40.1	137
97	2,8,23,25,34,47,48,52,67,70,76,77,78,82,84	42.4	15.0	43.5	44.1	40.4	138
98	2,8,23,25,34,47,48,52,67,70,76,77,81,82,83,84	43.2	15.0	42.6	45.3	40.5	139
72	2,8,14,15,19,30,33,45,47,48,52,53,69,78,80	49.1	16.0	40.1	41.2	40.6	140
462	18,19,30,33,45,47,48,52,65,67,77,78,79	29.9	54.0	50.0	31.5	40.7	141
46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	33.3	0.0	53.6	46.2	40.7	142
27	2,8,11,14,15,19,30,33,45,47,48,52,53,69,80,81,83	49.8	16.0	39.2	42.5	40.7	143
458	11,18,19,30,33,45,47,48,52,65,67,77,83	30.7	54.0	49.1	32.7	40.8	144
215	3,8,10,20,22,28,42,43,57,58,66,67,70,81	37.7	39.0	37.9	52.7	40.9	145
7	2,10,15,19,30,33,45,47,48,52,53,69,80	56.7	16.0	37.4	37.5	41.1	146
463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	30.3	39.0	51.5	38.9	41.4	147
459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	31.0	39.0	50.6	40.1	41.5	148
164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	29.3	54.0	55.9	24.9	41.5	149
509	8,10,15,19,30,33,45,47,48,52,53,69,79,80	51.4	55.0	35.6	33.6	41.9	150
165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	29.7	39.0	56.8	32.3	42.0	151
452	23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	34.1	54.0	45.6	40.7	42.0	152
191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	28.5	54.0	56.8	27.0	42.1	153
448	11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,79,81,82,83,84	34.8	54.0	45.3	42.0	42.4	154
192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	28.9	39.0	57.7	34.4	42.5	155
90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	36.5	15.0	54.4	41.9	42.6	156

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	37.3	15.0	53.5	43.1	42.7	157
167	3,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,82,83,84	33.5	54.0	51.5	34.2	42.9	158
437	23,25,34,47,48,52,53,69,77,78,79,80,82	51.4	70.0	38.6	25.1	42.9	159
433	11,23,25,34,47,48,52,53,69,77,78,79,81,82,83	52.2	70.0	37.7	26.3	43.0	160
432	11,16,23,25,34,47,48,52,55,59,66,67,70,79,81,84	37.2	54.0	51.0	30.3	43.0	161
473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	39.5	39.0	42.4	51.6	43.0	162
211	3,8,10,15,19,30,33,45,47,48,52,53,69,80,81	50.0	55.0	41.8	29.2	43.0	163
453	11,16,18,19,30,33,45,47,48,52,53,69,79,80,81,82	42.3	55.0	48.7	27.2	43.1	164
194	3,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,81,82,84	32.7	54.0	51.8	36.3	43.2	165
153	3,11,16,23,25,34,47,48,52,55,59,66,67,70,84	35.8	54.0	56.6	22.5	43.3	166
472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	31.8	39.0	53.5	42.4	43.3	167
91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	36.9	0.0	56.0	49.3	43.3	168
64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	37.7	0.0	55.1	50.5	43.4	169
126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	38.1	39.0	48.6	43.8	43.5	170
144	3,11,16,18,19,30,33,45,47,48,52,53,69,80,82	40.9	55.0	54.9	19.4	43.6	171
468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	32.5	39.0	53.2	43.6	43.7	172
170	3,11,23,25,34,47,48,52,53,69,77,8,82,83	50.8	70.0	44.5	18.5	43.7	173
485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	39.5	39.0	43.5	53.8	43.9	174
93	2,8,23,25,31,33,45,47,48,52,55,59,66,67,70,77,78,82,84	40.7	15.0	50.0	51.1	43.9	175
129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	31.2	39.0	59.4	35.8	44.2	176
197	3,23,25,34,47,48,52,53,69,77,78,80,81,82	50.0	70.0	45.4	20.6	44.3	177
66	2,8,11,23,25,31,33,45,47,48,52,55,59,66,67,70,77,81,82,83,84	41.5	15.0	49.7	52.4	44.3	178
123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	38.1	39.0	49.7	46.0	44.4	179
174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	30.4	39.0	59.7	37.9	44.5	180
95	2,8,23,25,34,47,48,52,53,69,77,78,80,82	58.0	31.0	43.0	35.5	44.8	181
69	2,8,11,23,25,34,47,48,52,53,69,77,81,82,83	58.8	31.0	42.1	36.7	44.9	182
52	2,8,11,16,23,25,34,47,48,52,55,59,66,67,70,81,84	43.8	15.0	55.4	40.7	45.0	183
25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	46.1	0.0	46.8	62.0	45.0	184
43	2,8,11,16,18,19,30,33,45,47,48,52,53,69,80,81,82	49.0	16.0	53.2	37.6	45.1	185
73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	38.4	0.0	57.9	52.8	45.2	186
5	2,10,15,19,21,29,43,44,55,67,70,76	53.0	0.0	45.1	57.0	45.3	187
28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,84	39.2	0.0	57.7	54.0	45.6	188
474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	44.4	39.0	46.7	48.6	45.6	189
461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	45.9	55.0	51.1	30.3	45.8	190
22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	46.1	0.0	47.9	64.2	45.8	191
457	11,18,19,30,33,45,47,48,52,53,69,77,79,80,81,83	46.7	55.0	50.2	31.5	45.9	192
8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	46.0	0.0	55.9	49.0	46.0	193
513	8,10,15,19,21,29,43,44,55,67,70,76,79	47.7	39.0	43.2	53.1	46.1	194
127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	43.1	39.0	52.9	40.8	46.1	195
2	2,10,15,19,21,22,28,43,44,55,67,70,76	53.0	0.0	46.2	59.2	46.2	196
475	11,14,15,19,21,29,42,43,57,58,66,67,70,79,81,83	31.7	39.0	53.3	57.6	46.3	197
486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	44.4	39.0	47.8	50.9	46.5	198
162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	45.3	55.0	57.0	23.7	46.6	199
125	3,11,14,15,19,21,29,42,43,57,58,66,67,70,83	30.3	39.0	59.5	49.8	46.8	200
512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	40.7	39.0	54.1	45.1	46.8	201
516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	47.7	39.0	44.3	55.4	47.0	202
124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	43.1	39.0	54.0	43.1	47.0	203
209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	46.3	39.0	48.8	48.7	47.0	204
189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	44.5	55.0	57.9	25.8	47.2	205
476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	38.6	39.0	56.4	46.7	47.4	206
487	11,14,15,19,21,22,28,42,43,57,58,66,67,70,79,81,83	31.7	39.0	55.0	59.9	47.4	207
440	23,25,34,47,48,52,55,59,66,67,70,77,78,79,82,84	40.8	54.0	56.4	36.6	47.5	208

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	51.1	0.0	51.1	59.0	47.6	209
142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	37.2	39.0	62.0	38.9	47.6	210
212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	39.3	39.0	59.6	40.7	47.7	211
88	2,8,18,19,30,33,45,47,48,52,53,69,77,78,80	52.5	16.0	55.5	40.7	47.7	212
61	2,8,11,18,19,30,33,45,47,48,52,53,69,77,80,81,83	53.3	16.0	54.6	41.9	47.8	213
436	11,23,25,34,47,48,52,55,59,66,67,70,77,79,81,82,83,84	41.5	54.0	56.2	37.8	47.9	214
122	3,11,14,15,19,21,22,28,42,43,57,58,66,67,70,83	30.3	39.0	61.2	52.1	47.9	215
206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	46.3	39.0	49.9	50.9	47.9	216
6	2,10,15,19,21,29,43,44,59,66,67,70	57.9	0.0	49.4	54.0	47.9	217
456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	31.7	39.0	67.2	38.7	48.0	218
24	2,8,11,14,15,19,21,29,42,43,57,58,66,67,70,81,83	38.4	0.0	57.7	68.0	48.2	219
488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	38.6	39.0	57.5	49.0	48.3	220
145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	30.3	39.0	72.8	30.9	48.3	221
171	3,11,23,25,34,47,48,52,55,59,66,67,70,77,82,83,84	40.1	54.0	62.4	30.0	48.4	222
23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	51.1	0.0	52.2	61.3	48.5	223
139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	37.2	39.0	63.1	41.2	48.5	224
4	2,10,15,19,21,29,42,43,57,58,66,67,70	45.2	0.0	56.0	63.0	48.6	225
198	3,23,25,34,47,48,52,55,59,66,67,70,77,78,81,82,84	39.4	54.0	62.6	32.1	48.7	226
514	8,10,15,19,21,29,43,44,59,66,67,70,79	52.6	39.0	47.5	50.2	48.7	227
3	2,10,15,19,21,22,28,43,44,59,66,67,70	57.9	0.0	50.5	56.3	48.8	228
41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	45.2	0.0	60.8	57.1	49.3	229
21	2,8,11,14,15,19,21,22,28,42,43,57,58,66,67,70,81,83	38.4	0.0	59.5	70.3	49.3	230
515	8,10,15,19,21,29,42,43,57,58,66,67,70,79	39.9	39.0	54.1	59.2	49.4	231
96	2,8,23,25,34,47,48,52,55,59,66,67,70,77,78,82,84	47.4	15.0	60.9	47.0	49.5	232
517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	52.6	39.0	48.6	52.4	49.6	233
210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	51.2	39.0	53.1	45.7	49.7	234
1	2,10,15,19,21,22,28,42,43,57,58,66,67,70	45.2	0.0	57.7	65.3	49.7	235
482	18,19,21,29,43,44,55,67,70,76,77,78,79	42.2	39.0	58.1	49.8	49.8	236
70	2,8,11,23,25,34,47,48,52,55,59,66,67,70,77,81,82,83,84	48.1	15.0	60.6	48.2	49.8	237
44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	38.3	0.0	71.7	49.1	50.0	238
477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	43.6	39.0	60.7	43.8	50.0	239
479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	42.9	39.0	57.8	51.0	50.1	240
38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	45.2	0.0	61.9	59.4	50.2	241
143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	42.2	39.0	66.3	35.9	50.3	242
208	3,8,10,15,19,21,29,42,43,57,58,66,67,70,81	38.5	39.0	59.7	54.7	50.3	243
464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	35.3	39.0	68.9	41.8	50.4	244
518	8,10,15,19,21,22,28,42,43,57,58,66,67,70,79	39.9	39.0	55.8	61.5	50.5	245
207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	51.2	39.0	54.2	48.0	50.5	246
160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	41.6	39.0	64.0	43.2	50.6	247
478	11,16,18,19,21,29,42,43,57,58,66,67,70,79,81,82	30.9	39.0	67.3	52.8	50.6	248
494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	42.2	39.0	59.2	52.0	50.6	249
460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	36.0	39.0	68.7	43.0	50.8	250
141	3,11,16,18,19,21,29,42,43,57,58,66,67,70,82	29.5	39.0	72.9	45.0	50.9	251

Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score	Rank
489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	43.6	39.0	61.8	46.0	50.9	252
187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	40.8	39.0	64.3	45.3	50.9	253
140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	42.2	39.0	67.4	38.2	51.1	254
163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	34.6	39.0	74.9	35.2	51.3	255
205	3,8,10,15,19,21,22,28,42,43,57,58,66,67,70,81	38.5	39.0	61.4	57.0	51.4	256
157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	41.6	39.0	65.1	45.5	51.5	257
491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	41.6	39.0	65.1	45.5	51.5	257
190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	33.9	39.0	75.2	37.3	51.6	259
86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	48.8	0.0	62.6	60.2	51.7	260
490	11,16,18,19,21,22,28,42,43,57,58,66,67,70,79,81,82	30.9	39.0	69.0	55.1	51.8	261
184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	40.8	39.0	65.4	47.6	51.8	262
42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	50.2	0.0	65.1	54.2	51.9	263
138	3,11,16,18,19,21,22,28,42,43,57,58,66,67,70,82	29.5	39.0	74.6	47.2	52.0	264
59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	49.6	0.0	62.3	61.4	52.1	265
89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	41.9	0.0	73.4	52.2	52.4	266
483	18,19,21,29,43,44,59,66,67,70,77,78,79	47.2	39.0	62.4	46.8	52.4	267
40	2,8,11,16,18,19,21,29,42,43,57,58,66,67,70,81,82	37.5	0.0	71.7	63.2	52.6	268
83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	48.8	0.0	63.7	62.4	52.6	269
62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,84	42.6	0.0	73.1	53.4	52.7	270
480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	47.9	39.0	62.1	48.0	52.7	271
39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	50.2	0.0	66.2	56.4	52.8	272
56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	49.6	0.0	63.4	63.7	53.0	273
484	18,19,21,29,42,43,57,58,66,67,70,77,78,79	34.4	39.0	69.0	55.8	53.0	274
161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	46.5	39.0	68.4	40.2	53.2	275
495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	47.2	39.0	63.5	49.1	53.3	276
481	11,18,19,21,29,42,43,57,58,66,67,70,77,79,81,83	35.2	39.0	68.7	57.1	53.4	277
188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	45.8	39.0	68.6	42.3	53.6	278
492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	47.9	39.0	63.2	50.3	53.6	279
37	2,8,11,16,18,19,21,22,28,42,43,57,58,66,67,70,81,82	37.5	0.0	73.5	65.5	53.7	280
159	3,11,18,19,21,29,42,43,57,58,66,67,70,77,83	33.8	39.0	75.0	49.2	53.9	281
158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	46.5	39.0	69.4	42.5	54.1	282
496	18,19,21,22,28,42,43,57,58,66,67,70,77,78,79	34.4	39.0	70.7	58.1	54.1	283
186	3,18,19,21,29,42,43,57,58,66,67,70,77,78,81	33.1	39.0	75.2	51.4	54.2	284
87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	53.8	0.0	66.9	57.2	54.3	285
185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	45.8	39.0	69.7	44.6	54.4	286
493	11,18,19,21,22,28,42,43,57,58,66,67,70,77,79,81,83	35.2	39.0	70.5	59.3	54.5	287
60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	54.5	0.0	66.6	58.4	54.7	288
85	2,8,18,19,21,29,42,43,57,58,66,67,70,77,78	41.1	0.0	73.5	66.2	55.0	289
156	3,11,18,19,21,22,28,42,43,57,58,66,67,70,77,83	33.8	39.0	76.7	51.5	55.0	290
84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	53.8	0.0	68.0	59.5	55.2	291
58	2,8,11,18,19,21,29,42,43,57,58,66,67,70,77,81,83	41.8	0.0	73.2	67.5	55.3	292
183	3,18,19,21,22,28,42,43,57,58,66,67,70,77,78,81	33.1	39.0	76.9	53.6	55.3	293
57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	54.5	0.0	67.7	60.7	55.6	294
82	2,8,18,19,21,22,28,42,43,57,58,66,67,70,77,78	41.1	0.0	75.2	68.5	56.1	295
55	2,8,11,18,19,21,22,28,42,43,57,58,66,67,70,77,81,83	41.8	0.0	74.9	69.7	56.5	296

MIN
MAX
RANGE

Appendix F. Second Round Scoring Results

Appendix F: Second Round Route Scoring

			Ecology						Cultural							
Rank	Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI within ROW (in acres)	Normalized Score for Area of NWI within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
1	266	4,17,32,37,63,74,75,80	0.69	0	2.41	47	3	33	0	0	1	50	5	60	0	0
2	306	4,9,11,14,20,29,43,44,55,67,70,76,83	2.37	17	2.80	58	3	33	0	0	0	0	2	0	0	0
3	266 (Mod)	4,17,32,37,63,74,75(mod),80(mod)	3.80	31	2.85	59	3	33	0	0	0	0	5	60	0	0
4	307	4,9,11,14,20,29,43,44,59,66,67,70,83	2.37	17	3.32	72	2	0	0	0	0	0	2	0	0	0
5	500	14,20,29,43,44,55,67,70,76,78,79	2.70	20	2.55	51	3	33	1	100	0	0	3	20	0	0
6	354	4,9,14,20,29,43,44,55,67,70,76,78,81	2.37	17	2.72	56	3	33	0	0	0	0	2	0	0	0
7	133	3,11,14,20,22,28,43,44,55,67,70,76,83	2.37	17	2.65	54	3	33	1	100	0	0	3	20	0	0
8	149	3,11,16,23,25,31,33,45,47,48,52,65,67	5.98	54	0.65	0	3	33	1	100	2	100	3	20	0	0
9	178	3,14,20,22,28,43,44,55,67,70,76,78,81	2.37	17	2.57	52	3	33	1	100	0	0	3	20	0	0
10	136	3,11,14,20,29,43,44,55,67,70,76,83	2.37	17	2.65	54	4	67	1	100	0	0	3	20	0	0
11	203	3,7,8,13,28,43,44,55,67,70,76,81	3.05	24	2.54	51	3	33	1	100	0	0	3	20	0	0
12	219	3,8,10,20,29,43,44,55,67,70,76,81	2.37	17	2.93	61	3	33	1	100	0	0	3	20	0	0
13	242	3,9,17,32,37,63,74,75,80	1.00	3	3.84	86	3	33	1	100	1	50	6	80	0	0
14	519	8,10,20,29,43,44,55,67,70,76,79	2.70	20	2.90	61	3	33	1	100	0	0	3	20	0	0
15	497	11,14,20,29,43,44,55,67,70,76,79,81,83	2.70	20	2.63	53	4	67	1	100	0	0	3	20	0	0
16	181	3,14,20,29,43,44,55,67,70,76,78,81	2.37	17	2.58	52	4	67	1	100	0	0	3	20	0	0
17	303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	2.37	17	2.80	58	4	67	0	0	0	0	2	0	0	0
18	498	11,14,20,29,43,44,59,66,67,70,79,81,83	2.70	20	3.15	67	3	33	1	100	0	0	3	20	0	0
19	501	14,20,29,43,44,59,66,67,70,78,79	2.70	20	3.07	65	3	33	1	100	0	0	3	20	0	0
20	522	8,10,20,22,28,43,44,55,67,70,76,79	2.70	20	2.90	61	3	33	1	100	0	0	3	20	0	0
21	355	4,9,14,20,29,43,44,59,66,67,70,78,81	2.37	17	3.24	70	3	33	0	0	0	0	2	0	0	0
22	304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	2.37	17	3.32	72	3	33	0	0	0	0	2	0	0	0
23	12	2,10,20,22,28,43,44,55,67,70,76	3.86	32	3.30	71	3	33	0	0	0	0	2	0	0	0
24	503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	2.70	20	2.63	53	4	67	1	100	0	0	3	20	0	0
25	506	14,20,22,28,43,44,55,67,70,76,78,79	2.70	20	2.55	51	4	67	1	100	0	0	3	20	0	0
26	351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	2.37	17	2.72	56	4	67	0	0	0	0	2	0	0	0
27	35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	3.86	32	3.17	68	3	33	0	0	0	0	2	0	0	0
28	80	2,8,14,20,29,43,44,55,67,70,76,78	3.86	32	3.09	66	3	33	0	0	0	0	2	0	0	0
29	410	9,17,32,37,63,74,75,79,80,81	1.33	6	3.81	85	3	33	1	100	1	50	6	80	0	0
30	525	7,8,13,28,43,44,55,67,70,76,79	3.37	27	2.52	50	4	67	1	100	0	0	3	20	0	0
31	507	14,20,22,28,43,44,59,66,67,70,78,79	2.70	20	3.07	65	3	33	1	100	0	0	3	20	0	0
32	276	4,7,8,9,13,28,43,44,55,67,70,76,81	3.05	24	2.69	55	4	67	0	0	0	0	2	0	0	0
33	352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	2.37	17	3.24	70	3	33	0	0	0	0	2	0	0	0
34	18	2,7,13,28,43,44,55,67,70,76	4.54	39	2.92	61	4	67	0	0	0	0	2	0	0	0
35	15	2,10,20,29,43,44,55,67,70,76	3.86	32	3.30	71	4	67	0	0	0	0	2	0	0	0
36	137	3,11,14,20,29,43,44,59,66,67,70,83	2.37	17	3.17	68	4	67	1	100	0	0	3	20	0	0
37	18 (Mod)	2(mod),7(mod),13(mod),28,43,44,55,67,70,76	3.18	25	2.72	56	4	67	0	0	0	0	2	0	0	0
38	77	2,8,14,20,22,28,43,44,55,67,70,76,78	3.86	32	3.09	66	3	33	0	0	0	0	2	0	0	0
39	149 (Mod2)	Mod. #2 to Route 149 (scored as complete new route)	5.17	45	0.86	6	3	33	1	100	0	0	3	20	0	0
40	216	3,8,10,20,22,28,43,44,55,67,70,76,81	2.37	17	2.93	61	4	67	1	100	0	0	3	20	0	0
41	19	2,7,13,28,43,44,59,66,67,70	4.54	39	3.44	75	3	33	0	0	0	0	2	0	0	0
42	182	3,14,20,29,43,44,59,66,67,70,78,81	2.37	17	3.09	66	4	67	1	100	0	0	3	20	0	0
43	134	3,11,14,20,22,28,43,44,59,66,67,70,83	2.37	17	3.17	68	4	67	1	100	0	0	3	20	0	0
44	504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	2.70	20	3.15	67	4	67	1	100	0	0	3	20	0	0
45	179	3,14,20,22,28,43,44,59,66,67,70,78,81	2.37	17	3.09	66	4	67	1	100	0	0	3	20	0	0
46	204	3,7,8,13,28,43,44,59,66,67,70,81	3.05	24	3.06	65	4	67	1	100	0	0	3	20	0	0
47	32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	3.86	32	3.17	68	4	67	0	0	0	0	2	0	0	0
48	273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	3.05	24	2.69	55	4	67	0	0	0	0	2	0	0	0
49	526	7,8,13,28,43,44,59,66,67,70,79	3.37	27	3.03	64	4	67	1	100	0	0	3	20	0	0
50	277	4,7,8,9,13,28,43,44,59,66,67,70,81	3.05	24	3.21	69	4	67	0	0	0	0	2	0	0	0
51	520	8,10,20,29,43,44,59,66,67,70,79	2.70	20	3.42	75	4	67	1	100	0	0	3	20	0	0
52	16	2,10,20,29,43,44,59,66,67,70	3.86	32	3.82	85	4	67	0	0	0	0	2	0	0	0
53	119	2,8,9,17,32,37,63,74,75,80,81	2.50	18	4.36	100	3	33	0	0	1	50	5	60	0	0
54	217	3,8,10,20,22,28,43,44,59,66,67,70,81	2.37	17	3.44	75	4	67	1	100	0	0	3	20	0	0
55	523	8,10,20,22,28,43,44,59,66,67,70,79	2.70	20	3.42	75	4	67	1	100	0	0	3	20	0	0
56	13	2,10,20,22,28,43,44,59,66,67,70	3.86	32	3.82	85	4	67	0	0	0	0	2	0	0	0
57	36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	3.86	32	3.69	82	4	67	0	0	0	0	2	0	0	0
58	81	2,8,14,20,29,43,44,59,66,67,70,78	3.86	32	3.61	80	4	67	0	0	0	0	2	0	0	0
59	220	3,8,10,20,29,43,44,59,66,67,70,81	2.37	17	3.44	75	5	100	1	100	0	0	3	20	0	0
60	78	2,8,14,20,22,28,43,44,59,66,67,70,78	3.86	32	3.61	80	4	67	0	0	0	0	2	0	0	0
61	176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	6.07	54	0.74	2	3	33	1	100	0	0	3	20	0	0
62	511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	6.39	58	1.06	11	3	33	1	100	0	0	3	20	0	0

			Ecology						Cultural							
Rank	Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI within ROW (in acres)	Normalized Score for Area of NWI within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
63	301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	6.07	54	0.96	8	4	67	0	0	0	0	2	0	0	0
64	10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	7.56	70	1.46	22	3	33	0	0	0	0	2	0	0	0
65	123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	2.37	17	2.74	56	3	33	1	100	0	0	3	20	0	0
66	467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	6.39	58	0.79	4	4	67	1	100	0	0	3	20	0	0
67	300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	5.98	54	0.96	8	4	67	0	0	1	50	2	0	0	0
68	270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	6.66	60	1.07	11	3	33	0	0	1	50	2	0	0	0
69	466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	6.31	57	0.79	4	4	67	1	100	1	50	3	20	0	0
70	33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	3.86	32	3.69	82	5	100	0	0	0	0	2	0	0	0
71	356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	5.98	54	0.88	6	4	67	0	0	1	50	2	0	0	0
72	274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	3.05	24	3.21	69	5	100	0	0	0	0	2	0	0	0
73	471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	6.39	58	0.71	2	4	67	1	100	0	0	3	20	0	0
74	470	14,15,19,30,33,45,47,48,52,65,67,78,79	6.31	57	0.71	2	4	67	1	100	1	50	3	20	0	0
75	288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	5.98	54	1.23	16	3	33	0	0	1	50	2	0	0	0
76	126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	2.37	17	2.74	56	4	67	1	100	0	0	3	20	0	0
77	30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	7.56	70	1.33	18	3	33	0	0	0	0	2	0	0	0
78	131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	6.07	54	0.81	4	5	100	1	100	0	0	3	20	0	0
79	149 (Mod1)	Mod. #1 to Route 149 (scored as complete new route)	6.14	55	2.77	57	4	67	1	100	0	0	3	20	0	0
80	29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	7.47	69	1.33	18	3	33	0	0	1	50	2	0	0	0
81	513	8,10,15,19,21,29,43,44,55,67,70,76,79	2.70	20	2.99	63	3	33	1	100	0	0	3	20	0	0
82	75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	7.56	70	1.25	16	3	33	0	0	0	0	2	0	0	0
83	130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	5.98	54	0.81	4	5	100	1	100	1	50	3	20	0	0
84	473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	2.70	20	2.71	56	4	67	1	100	0	0	3	20	0	0
85	74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	7.47	69	1.25	16	3	33	0	0	1	50	2	0	0	0
86	510	8,10,15,19,30,33,45,47,48,52,65,67,79	6.31	57	1.06	11	4	67	1	100	1	50	3	20	0	0
87	210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	2.37	17	3.53	78	2	0	1	100	0	0	3	20	0	0
88	213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	5.98	54	1.09	12	4	67	1	100	1	50	3	20	0	0
89	271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	6.75	61	1.07	11	4	67	0	0	0	0	2	0	0	0
90	289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	6.07	54	1.23	16	4	67	0	0	0	0	2	0	0	0
91	485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	2.70	20	2.71	56	4	67	1	100	0	0	3	20	0	0
92	349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	6.07	54	0.88	6	5	100	0	0	0	0	2	0	0	0
93	175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	5.98	54	0.74	2	5	100	1	100	1	50	3	20	0	0
94	147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	6.07	54	0.77	3	4	67	1	100	0	0	3	20	0	0
95	312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	2.37	17	2.84	59	3	33	0	0	0	0	2	0	0	0
96	209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	2.37	17	3.01	64	4	67	1	100	0	0	3	20	0	0
97	146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	5.98	54	0.77	3	4	67	1	100	1	50	3	20	0	0
98	486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	2.70	20	3.23	70	3	33	1	100	0	0	3	20	0	0
99	127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	2.37	17	3.26	70	4	67	1	100	0	0	3	20	0	0
100	5	2,10,15,19,21,29,43,44,55,67,70,76	3.86	32	3.39	74	4	67	0	0	0	0	2	0	0	0
101	317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	6.07	54	0.92	7	4	67	0	0	0	0	2	0	0	0
102	22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	3.86	32	3.26	70	3	33	0	0	0	0	2	0	0	0
103	455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	6.39	58	0.74	2	4	67	1	100	0	0	3	20	0	0
104	316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	5.98	54	0.92	7	4	67	0	0	1	50	2	0	0	0
105	9	2,10,15,19,30,33,45,47,48,52,65,67	7.47	69	1.46	22	5	100	0	0	1	50	2	0	0	0
106	454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	6.31	57	0.74	2	4	67	1	100	1	50	3	20	0	0
107	206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	2.37	17	3.01	64	4	67	1	100	0	0	3	20	0	0
108	474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	2.70	20	3.23	70	4	67	1	100	0	0	3	20	0	0
109	516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	2.70	20	2.99	63	4	67	1	100	0	0	3	20	0	0
110	124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	2.37	17	3.26	70	4	67	1	100	0	0	3	20	0	0
111	2	2,10,15,19,21,22,28,43,44,55,67,70,76	3.86	32	3.39	74	4	67	0	0	0	0	2	0	0	0
112	25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	3.86	32	3.26	70	4	67	0	0	0	0	2	0	0	0
113	129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	6.07	54	1.33	18	3	33	1	100	0	0	3	20	0	0
114	46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	7.56	70	1.28	17	3	33	0	0	0	0	2	0	0	0
115	458	11,18,19,30,33,45,47,48,52,65,67,77,83	6.31	57	1.22	15	3	33	1	100	1	50	3	20	0	0
116	139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	2.37	17	2.69	55	4	67	1	100	0	0	3	20	0	0
117	313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	2.37	17	3.36	73	3	33	0	0	0	0	2	0	0	0
118	476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	2.70	20	2.67	54	4	67	1	100	0	0	3	20	0	0
119	192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	6.07	54	1.17	14	3	33	1	100	0	0	3	20	0	0
120	7	2,10,15,19,30,33,45,47,48,52,53,69,80	10.58	100	1.88	33	2	0	0	0	0	0	6	80	0	0
121	309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	2.37	17	2.84	59	4	67	0	0	0	0	2	0	0	0
122	514	8,10,15,19,21,29,43,44,59,66,67,70,79	2.70	20	3.50	77	4	67	1	100	0	0	3	20	0	0
123	366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	5.98	54	1.32	18	3	33	0	0	1	50	2	0	0	0
124	329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	2.37	17	3.32	72	3	33	0	0	0	0	2	0	0	0

			Ecology						Cultural							
Rank	Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI within ROW (in acres)	Normalized Score for Area of NWI within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
125	6	2,10,15,19,21,29,43,44,59,66,67,70	3.86	32	3.91	88	4	67	0	0	0	0	2	0	0	0
126	23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	3.86	32	3.77	84	3	33	0	0	0	0	2	0	0	0
127	142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	2.37	17	2.69	55	5	100	1	100	0	0	3	20	0	0
128	165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	6.07	54	1.25	16	4	67	1	100	0	0	3	20	0	0
129	207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	2.37	17	3.53	78	4	67	1	100	0	0	3	20	0	0
130	41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	3.86	32	3.21	69	3	33	0	0	0	0	2	0	0	0
131	164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	5.98	54	1.25	16	4	67	1	100	1	50	3	20	0	0
132	482	18,19,21,29,43,44,55,67,70,76,77,78,79	2.70	20	3.07	65	3	33	1	100	0	0	3	20	0	0
133	517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	2.70	20	3.50	77	4	67	1	100	0	0	3	20	0	0
134	363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	2.37	17	3.24	70	3	33	0	0	0	0	2	0	0	0
135	334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	6.07	54	1.39	20	4	67	0	0	0	0	2	0	0	0
136	143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	2.37	17	3.21	69	4	67	1	100	0	0	3	20	0	0
137	45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	7.47	69	1.28	17	4	67	0	0	1	50	2	0	0	0
138	157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	2.37	17	3.17	68	3	33	1	100	0	0	3	20	0	0
139	212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	6.07	54	1.60	26	3	33	1	100	0	0	3	20	0	0
140	459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	6.39	58	1.22	15	4	67	1	100	0	0	3	20	0	0
141	299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	6.07	54	1.48	22	4	67	0	0	0	0	2	0	0	0
142	333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	5.98	54	1.39	20	4	67	0	0	1	50	2	0	0	0
143	269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	6.75	61	1.59	25	3	33	0	0	0	0	2	0	0	0
144	463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	6.39	58	1.14	13	4	67	1	100	0	0	3	20	0	0
145	468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	6.39	58	1.31	18	4	67	1	100	0	0	3	20	0	0
146	472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	6.39	58	1.23	16	4	67	1	100	0	0	3	20	0	0
147	462	18,19,30,33,45,47,48,52,65,67,77,78,79	6.31	57	1.14	13	4	67	1	100	1	50	3	20	0	0
148	174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	6.07	54	1.25	16	4	67	1	100	0	0	3	20	0	0
149	367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	6.07	54	1.32	18	4	67	0	0	0	0	2	0	0	0
150	184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	2.37	17	3.09	66	3	33	1	100	0	0	3	20	0	0
151	191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	5.98	54	1.17	14	4	67	1	100	1	50	3	20	0	0
152	140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	2.37	17	3.21	69	4	67	1	100	0	0	3	20	0	0
153	160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	2.37	17	3.17	68	4	67	1	100	0	0	3	20	0	0
154	477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	2.70	20	3.19	68	4	67	1	100	0	0	3	20	0	0
155	310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	2.37	17	3.36	73	4	67	0	0	0	0	2	0	0	0
156	488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	2.70	20	2.67	54	5	100	1	100	0	0	3	20	0	0
157	63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	7.47	69	1.76	30	3	33	0	0	1	50	2	0	0	0
158	90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	7.47	69	1.68	28	3	33	0	0	1	50	2	0	0	0
159	479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	2.70	20	3.15	67	4	67	1	100	0	0	3	20	0	0
160	187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	2.37	17	3.09	66	4	67	1	100	0	0	3	20	0	0
161	326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	2.37	17	3.32	72	4	67	0	0	0	0	2	0	0	0
162	491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	2.37	17	3.17	68	4	67	1	100	0	0	3	20	0	0
163	489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	2.70	20	3.18	68	4	67	1	100	0	0	3	20	0	0
164	3	2,10,15,19,21,22,28,43,44,59,66,67,70	3.86	32	3.91	88	5	100	0	0	0	0	2	0	0	0
165	315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	6.07	54	1.43	21	3	33	0	0	0	0	2	0	0	0
166	26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	3.86	32	3.77	84	5	100	0	0	0	0	2	0	0	0
167	42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	3.86	32	3.73	83	3	33	0	0	0	0	2	0	0	0
168	483	18,19,21,29,43,44,59,66,67,70,77,78,79	2.70	20	3.58	79	3	33	1	100	0	0	3	20	0	0
169	8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	7.56	70	1.98	36	4	67	0	0	0	0	2	0	0	0
170	38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	3.86	32	3.21	69	4	67	0	0	0	0	2	0	0	0
171	494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	2.70	20	3.07	65	4	67	1	100	0	0	3	20	0	0
172	360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	2.37	17	3.24	70	4	67	0	0	0	0	2	0	0	0
173	59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	3.86	32	3.69	82	3	33	0	0	0	0	2	0	0	0
174	64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	7.56	70	1.76	30	4	67	0	0	0	0	2	0	0	0
175	145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	6.07	54	1.28	17	4	67	1	100	0	0	3	20	0	0
176	91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	7.56	70	1.68	28	4	67	0	0	0	0	2	0	0	0
177	330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	2.36	17	3.84	86	4	67	0	0	0	0	2	0	0	0
178	161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	2.37	17	3.69	82	4	67	1	100	0	0	3	20	0	0
179	73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	7.56	70	1.77	30	4	67	0	0	0	0	2	0	0	0
180	512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	6.39	58	1.58	25	5	100	1	100	0	0	3	20	0	0
181	480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	2.70	20	3.66	81	4	67	1	100	0	0	3	20	0	0
182	456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	6.39	58	1.26	16	4	67	1	100	0	0	3	20	0	0
183	364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	2.37	17	3.76	84	4	67	0	0	0	0	2	0	0	0
184	57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	3.86	32	4.20	96	2	0	0	0	0	0	2	0	0	0
185	278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	6.07	54	1.75	30	5	100	0	0	0	0	2	0	0	0
186	327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	2.37	17	3.84	86	4	67	0	0	0	0	2	0	0	0

			Ecology						Cultural							
Rank	Routes	Study Segments	Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI within ROW (in acres)	Normalized Score for Area of NWI within ROW	NHD Stream Crossing	Normalized Score for NHD Stream Crossing	NRHP-listed and eligible resources within 1,000-ft of centerline	Normalized Score for NRHP-listed and eligible resources within 1,000-ft of centerline	Known Archaeology Sites within 75-ft of centerline	Normalized Score for Known Archaeology Sites within 75-ft of centerline	OHI Historic Structures within 1,000-ft of centerline	Normalized Score for OHI Historic Structures within 1,000-ft of centerline	Cemeteries within 75-ft of centerline	Normalized Score for Cemeteries within 75-ft of centerline
187	158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	2.37	17	3.69	82	4	67	1	100	0	0	3	20	0	0
188	84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	3.86	32	4.13	94	2	0	0	0	0	0	2	0	0	0
189	86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	3.86	32	3.61	80	4	67	0	0	0	0	2	0	0	0
190	39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	3.86	32	3.73	83	4	67	0	0	0	0	2	0	0	0
191	495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	2.70	20	3.58	79	4	67	1	100	0	0	3	20	0	0
192	332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	6.07	54	1.91	34	3	33	0	0	0	0	2	0	0	0
193	361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	2.37	17	3.76	84	4	67	0	0	0	0	2	0	0	0
194	28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,8	7.56	70	1.85	32	5	100	0	0	0	0	2	0	0	0
195	464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	6.39	58	1.66	27	3	33	1	100	0	0	3	20	0	0
196	56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	3.86	32	3.69	82	4	67	0	0	0	0	2	0	0	0
197	83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	3.86	32	3.61	80	4	67	0	0	0	0	2	0	0	0
198	188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	2.37	17	3.61	80	5	100	1	100	0	0	3	20	0	0
199	492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	2.70	20	3.66	81	5	100	1	100	0	0	3	20	0	0
200	185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	2.37	17	3.61	80	5	100	1	100	0	0	3	20	0	0
201	162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	9.08	85	1.66	27	4	67	1	100	0	0	7	100	0	0
202	44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	7.56	70	1.80	31	4	67	0	0	0	0	2	0	0	0
203	460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	6.39	58	1.74	29	4	67	1	100	0	0	3	20	0	0
204	190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	6.07	54	1.68	28	4	67	1	100	0	0	3	20	0	0
205	368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	6.07	54	1.83	32	4	67	0	0	0	0	2	0	0	0
206	163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	6.07	54	1.76	30	5	100	1	100	0	0	3	20	0	0
207	60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	3.86	32	4.21	96	5	100	0	0	0	0	2	0	0	0
208	87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	3.86	32	4.13	94	5	100	0	0	0	0	2	0	0	0
209	461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	9.41	88	1.55	24	5	100	1	100	0	0	7	100	0	0
210	189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	9.08	85	1.58	25	5	100	1	100	0	0	7	100	0	0
211	62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,8	7.56	70	2.28	44	4	67	0	0	0	0	2	0	0	0
212	89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	7.56	70	2.20	42	5	100	0	0	0	0	2	0	0	0
		MIN	1	0	1	0	2	0	0	0	0	0	2	0	0	0
		MAX	11	100	4	100	5	100	1	100	2	100	7	100	0	0
		RANGE	10	100	4	100	3	100	1	100	2	100	5	100	0	0

			Land Use															
Rank	Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000 ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
1	266	4,17,32,37,63,74,75,80	3	2.50	6	0.00	14	1.27	12	0	34	11	66.49	43	2	100	0	0
2	306	4,9,11,14,20,29,43,44,55,67,70,76,83	2	1.25	11	1.90	9	0.00	12	0	41	50	95.09	80	2	100	0	0
3	266 (Mod)	4,17,32,37,63,74,75(mod),80(mod)	3	2.50	9	1.14	13	1.02	16	1	33	6	91.77	76	2	100	0	0
4	307	4,9,11,14,20,29,43,44,59,66,67,70,83	2	1.25	19	4.94	15	1.53	15	1	43	61	94.59	79	2	100	0	0
5	500	14,20,29,43,44,55,67,70,76,78,79	2	1.25	11	1.90	16	1.78	18	1	38	33	83.89	65	1	50	0	0
6	354	4,9,14,20,29,43,44,55,67,70,76,78,81	2	1.25	11	1.90	9	0.00	12	0	42	56	87.18	70	2	100	0	0
7	133	3,11,14,20,22,28,43,44,55,67,70,76,83	8	8.75	14	3.04	15	1.53	19	1	42	56	78.70	59	1	50	0	0
8	149	3,11,16,23,25,31,33,45,47,48,52,65,67	16	18.75	35	11.01	23	3.56	30	3	42	56	33.85	0	0	0	0	0
9	178	3,14,20,22,28,43,44,55,67,70,76,78,81	8	8.75	14	3.04	15	1.53	19	1	43	61	70.79	48	1	50	0	0
10	136	3,11,14,20,29,43,44,55,67,70,76,83	6	6.25	16	3.80	14	1.27	17	1	42	56	81.11	62	1	50	0	0
11	203	3,7,8,13,28,43,44,55,67,70,76,81	5	5.00	16	3.80	18	2.29	20	1	39	39	85.02	67	1	50	0	0
12	219	3,8,10,20,29,43,44,55,67,70,76,81	7	7.50	15	3.42	15	1.53	17	1	41	50	83.47	65	1	50	0	0
13	242	3,9,17,32,37,63,74,75,80	7	7.50	13	2.66	21	3.05	19	1	38	33	59.93	34	1	50	0	0
14	519	8,10,20,29,43,44,55,67,70,76,79	3	2.50	10	1.52	17	2.03	18	1	37	28	94.16	79	1	50	0	0
15	497	11,14,20,29,43,44,55,67,70,76,79,81,83	2	1.25	11	1.90	16	1.78	18	1	37	28	91.80	76	1	50	0	0
16	181	3,14,20,29,43,44,55,67,70,76,78,81	6	6.25	16	3.80	14	1.27	17	1	43	61	73.20	51	1	50	0	0
17	303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	4	3.75	9	1.14	10	0.25	14	1	41	50	92.68	77	2	100	0	0
18	498	11,14,20,29,43,44,59,66,67,70,79,81,83	2	1.25	19	4.94	22	3.31	21	2	39	39	91.30	75	1	50	0	0
19	501	14,20,29,43,44,59,66,67,70,78,79	2	1.25	19	4.94	22	3.31	21	2	40	44	83.38	65	1	50	0	0
20	522	8,10,20,22,28,43,44,55,67,70,76,79	5	5.00	8	0.76	18	2.29	20	1	37	28	91.75	76	1	50	0	0
21	355	4,9,14,20,29,43,44,59,66,67,70,78,81	2	1.25	19	4.94	15	1.53	15	1	44	67	86.67	69	2	100	0	0
22	304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	4	3.75	17	4.18	16	1.78	17	1	43	61	92.18	76	2	100	0	0
23	12	2,10,20,22,28,43,44,55,67,70,76	6	6.25	9	1.14	13	1.02	15	1	41	50	81.45	62	1	50	0	0
24	503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	4	3.75	9	1.14	17	2.03	20	1	37	28	89.39	73	1	50	0	0
25	506	14,20,22,28,43,44,55,67,70,76,78,79	4	3.75	9	1.14	17	2.03	20	1	38	33	81.48	62	1	50	0	0
26	351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	4	3.75	9	1.14	10	0.25	14	1	42	56	84.77	66	2	100	0	0
27	35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	3	2.50	14	3.04	13	1.02	15	1	43	61	91.28	75	1	50	0	0
28	80	2,8,14,20,29,43,44,55,67,70,76,78	3	2.50	14	3.04	13	1.02	15	1	44	67	83.37	65	1	50	0	0
29	410	9,17,32,37,63,74,75,79,80,81	3	2.50	8	0.76	23	3.56	20	1	36	22	70.62	48	1	50	0	0
30	525	7,8,13,28,43,44,55,67,70,76,79	1	0.00	11	1.90	20	2.80	21	2	35	17	95.71	81	1	50	0	0
31	507	14,20,22,28,43,44,59,66,67,70,78,79	4	3.75	17	4.18	23	3.56	23	2	40	44	80.98	62	1	50	0	0
32	276	4,7,8,9,13,28,43,44,55,67,70,76,81	1	0.00	11	1.90	13	1.02	15	1	39	39	99.01	85	2	100	0	0
33	352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	4	3.75	17	4.18	16	1.78	17	1	44	67	84.27	66	2	100	0	0
34	18	2,7,13,28,43,44,55,67,70,76	2	1.25	12	2.28	15	1.53	16	1	39	39	85.35	67	1	50	0	0
35	15	2,10,20,29,43,44,55,67,70,76	4	3.75	11	1.90	12	0.76	13	1	41	50	83.86	65	1	50	0	0
36	137	3,11,14,20,29,43,44,59,66,67,70,83	6	6.25	24	6.84	20	2.80	20	1	44	67	80.61	61	1	50	0	0
37	18 (Mod)	2(mod),7(mod),13(mod),28,43,44,55,67,70,76	4	3.75	14	3.04	21	3.05	22	2	42	56	100.67	87	1	50	0	0
38	77	2,8,14,20,22,28,43,44,55,67,70,76,78	5	5.00	12	2.28	14	1.27	17	1	44	67	80.96	62	1	50	0	0
39	149 (Mod2)	Mod. #2 to Route 149 (scored as complete new route)	9	10.00	56	18.99	64	13.98	34	3	45	72	86.90	69	0	0	0	0
40	216	3,8,10,20,22,28,43,44,55,67,70,76,81	9	10.00	13	2.66	16	1.78	19	1	41	50	81.06	62	1	50	0	0
41	19	2,7,13,28,43,44,59,66,67,70	2	1.25	20	5.32	21	3.05	19	1	41	50	84.84	67	1	50	0	0
42	182	3,14,20,29,43,44,59,66,67,70,78,81	6	6.25	24	6.84	20	2.80	20	1	45	72	72.70	51	1	50	0	0
43	134	3,11,14,20,22,28,43,44,59,66,67,70,83	8	8.75	22	6.08	21	3.05	22	2	44	67	78.20	58	1	50	0	0
44	504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	4	3.75	17	4.18	23	3.56	23	2	39	39	88.89	72	1	50	0	0
45	179	3,14,20,22,28,43,44,59,66,67,70,78,81	8	8.75	22	6.08	21	3.05	22	2	45	72	70.29	48	1	50	0	0
46	204	3,7,8,13,28,43,44,59,66,67,70,81	5	5.00	24	6.84	24	3.81	23	2	41	50	84.52	66	1	50	0	0
47	32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	5	5.00	12	2.28	14	1.27	17	1	43	61	88.87	72	1	50	0	0
48	273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	3	2.50	13	2.66	13	1.02	14	1	42	56	105.75	94	2	100	0	0
49	526	7,8,13,28,43,44,59,66,67,70,79	1	0.00	19	4.94	26	4.32	24	2	37	28	95.21	80	1	50	0	0
50	277	4,7,8,9,13,28,43,44,59,66,67,70,81	1	0.00	19	4.94	19	2.54	18	1	41	50	98.50	84	2	100	0	0
51	520	8,10,20,29,43,44,59,66,67,70,79	3	2.50	18	4.56	23	3.56	21	2	39	39	93.65	78	1	50	0	0
52	16	2,10,20,29,43,44,59,66,67,70	4	3.75	19	4.94	18	2.29	16	1	43	61	83.35	65	1	50	0	0
53	119	2,8,9,17,32,37,63,74,75,80,81	4	3.75	11	1.90	20	2.80	18	1	42	56	70.10	47	1	50	0	0
54	217	3,8,10,20,22,28,43,44,59,66,67,70,81	9	10.00	21	5.70	22	3.31	22	2	43	61	80.55	61	1	50	0	0
55	523	8,10,20,22,28,43,44,59,66,67,70,79	5	5.00	16	3.80	24	3.81	23	2	39	39	91.24	75	1	50	0	0
56	13	2,10,20,22,28,43,44,59,66,67,70	6	6.25	17	4.18	19	2.54	18	1	43	61	80.94	61	1	50	0	0
57	36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	3	2.50	22	6.08	19	2.54	18	1	45	72	90.77	74	1	50	0	0
58	81	2,8,14,20,29,43,44,59,66,67,70,78	3	2.50	22	6.08	19	2.54	18	1	46	78	82.86	64	1	50	0	0
59	220	3,8,10,20,29,43,44,59,66,67,70,81	7	7.50	23	6.46	21	3.05	20	1	43	61	82.96	64	1	50	0	0
60	78	2,8,14,20,22,28,43,44,59,66,67,70,78	5	5.00	20	5.32	20	2.80	20	1	46	78	80.46	61	1	50	0	0
61	176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	27	32.50	58	19.75	37	7.12	24	2	41	50	54.28	27	0	0	0	0
62	511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	24	28.75	52	17.47	40	7.88	27	2	34	11	75.26	54	0	0	0	0

**Institutional land use includes schools, churches, and hospitals
**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

			Land Use															
Rank	Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000 ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
63	301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	23	27.50	53	17.85	32	5.85	19	1	40	44	76.17	55	1	50	0	0
64	10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	25	30.00	53	17.85	35	6.61	22	2	38	33	64.96	41	0	0	0	0
65	123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	25	30.00	55	18.61	33	6.10	17	1	39	39	94.61	79	1	50	0	0
66	467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	23	27.50	53	17.85	39	7.63	25	2	34	11	72.88	51	0	0	0	0
67	300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	23	27.50	53	17.85	32	5.85	18	1	38	33	70.59	48	1	50	0	0
68	270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	10	11.25	33	10.25	38	7.37	44	4	44	67	86.86	69	1	50	0	0
69	466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	23	27.50	53	17.85	39	7.63	24	2	32	0	67.30	44	0	0	0	0
70	33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	5	5.00	20	5.32	20	2.80	20	1	45	72	88.37	71	1	50	0	0
71	356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	23	27.50	53	17.85	32	5.85	18	1	39	39	58.20	32	1	50	0	0
72	274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	3	2.50	21	5.70	19	2.54	17	1	44	67	105.24	93	2	100	0	0
73	471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	23	27.50	53	17.85	39	7.63	25	2	36	22	64.97	41	0	0	0	0
74	470	14,15,19,30,33,45,47,48,52,65,67,78,79	23	27.50	53	17.85	39	7.63	24	2	34	11	59.39	33	0	0	0	0
75	288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	24	28.75	52	17.47	33	6.10	20	1	38	33	72.97	51	1	50	0	0
76	126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	23	27.50	57	19.37	32	5.85	15	1	39	39	97.00	82	1	50	0	0
77	30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	24	28.75	56	18.99	36	6.86	22	2	40	44	72.36	50	0	0	0	0
78	131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	27	32.50	58	19.75	37	7.12	24	2	39	39	62.19	37	0	0	0	0
79	149 (Mod1)	Mod. #1 to Route 149 (scored as complete new route)	8	8.75	56	18.99	68	15.00	39	4	38	33	70.52	48	0	0	0	0
80	29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	24	28.75	56	18.99	36	6.86	21	2	38	33	66.78	43	0	0	0	0
81	513	8,10,15,19,21,29,43,44,55,67,70,76,79	20	23.75	51	17.09	35	6.61	18	1	34	11	110.07	100	1	50	0	0
82	75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	24	28.75	56	18.99	36	6.86	22	2	42	56	64.45	40	0	0	0	0
83	130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	27	32.50	58	19.75	37	7.12	23	2	38	33	56.61	30	0	0	0	0
84	473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	19	22.50	52	17.47	34	6.36	16	1	34	11	107.69	96	1	50	0	0
85	74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	24	28.75	56	18.99	36	6.86	21	2	40	44	58.87	33	0	0	0	0
86	510	8,10,15,19,30,33,45,47,48,52,65,67,79	24	28.75	52	17.47	40	7.88	26	2	32	0	69.68	47	0	0	0	0
87	210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	24	28.75	64	22.03	39	7.63	20	1	40	44	98.87	85	1	50	0	0
88	213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	28	33.75	57	19.37	38	7.37	25	2	37	28	59.00	33	0	0	0	0
89	271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	10	11.25	33	10.25	38	7.37	45	5	46	78	92.44	77	1	50	0	0
90	289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	24	28.75	52	17.47	33	6.10	21	2	40	44	78.55	58	1	50	0	0
91	485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	21	25.00	50	16.71	35	6.61	18	1	34	11	105.29	93	1	50	0	0
92	349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	23	27.50	53	17.85	32	5.85	19	1	41	50	68.26	45	1	50	0	0
93	175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	27	32.50	58	19.75	37	7.12	23	2	40	44	48.70	19	0	0	0	0
94	147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	41	50.00	76	26.58	37	7.12	26	2	38	33	60.78	35	0	0	0	0
95	312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	33	40.00	70	24.30	27	4.58	12	0	38	33	109.57	99	2	100	0	0
96	209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	24	28.75	56	18.99	33	6.10	17	1	38	33	99.38	86	1	50	0	0
97	146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	41	50.00	76	26.58	37	7.12	25	2	37	28	55.20	28	0	0	0	0
98	486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	21	25.00	58	19.75	41	8.14	21	2	36	22	104.79	93	1	50	0	0
99	127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	23	27.50	65	22.41	38	7.37	18	1	41	50	96.49	82	1	50	0	0
100	5	2,10,15,19,21,29,43,44,55,67,70,76	21	25.00	52	17.47	30	5.34	13	1	38	33	99.77	86	1	50	0	0
101	317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	37	45.00	71	24.68	32	5.85	21	2	40	44	74.76	53	1	50	0	0
102	22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	22	26.25	53	17.85	32	5.85	15	1	40	44	104.77	93	1	50	0	0
103	455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	37	45.00	71	24.68	39	7.63	27	2	34	11	71.47	49	0	0	0	0
104	316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	37	45.00	71	24.68	32	5.85	20	1	38	33	69.18	46	1	50	0	0
105	9	2,10,15,19,30,33,45,47,48,52,65,67	25	30.00	53	17.85	35	6.61	21	2	36	22	59.38	33	0	0	0	0
106	454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	37	45.00	71	24.68	39	7.63	26	2	32	0	65.89	42	0	0	0	0
107	206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	26	31.25	54	18.23	34	6.36	19	1	38	33	96.99	82	1	50	0	0
108	474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	19	22.50	60	20.51	40	7.88	19	1	36	22	107.18	96	1	50	0	0
109	516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	22	26.25	49	16.33	36	6.86	20	1	34	11	107.68	96	1	50	0	0
110	124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	25	30.00	63	21.65	39	7.63	20	1	41	50	94.10	79	1	50	0	0
111	2	2,10,15,19,21,22,28,43,44,55,67,70,76	23	27.50	50	16.71	31	5.59	15	1	38	33	97.37	83	1	50	0	0
112	25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	20	23.75	55	18.61	31	5.59	13	1	40	44	107.17	96	1	50	0	0
113	129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	27	32.50	66	22.78	45	9.15	28	2	45	72	80.18	61	1	50	0	0
114	46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	38	46.25	74	25.82	36	6.86	24	2	40	44	70.95	48	0	0	0	0
115	458	11,18,19,30,33,45,47,48,52,65,67,77,83	37	45.00	72	25.06	41	8.14	23	2	34	11	60.06	34	0	0	0	0
116	139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	39	47.50	73	25.44	33	6.10	19	1	38	33	93.19	77	1	50	0	0
117	313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	33	40.00	78	27.34	33	6.10	15	1	40	44	109.06	98	2	100	0	0
118	476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	33	40.00	70	24.30	34	6.36	18	1	34	11	106.28	95	1	50	0	0
119	192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	41	50.00	77	26.96	39	7.63	23	2	43	61	47.04	17	0	0	0	0
120	7	2,10,15,19,30,33,45,47,48,52,53,69,80	25	30.00	54	18.23	36	6.86	22	2	37	28	59.38	33	0	0	0	0
121	309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	35	42.50	68	23.54	28	4.83	14	1	38	33	107.17	96	2	100	0	0
122	514	8,10,15,19,21,29,43,44,59,66,67,70,79	20	23.75	59	20.13	41	8.14	21	2	36	22	109.56	99	1	50	0	0
123	366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	37	45.00	72	25.06	34	6.36	17	1	41	50	55.44	28	1	50	0	0
124	329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	33	40.00	71	24.68	29	5.08	9	0	40	44	103.74	91	2	100	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

			Land Use															
Rank	Routes	Study Segments	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000 ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
125	6	2,10,15,19,21,29,43,44,59,66,67,70	21	25.00	60	20.51	36	6.86	16	1	40	44	99.26	85	1	50	0	0
126	23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	22	26.25	61	20.89	38	7.37	18	1	42	56	104.27	92	1	50	0	0
127	142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	37	45.00	75	26.20	32	5.85	17	1	38	33	95.59	81	1	50	0	0
128	165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	41	50.00	77	26.96	39	7.63	23	2	41	50	54.95	28	0	0	0	0
129	207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	26	31.25	62	21.27	40	7.88	22	2	40	44	96.48	82	1	50	0	0
130	41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	34	41.25	73	25.44	31	5.59	15	1	40	44	105.75	94	1	50	0	0
131	164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	41	50.00	77	26.96	39	7.63	22	2	40	44	49.37	20	0	0	0	0
132	482	18,19,21,29,43,44,55,67,70,76,77,78,79	33	40.00	71	24.68	36	6.86	15	1	37	28	92.54	77	1	50	0	0
133	517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	22	26.25	57	19.37	42	8.39	23	2	36	22	107.17	96	1	50	0	0
134	363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	33	40.00	71	24.68	29	5.08	9	0	41	50	95.82	81	2	100	0	0
135	334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	37	45.00	72	25.06	34	6.36	18	1	42	56	68.93	46	1	50	0	0
136	143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	37	45.00	83	29.24	38	7.37	20	1	40	44	95.08	80	1	50	0	0
137	45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	38	46.25	74	25.82	36	6.86	23	2	38	33	65.37	41	0	0	0	0
138	157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	39	47.50	74	25.82	35	6.61	16	1	41	50	87.36	70	1	50	0	0
139	212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	28	33.75	65	22.41	46	9.41	30	3	44	67	82.56	64	1	50	0	0
140	459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	37	45.00	72	25.06	41	8.14	24	2	36	22	65.64	42	0	0	0	0
141	299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	23	27.50	61	20.89	40	7.88	23	2	45	72	94.16	79	2	100	0	0
142	333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	37	45.00	72	25.06	34	6.36	17	1	40	44	63.35	39	1	50	0	0
143	269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	10	11.25	41	13.29	46	9.41	49	5	50	100	110.43	100	2	100	0	0
144	463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	37	45.00	72	25.06	41	8.14	24	2	38	33	57.73	31	0	0	0	0
145	468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,84	23	27.50	61	20.89	47	9.66	29	3	40	44	90.87	74	1	50	0	0
146	472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	23	27.50	61	20.89	47	9.66	29	3	41	50	82.96	64	1	50	0	0
147	462	18,19,30,33,45,47,48,52,65,67,77,78,79	37	45.00	72	25.06	41	8.14	23	2	36	22	52.15	24	0	0	0	0
148	174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	27	32.50	66	22.78	45	9.15	28	2	46	78	72.27	50	1	50	0	0
149	367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	37	45.00	72	25.06	34	6.36	18	1	43	61	61.02	35	1	50	0	0
150	184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	39	47.50	74	25.82	35	6.61	16	1	42	56	79.45	60	1	50	0	0
151	191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	41	50.00	77	26.96	39	7.63	22	2	42	56	41.46	10	0	0	0	0
152	140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	39	47.50	81	28.48	39	7.63	22	2	40	44	92.69	77	1	50	0	0
153	160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	37	45.00	76	26.58	34	6.36	14	1	41	50	89.76	73	1	50	0	0
154	477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	33	40.00	78	27.34	40	7.88	21	2	36	22	105.77	94	1	50	0	0
155	310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	35	42.50	76	26.58	34	6.36	17	1	40	44	106.67	95	2	100	0	0
156	488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	35	42.50	68	23.54	35	6.61	20	1	34	11	103.88	91	1	50	0	0
157	63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	38	46.25	75	26.20	38	7.37	20	1	40	44	59.54	34	0	0	0	0
158	90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	38	46.25	75	26.20	38	7.37	20	1	42	56	51.63	23	0	0	0	0
159	479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	33	40.00	71	24.68	36	6.86	15	1	36	22	100.44	87	1	50	0	0
160	187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	37	45.00	76	26.58	34	6.36	14	1	42	56	81.84	63	1	50	0	0
161	326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	35	42.50	69	23.92	30	5.34	11	0	40	44	101.34	88	2	100	0	0
162	491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	39	47.50	74	25.82	35	6.61	16	1	41	50	87.36	70	1	50	0	0
163	489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	35	42.50	76	26.58	41	8.14	23	2	36	22	103.38	91	1	50	0	0
164	3	2,10,15,19,21,22,28,43,44,59,66,67,70	23	27.50	58	19.75	37	7.12	18	1	40	44	96.87	82	1	50	0	0
165	315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	37	45.00	79	27.72	40	7.88	25	2	45	72	92.75	77	2	100	0	0
166	26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	20	23.75	63	21.65	37	7.12	16	1	42	56	106.66	95	1	50	0	0
167	42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	34	41.25	81	28.48	37	7.12	18	1	42	56	105.25	93	1	50	0	0
168	483	18,19,21,29,43,44,59,66,67,70,77,78,79	33	40.00	79	27.72	42	8.39	18	1	39	39	92.03	76	1	50	0	0
169	8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	25	30.00	61	20.89	43	8.64	26	2	44	67	82.95	64	1	50	0	0
170	38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	36	43.75	71	24.68	32	5.85	17	1	40	44	103.36	91	1	50	0	0
171	494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	35	42.50	69	23.92	37	7.12	17	1	37	28	90.14	74	1	50	0	0
172	360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	35	42.50	69	23.92	30	5.34	11	0	41	50	93.43	78	2	100	0	0
173	59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	34	41.25	74	25.82	33	6.10	12	0	42	56	99.92	86	1	50	0	0
174	64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	38	46.25	75	26.20	38	7.37	21	2	42	56	65.12	41	0	0	0	0
175	145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	41	50.00	84	29.62	45	9.15	30	3	44	67	78.77	59	1	50	0	0
176	91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	38	46.25	75	26.20	38	7.37	21	2	44	67	57.21	31	0	0	0	0
177	330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	33	40.00	79	27.72	35	6.61	12	0	42	56	103.22	91	2	100	0	0
178	161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	37	45.00	84	29.62	40	7.88	17	1	43	61	89.25	72	1	50	0	0
179	73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	24	28.75	64	22.03	44	8.90	26	2	47	83	82.44	63	1	50	0	0
180	512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	24	28.75	60	20.51	48	9.92	31	3	40	44	93.25	78	1	50	0	0
181	480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	33	40.00	79	27.72	42	8.39	18	1	38	33	99.94	86	1	50	0	0
182	456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	37	45.00	79	27.72	47	9.66	31	3	40	44	89.46	73	1	50	0	0
183	364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	33	40.00	79	27.72	35	6.61	12	0	43	61	95.32	80	2	100	0	0
184	57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	36	43.75	80	28.10	40	7.88	17	1	44	67	97.02	82	1	50	0	0
185	278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	24	28.75	60	20.51	41	8.14	25	2	45	72	96.54	82	2	100	0	0
186	327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	35	42.50	77	26.96	36	6.86	14	1	42	56	100.83	87	2	100	0	0

**Institutional land use includes schools, churches, and hospitals

**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

Rank	Routes	Study Segments	Land Use																
			Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 50%)	Residences between 250-500-ft of centerline	Normalized Score for Residences between 250-500-ft of centerline (weighted 30%)	Residences between 500-750-ft of centerline	Normalized Score for Residences between 500-750-ft of centerline (weighted 15%)	Residences between 750-1,000-ft of centerline	Normalized Score for Residences between 750-1,000-ft of centerline (weighted 5%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Ag. District Lands Crossed by ROW (acres)	Normalized Score for Ag. District Lands Crossed by ROW	Other Sensitive Land Uses within 1,000-ft**	Normalized Score for Linear Feet of Other Sensitive Land Uses within 1,000-ft	Institutional Land Uses within 1,000 ft of centerline**	Normalized Score for Institutional Land Uses within 1,000-ft of centerline
187	158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	39	47.50	82	28.86	41	8.14	19	1	43	61	86.86	69	1	50	0	0
188	84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	36	43.75	80	28.10	40	7.88	17	1	45	72	89.11	72	1	50	0	0
189	86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	34	41.25	74	25.82	33	6.10	12	0	43	61	92.01	76	1	50	0	0
190	39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	36	43.75	79	27.72	38	7.37	20	1	42	56	102.85	90	1	50	0	0
191	495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	35	42.50	77	26.96	43	8.64	20	1	39	39	89.63	73	1	50	0	0
192	332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	37	45.00	80	28.10	42	8.39	22	2	47	83	86.92	69	2	100	0	0
193	361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	35	42.50	77	26.96	36	6.86	14	1	43	61	92.92	77	2	100	0	0
194	28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,8	24	28.75	64	22.03	44	8.90	26	2	46	78	90.35	74	1	50	0	0
195	464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	37	45.00	80	28.10	49	10.17	28	2	43	61	75.72	55	1	50	0	0
196	56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	36	43.75	72	25.06	34	6.36	14	1	42	56	97.53	83	1	50	0	0
197	83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	36	43.75	72	25.06	34	6.36	14	1	43	61	89.62	73	1	50	0	0
198	188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	37	45.00	84	29.62	40	7.88	17	1	44	67	81.34	62	1	50	0	0
199	492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	35	42.50	77	26.96	43	8.64	20	1	38	33	97.54	83	1	50	0	0
200	185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	39	47.50	82	28.86	41	8.14	19	1	44	67	78.94	59	1	50	0	0
201	162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	41	50.00	78	27.34	40	7.88	23	2	41	50	49.37	20	0	0	0	0
202	44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	38	46.25	82	28.86	44	8.90	28	2	46	78	88.94	72	1	50	0	0
203	460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,84	37	45.00	80	28.10	49	10.17	28	2	42	56	83.63	65	1	50	0	0
204	190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	41	50.00	85	30.00	47	9.66	27	2	48	89	65.03	41	1	50	0	0
205	368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	37	45.00	80	28.10	42	8.39	22	2	48	89	79.01	59	2	100	0	0
206	163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	41	50.00	85	30.00	47	9.66	27	2	47	83	72.94	51	1	50	0	0
207	60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	34	41.25	82	28.86	39	7.63	15	1	44	67	99.42	86	1	50	0	0
208	87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	34	41.25	82	28.86	39	7.63	15	1	45	72	91.51	75	1	50	0	0
209	461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	37	45.00	73	25.44	42	8.39	24	2	37	28	52.15	24	0	0	0	0
210	189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	41	50.00	78	27.34	40	7.88	23	2	43	61	41.46	10	0	0	0	0
211	62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,8	38	46.25	83	29.24	46	9.41	25	2	48	89	83.11	64	1	50	0	0
212	89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	38	46.25	83	29.24	46	9.41	25	2	49	94	75.20	54	1	50	0	0
		MIN	1	0	6	0	9	0	9	0	32	0	34	0	0	0	0	0
		MAX	41	50	85	30	68	15	49	5	50	100	110	100	2	100	0	0
		RANGE	40	50	79	30	59	15	40	5	18	100	77	100	2	100	0	0

**Institutional land use includes schools, churches, and hospitals
**Other sensitive land uses include parks, preserves, managed areas, conservation sites, golf courses, and airports.

			Technical															
Rank	Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
1	266	4,17,32,37,63,74,75,80	0	0	4	25	7.56	0	0.00	30	2.90	21	0.00	100	9.47	23	0.15	0
2	306	4,9,11,14,20,29,43,44,55,67,70,76,83	0	0	6	50	2.03	22	1.91	20	1.22	34	0.44	85	10.81	49	0.15	0
3	266 (Mod)	4,17,32,37,63,74,75(mod),80(mod)	0	0	7	63	7.09	2	0.00	30	2.94	20	0.00	100	9.48	23	0.15	0
4	307	4,9,11,14,20,29,43,44,59,66,67,70,83	0	0	4	25	2.03	22	0.44	28	0.98	36	0.44	85	10.53	44	0.15	0
5	500	14,20,29,43,44,55,67,70,76,78,79	0	0	4	25	0.00	30	3.98	8	0.78	38	0.00	100	9.45	23	1.13	49
6	354	4,9,14,20,29,43,44,55,67,70,76,78,81	0	0	6	50	2.03	22	1.93	19	0.78	38	0.00	100	10.83	50	0.15	0
7	133	3,11,14,20,22,28,43,44,55,67,70,76,83	0	0	6	50	0.00	30	3.33	12	2.65	23	1.86	38	9.75	29	1.07	46
8	149	3,11,16,23,25,31,33,45,47,48,52,65,67	0	0	5	38	0.00	30	5.41	0	5.42	0	3.02	0	8.33	1	1.07	46
9	178	3,14,20,22,28,43,44,55,67,70,76,78,81	0	0	6	50	0.00	30	3.35	12	2.21	26	1.42	53	9.77	29	1.07	46
10	136	3,11,14,20,29,43,44,55,67,70,76,83	0	0	5	38	0.00	30	3.33	12	2.65	23	1.86	38	9.50	24	1.07	46
11	203	3,7,8,13,28,43,44,55,67,70,76,81	0	0	7	63	0.00	30	2.89	14	2.21	26	1.42	53	10.32	40	1.07	46
12	219	3,8,10,20,29,43,44,55,67,70,76,81	0	0	6	50	0.00	30	2.89	14	2.21	26	1.42	53	9.77	29	1.07	46
13	242	3,9,17,32,37,63,74,75,80	0	0	5	38	5.56	8	1.42	22	4.31	9	1.42	53	10.86	50	1.07	46
14	519	8,10,20,29,43,44,55,67,70,76,79	0	0	5	38	0.00	30	3.52	11	0.78	38	0.00	100	9.71	28	1.13	49
15	497	11,14,20,29,43,44,55,67,70,76,79,81,83	0	0	6	50	0.00	30	3.96	8	1.22	34	0.44	85	9.55	25	1.13	49
16	181	3,14,20,29,43,44,55,67,70,76,78,81	0	0	5	38	0.00	30	3.35	12	2.21	26	1.42	53	9.52	24	1.07	46
17	303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	0	0	7	63	2.03	22	1.91	20	1.22	34	0.44	85	11.07	54	0.15	0
18	498	11,14,20,29,43,44,59,66,67,70,79,81,83	0	0	4	25	0.00	30	2.49	16	0.98	36	0.44	85	9.26	19	1.13	49
19	501	14,20,29,43,44,59,66,67,70,78,79	0	0	2	0	0.00	30	2.51	16	0.54	40	0.00	100	9.17	17	1.13	49
20	522	8,10,20,22,28,43,44,55,67,70,76,79	0	0	6	50	0.00	30	3.52	11	0.78	38		100	9.96	33	1.13	49
21	355	4,9,14,20,29,43,44,59,66,67,70,78,81	0	0	4	25	2.03	22	0.46	27	0.54	40	0.00	100	10.54	44	0.15	0
22	304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	0	0	5	38	2.03	22	0.44	28	0.98	36	0.44	85	10.78	49	0.15	0
23	12	2,10,20,22,28,43,44,55,67,70,76	0	0	5	38	0.00	30	1.47	22	0.78	38	0.00	100	9.36	21	2.16	100
24	503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	0	0	7	63	0.00	30	3.96	8	1.22	34	0.44	85	9.80	30	1.13	49
25	506	14,20,22,28,43,44,55,67,70,76,78,79	0	0	5	38	0.00	30	3.98	8	0.78	38	0.00	100	9.71	28	1.13	49
26	351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	0	0	7	63	2.03	22	1.93	19	0.78	38	0.00	100	11.08	54	0.15	0
27	35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	0	0	7	63	0.00	30	1.91	20	1.22	34	0.44	85	10.11	36	2.16	100
28	80	2,8,14,20,29,43,44,55,67,70,76,78	0	0	5	38	0.00	30	1.93	19	0.78	38	0.00	100	10.02	34	2.16	100
29	410	9,17,32,37,63,74,75,79,80,81	0	0	6	50	5.56	8	2.05	19	2.88	21	0.00	100	10.91	51	1.13	49
30	525	7,8,13,28,43,44,55,67,70,76,79	0	0	6	50	0.00	30	3.52	11	0.78	38	0.00	100	10.26	39	1.13	49
31	507	14,20,22,28,43,44,59,66,67,70,78,79	0	0	3	13	0.00	30	2.51	16	0.54	40		100	9.42	22	1.13	49
32	276	4,7,8,9,13,28,43,44,55,67,70,76,81	0	0	8	75	2.03	22	1.47	22	0.78	38	0.00	100	11.63	65	0.15	0
33	352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	0	0	5	38	2.03	22	0.46	27	0.54	40		100	10.79	49	0.15	0
34	18	2,7,13,28,43,44,55,67,70,76	0	0	5	38	0.00	30	1.47	22	0.78	38	0.00	100	9.66	27	2.16	100
35	15	2,10,20,29,43,44,55,67,70,76	0	0	4	25	0.00	30	1.47	22	0.78	38	0.00	100	9.10	16	2.16	100
36	137	3,11,14,20,29,43,44,59,66,67,70,83	0	0	3	13	0.00	30	1.86	20	2.41	25	1.86	38	9.22	18	1.07	46
37	18 (Mod)	2(mod),7(mod),13(mod),28,43,44,55,67,70,76	0	0	6	50	0.00	30	1.54	22	0.83	38	0.00	100	9.30	20	2.16	100
38	77	2,8,14,20,22,28,43,44,55,67,70,76,78	0	0	6	50	0.00	30	1.93	19	0.78	38		100	10.27	39	2.16	100
39	149 (Mod2)	Mod. #2 to Route 149 (scored as complete new route)	0	0	6	50	0.00	30	4.01	8	4.08	11	2.47	18	8.52	5	1.07	46
40	216	3,8,10,20,22,28,43,44,55,67,70,76,81	0	0	7	63	0.00	30	2.89	14	2.21	26	1.42	53	10.02	34	1.07	46
41	19	2,7,13,28,43,44,59,66,67,70	0	0	3	13	0.00	30	0.00	30	0.54	40		100	9.37	21	2.16	100
42	182	3,14,20,29,43,44,59,66,67,70,78,81	0	0	3	13	0.00	30	1.88	20	1.97	28	1.42	53	9.23	19	1.07	46
43	134	3,11,14,20,22,28,43,44,59,66,67,70,83	0	0	4	25	0.00	30	1.86	20	2.41	25	1.86	38	9.47	23	1.07	46
44	504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	0	0	5	38	0.00	30	2.49	16	0.98	36	0.44	85	9.52	24	1.13	49
45	179	3,14,20,22,28,43,44,59,66,67,70,78,81	0	0	4	25	0.00	30	1.88	20	1.97	28	1.42	53	9.48	24	1.07	46
46	204	3,7,8,13,28,43,44,59,66,67,70,81	0	0	5	38	0.00	30	1.42	22	1.97	28	1.42	53	10.04	34	1.07	46
47	32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	0	0	8	75	0.00	30	1.91	20	1.22	34	0.44	85	10.36	41	2.16	100
48	273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	0	0	9	88	2.03	22	1.47	22	0.78	38	0.00	100	12.10	74	0.15	0
49	526	7,8,13,28,43,44,59,66,67,70,79	0	0	4	25	0.00	30	2.05	19	0.54	40	0.00	100	9.97	33	1.13	49
50	277	4,7,8,9,13,28,43,44,59,66,67,70,81	0	0	6	50	2.03	22	0.00	30	0.54	40	0.00	100	11.35	60	0.15	0
51	520	8,10,20,29,43,44,59,66,67,70,79	0	0	3	13	0.00	30	2.05	19	0.54	40	0.00	100	9.42	22	1.13	49
52	16	2,10,20,29,43,44,59,66,67,70	0	0	2	0	0.00	30	0.00	30	0.54	40	0.00	100	8.82	11	2.16	100
53	119	2,8,9,17,32,37,63,74,75,80,81	0	0	7	63	5.56	8	0.00	30	2.88	21	0.00	100	11.47	62	2.16	100
54	217	3,8,10,20,22,28,43,44,59,66,67,70,81	0	0	5	38	0.00	30	1.42	22	1.97	28	1.42	53	9.74	28	1.07	46
55	523	8,10,20,22,28,43,44,59,66,67,70,79	0	0	4	25	0.00	30	2.05	19	0.54	40	0.00	100	9.67	27	1.13	49
56	13	2,10,20,22,28,43,44,59,66,67,70	0	0	3	13	0.00	30	0.00	30	0.54	40	0.00	100	9.07	16	2.16	100
57	36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	0	0	5	38	0.00	30	0.44	28	0.98	36	0.44	85	9.83	30	2.16	100
58	81	2,8,14,20,29,43,44,59,66,67,70,78	0	0	3	13	0.00	30	0.46	27	0.54	40	0.00	100	9.73	28	2.16	100
59	220	3,8,10,20,29,43,44,59,66,67,70,81	0	0	4	25	0.00	30	1.42	22	1.97	28	1.42	53	9.49	24	1.07	46
60	78	2,8,14,20,22,28,43,44,59,66,67,70,78	0	0	4	25	0.00	30	0.46	27	0.54	40	0.00	100	9.98	33	2.16	100
61	176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	0	0	6	50	0.00	30	3.92	9	3.36	17	1.42	53	8.84	11	1.07	46
62	511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	0	0	6	50	0.00	30	4.08	8	1.93	29	0.00	100	9.03	15	1.13	49
63	301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	0	0	7	63	2.03	22	2.48	16	2.37	25	0.44	85	10.14	36	0.15	0
64	10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	0	0	5	38	0.00	30	2.04	19	1.93	29	0.00	100	8.43	3	2.16	100
65	123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	0	0	8	75	0.00	30	3.33	12	2.65	23	1.86	38	10.16	37	1.07	46
66	467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	0	0	7	63	0.00	30	4.52	5	2.37	25	0.44	85	8.87	12	1.13	49
67	300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	0	0	7	63	2.03	22	2.83	14	2.84	21	0.44	85	9.97	33	0.15	0
68	270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	0	0	9	88	2.03	22	2.39	17	2.40	25	0.00	100	11.98	72	0.15	0

			Technical															
Rank	Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
69	466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	0	0	7	63	0.00	30	4.88	3	2.83	21	0.44	85	8.71	9	1.13	49
70	33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	0	0	6	50	0.00	30	0.44	28	0.98	36	0.44	85	10.08	35	2.16	100
71	356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	0	0	6	50	2.03	22	2.86	14	2.40	25	0.00	100	9.69	28	0.15	0
72	274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	0	0	7	63	2.03	22	0.00	30	0.54	40	0.00	100	11.82	69	0.15	0
73	471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	0	0	5	38	0.00	30	4.55	5	1.93	29	0.00	100	8.78	10	1.13	49
74	470	14,15,19,30,33,45,47,48,52,65,67,78,79	0	0	5	38	0.00	30	4.90	3	2.39	25	0.00	100	8.61	7	1.13	49
75	288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	0	0	8	75	2.03	22	2.39	17	2.40	25	0.00	100	10.24	38	0.15	0
76	126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	0	0	7	63	0.00	30	3.33	12	2.65	23	1.86	38	9.91	32	1.07	46
77	30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	0	0	8	75	0.00	30	2.48	16	2.37	25	0.44	85	9.43	23	2.16	100
78	131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	0	0	6	50	0.00	30	3.90	9	3.80	13	1.86	38	8.82	11	1.07	46
79	149 (Mod1)	Mod. #1 to Route 149 (scored as complete new route)	0	0	9	88	0.00	30	3.19	13	4.10	11	2.01	34	8.69	8	1.07	46
80	29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	0	0	8	75	0.00	30	2.83	14	2.83	21	0.44	85	9.27	19	2.16	100
81	513	8,10,15,19,21,29,43,44,55,67,70,76,79	0	0	7	63	0.00	30	3.52	11	0.78	38	0.00	100	10.12	36	1.13	49
82	75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	0	0	6	50	0.00	30	2.50	16	1.93	29	0.00	100	9.34	21	2.16	100
83	130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	0	0	6	50	0.00	30	4.25	7	4.27	9	1.86	38	8.66	8	1.07	46
84	473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	0	0	8	75	0.00	30	3.96	8	1.22	34	0.44	85	9.96	33	1.13	49
85	74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	0	0	6	50	0.00	30	2.86	14	2.39	25	0.00	100	9.17	18	2.16	100
86	510	8,10,15,19,30,33,45,47,48,52,65,67,79	0	0	6	50	0.00	30	4.44	6	2.39	25	0.00	100	8.87	12	1.13	49
87	210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	0	0	6	50	0.00	30	1.42	22	1.97	28	1.42	53	9.89	31	1.07	46
88	213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	0	0	7	63	0.00	30	3.81	9	3.83	13	1.42	53	8.93	13	1.07	46
89	271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	0	0	10	100	2.03	22	2.04	19	1.93	29	0.00	100	12.20	76	0.15	0
90	289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	0	0	8	75	2.03	22	2.04	19	1.93	29	0.00	100	10.41	41	0.15	0
91	485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	0	0	9	88	0.00	30	3.96	8	1.22	34	0.44	85	10.21	38	1.13	49
92	349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	0	0	7	63	2.03	22	2.50	16	1.93	29	0.00	100	10.15	36	0.15	0
93	175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	0	0	6	50	0.00	30	4.28	7	3.83	13	1.42	53	8.68	8	1.07	46
94	147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	0	0	5	38	0.00	30	4.50	5	4.40	8	2.46	18	8.86	12	1.07	46
95	312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	0	0	7	63	2.03	22	2.51	16	1.82	30	1.04	66	11.26	58	0.15	0
96	209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	0	0	8	75	0.00	30	2.89	14	2.21	26	1.42	53	10.18	37	1.07	46
97	146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	0	0	5	38	0.00	30	4.85	3	4.86	5	2.46	18	8.70	8	1.07	46
98	486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	0	0	7	63	0.00	30	2.49	16	0.98	36	0.44	85	9.92	32	1.13	49
99	127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	0	0	5	38	0.00	30	1.86	20	2.41	25	1.86	38	9.62	26	1.07	46
100	5	2,10,15,19,21,29,43,44,55,67,70,76	0	0	6	50	0.00	30	1.47	22	0.78	38	0.00	100	9.51	24	2.16	100
101	317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	0	0	6	50	2.03	22	3.08	13	2.97	20	1.04	66	10.17	37	0.15	0
102	22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	0	0	10	100	0.00	30	1.91	20	1.22	34	0.44	85	10.77	48	2.16	100
103	455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	0	0	6	50	0.00	30	5.12	2	2.97	20	1.04	66	8.91	12	1.13	49
104	316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	0	0	6	50	2.03	22	3.43	11	3.44	16	1.04	66	10.01	34	0.15	0
105	9	2,10,15,19,30,33,45,47,48,52,65,67	0	0	5	38	0.00	30	2.39	17	2.39	25	0.00	100	8.26	0	2.16	100
106	454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	0	0	6	50	0.00	30	5.48	0	3.43	16	1.04	66	8.75	9	1.13	49
107	206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	0	0	9	88	0.00	30	2.89	14	2.21	26	1.42	53	10.43	42	1.07	46
108	474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	0	0	6	50	0.00	30	2.49	16	0.98	36	0.44	85	9.67	27	1.13	49
109	516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	0	0	8	75	0.00	30	3.52	11	0.78	38	0.00	100	10.37	41	1.13	49
110	124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	0	0	6	50	0.00	30	1.86	20	2.41	25	1.86	38	9.87	31	1.07	46
111	2	2,10,15,19,21,22,28,43,44,55,67,70,76	0	0	7	63	0.00	30	1.47	22	0.78	38	0.00	100	9.76	29	2.16	100
112	25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	0	0	9	88	0.00	30	1.91	20	1.22	34	0.44	85	10.52	44	2.16	100
113	129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	0	0	6	50	0.00	30	3.95	8	3.56	15	1.86	38	10.06	35	1.07	46
114	46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	0	0	7	63	0.00	30	3.08	13	2.97	20	1.04	66	9.47	23	2.16	100
115	458	11,18,19,30,33,45,47,48,52,65,67,77,83	0	0	7	63	0.00	30	5.46	0	2.83	21	0.44	85	8.74	9	1.13	49
116	139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	0	0	7	63	0.00	30	3.93	8	3.25	18	2.46	18	10.20	37	1.07	46
117	313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	0	0	5	38	2.03	22	1.04	24	1.58	31	1.04	66	10.97	52	0.15	0
118	476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	0	0	7	63	0.00	30	4.56	5	1.82	30	1.04	66	9.99	33	1.13	49
119	192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	0	0	6	50	0.00	30	4.50	5	3.36	17	1.42	53	8.86	12	1.07	46
120	7	2,10,15,19,30,33,45,47,48,52,53,69,80	0	0	7	63	0.00	30	1.69	21	2.32	25	0.00	100	9.17	17	2.16	100
121	309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	0	0	8	75	2.03	22	2.51	16	1.82	30	1.04	66	11.51	63	0.15	0
122	514	8,10,15,19,21,29,43,44,59,66,67,70,79	0	0	5	38	0.00	30	2.05	19	0.54	40	0.00	100	9.83	30	1.13	49
123	366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	0	0	7	63	2.03	22	3.43	11	2.40	25	0.00	100	10.01	34	0.15	0
124	329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	0	0	8	75	2.03	22	2.49	16	1.22	34	0.44	85	11.25	58	0.15	0
125	6	2,10,15,19,21,29,43,44,59,66,67,70	0	0	4	25	0.00	30	0.00	30	0.54	40	0.00	100	9.23	19	2.16	100
126	23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	0	0	8	75	0.00	30	0.44	28	0.98	36	0.44	85	10.49	43	2.16	100
127	142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	0	0	6	50	0.00	30	3.93	8	3.25	18	2.46	18	9.95	32	1.07	46
128	165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	0	0	6	50	0.00	30	4.47	6	3.80	13	1.86	38	8.85	11	1.07	46
129	207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	0	0	7	63	0.00	30	1.42	22	1.97	28	1.42	53	10.14	36	1.07	46
130	41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	0	0	8	75	0.00	30	2.51	16	1.82	30	1.04	66	10.56	44	2.16	100
131	164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	0	0	6	50	0.00	30	4.83	4	4.27	9	1.86	38	8.69	8	1.07	46
132	482	18,19,21,29,43,44,55,67,70,76,77,78,79	0	0	6	50	0.00	30	4.56	5	0.78	38	0.00	100	9.89	31	1.13	49
133	517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	0	0	6	50	0.00	30	2.05	19	0.54	40	0.00	100	10.08	35	1.13	49
134	363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	0	0	8	75	2.03	22	2.51	16	0.78	38	0.00	100	11.26	58	0.15	0
135	334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	0	0	7	63	2.03	22	3.05	13	2.37	25	0.44	85	10.16	37	0.15	0
136	143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	0	0	4	25	0.00	30	2.46	17	3.01	20	2.46	18	9.66	27	1.07	46

			Technical															
Rank	Routes	Study Segments	Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
137	45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	0	0	7	63	0.00	30	3.43	11	3.43	16	1.04	66	9.31	20	2.16	100
138	157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	0	0	8	75	0.00	30	3.91	9	2.65	23	1.86	38	10.19	37	1.07	46
139	212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	7	63	0.00	30	3.51	11	3.12	19	1.42	53	10.33	40	1.07	46
140	459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	0	0	7	63	0.00	30	5.10	2	2.37	25	0.44	85	8.90	12	1.13	49
141	299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	0	0	7	63	2.03	22	2.53	16	2.13	27	0.44	85	11.37	60	0.15	0
142	333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	0	0	7	63	2.03	22	3.41	11	2.84	21	0.44	85	10.00	34	0.15	0
143	269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	10	100	2.03	22	2.09	19	1.69	31	0.00	100	13.44	100	0.15	0
144	463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	0	0	5	38	0.00	30	5.12	2	1.93	29	0.00	100	8.80	10	1.13	49
145	468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,8	0	0	7	63	0.00	30	4.58	5	2.13	27	0.44	85	10.11	36	1.13	49
146	472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	0	0	5	38	0.00	30	4.60	5	1.69	31	0.00	100	10.01	34	1.13	49
147	462	18,19,30,33,45,47,48,52,65,67,77,78,79	0	0	5	38	0.00	30	5.48	0	2.39	25	0.00	100	8.64	7	1.13	49
148	174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	0	0	6	50	0.00	30	3.98	8	3.12	19	1.42	53	10.08	35	1.07	46
149	367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	0	0	7	63	2.03	22	3.08	13	1.93	29	0.00	100	10.17	37	0.15	0
150	184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	0	0	8	75	0.00	30	3.93	8	2.21	26	1.42	53	10.20	37	1.07	46
151	191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	0	0	6	50	0.00	30	4.85	3	3.83	13	1.42	53	8.70	8	1.07	46
152	140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	0	0	5	38	0.00	30	2.46	17	3.01	20	2.46	18	9.91	32	1.07	46
153	160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	0	0	7	63	0.00	30	3.91	9	2.65	23	1.86	38	9.93	32	1.07	46
154	477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	0	0	5	38	0.00	30	3.09	13	1.58	31	1.04	66	9.71	28	1.13	49
155	310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	0	0	6	50	2.03	22	1.04	24	1.58	31	1.04	66	11.22	57	0.15	0
156	488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	0	0	8	75	0.00	30	4.56	5	1.82	30	1.04	66	10.25	38	1.13	49
157	63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	0	0	8	75	0.00	30	3.41	11	2.83	21	0.44	85	9.30	20	2.16	100
158	90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	0	0	6	50	0.00	30	3.43	11	2.39	25	0.00	100	9.20	18	2.16	100
159	479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	0	0	8	75	0.00	30	4.53	5	1.22	34	0.44	85	9.98	33	1.13	49
160	187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	0	0	7	63	0.00	30	3.93	8	2.21	26	1.42	53	9.95	33	1.07	46
161	326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	0	0	9	88	2.03	22	2.49	16	1.22	34	0.44	85	11.50	62	0.15	0
162	491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	0	0	8	75	0.00	30	3.91	9	2.65	23	1.86	38	10.19	37	1.07	46
163	489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	0	0	6	50	0.00	30	3.09	13	1.58	31	1.04	66	9.96	33	1.13	49
164	3	2,10,15,19,21,22,28,43,44,59,66,67,70	0	0	5	38	0.00	30	0.00	30	0.54	40	0.00	100	9.48	23	2.16	100
165	315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	0	0	6	50	2.03	22	3.13	13	2.73	22	1.04	66	11.41	61	0.15	0
166	26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	0	0	7	63	0.00	30	0.44	28	0.98	36	0.44	85	10.23	38	2.16	100
167	42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	0	0	6	50	0.00	30	1.04	24	1.58	31	1.04	66	10.27	39	2.16	100
168	483	18,19,21,29,43,44,59,66,67,70,77,78,79	0	0	4	25	0.00	30	3.09	13	0.54	40	0.00	100	9.60	26	1.13	49
169	8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	0	0	5	38	0.00	30	2.09	19	1.69	31	0.00	100	9.67	27	2.16	100
170	38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	0	0	9	88	0.00	30	2.51	16	1.82	30	1.04	66	10.81	49	2.16	100
171	494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	0	0	7	63	0.00	30	4.56	5	0.78	38	0.00	100	10.14	36	1.13	49
172	360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	0	0	9	88	2.03	22	2.51	16	0.78	38	0.00	100	11.51	63	0.15	0
173	59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	0	0	9	88	0.00	30	2.49	16	1.22	34	0.44	85	10.54	44	2.16	100
174	64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	0	0	8	75	0.00	30	3.05	13	2.37	25	0.44	85	9.46	23	2.16	100
175	145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	0	0	5	38	0.00	30	4.55	5	4.16	10	2.46	18	10.10	35	1.07	46
176	91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	0	0	6	50	0.00	30	3.08	13	1.93	29	0.00	100	9.36	21	2.16	100
177	330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	0	0	6	50	2.03	22	1.02	24	0.98	36	0.44	85	10.96	52	0.15	0
178	161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	0	0	5	38	0.00	30	2.44	17	2.41	25	1.86	38	9.65	27	1.07	46
179	73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	0	0	6	50	0.00	30	2.56	16	1.69	31	0.00	100	10.58	45	2.16	100
180	512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	0	0	6	50	0.00	30	4.14	7	1.69	31	0.00	100	10.27	39	1.13	49
181	480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	0	0	6	50	0.00	30	3.06	13	0.98	36	0.44	85	9.70	28	1.13	49
182	456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	0	0	6	50	0.00	30	5.18	2	2.73	22	1.04	66	10.15	36	1.13	49
183	364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	0	0	6	50	2.03	22	1.04	24	0.54	40	0.00	100	10.97	52	0.15	0
184	57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	0	0	8	75	0.00	30	1.02	24	0.98	36	0.44	85	10.51	43	2.16	100
185	278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	0	0	8	75	2.03	22	2.09	19	1.69	31	0.00	100	11.64	65	0.15	0
186	327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	0	0	7	63	2.03	22	1.02	24	0.98	36	0.44	85	11.21	57	0.15	0
187	158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	0	0	6	50	0.00	30	2.44	17	2.41	25	1.86	38	9.90	32	1.07	46
188	84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	0	0	6	50	0.00	30	1.04	24	0.54	40	0.00	100	10.41	42	2.16	100
189	86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	0	0	7	63	0.00	30	2.51	16	0.78	38	0.00	100	10.45	42	2.16	100
190	39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	0	0	7	63	0.00	30	1.04	24	1.58	31	1.04	66	10.52	44	2.16	100
191	495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	0	0	5	38	0.00	30	3.09	13	0.54	40	0.00	100	9.85	31	1.13	49
192	332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	0	0	7	63	2.03	22	3.11	13	2.13	27	0.44	85	11.40	61	0.15	0
193	361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	0	0	7	63	2.03	22	1.04	24	0.54	40	0.00	100	11.23	57	0.15	0
194	28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,8	0	0	8	75	0.00	30	2.53	16	2.13	27	0.44	85	10.67	47	2.16	100
195	464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	0	0	5	38	0.00	30	5.18	2	1.69	31	0.00	100	10.04	34	1.13	49
196	56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	0	0	10	100	0.00	30	2.49	16	1.22	34	0.44	85	10.80	49	2.16	100
197	83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	0	0	8	75	0.00	30	2.51	16	0.78	38	0.00	100	10.70	47	2.16	100
198	188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	0	0	5	38	0.00	30	2.46	17	1.97	28	1.42	53	9.66	27	1.07	46
199	492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	0	0	7	63	0.00	30	3.06	13	0.98	36	0.44	85	9.95	33	1.13	49
200	185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	0	0	6	50	0.00	30	2.46	17	1.97	28	1.42	53	9.91	32	1.07	46
201	162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	0	0	8	75	0.00	30	4.13	7	4.19	10	1.86	38	9.59	26	1.07	46
202	44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	0	0	7	63	0.00	30	3.13	13	2.73	22	1.04	66	10.71	47	2.16	100
203	460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,8	0	0	7	63	0.00	30	5.16	2	2.13	27	0.44	85	10.14	36	1.13	49

Rank	Routes	Study Segments	Technical															
			Interstate Highway Crossings	Normalized Score for Interstate Highway Crossings	Turn Angles Greater than or Equal to 45 Degrees	Normalized Score for Turn Angles Greater than or Equal to 45 Degrees	Length of Segment Paralleling limited Access Highway (in miles)	Normalized Score for Length of Segment Paralleling limited Access Highway (weighted 30%)	Length of Segment Paralleling Railroad Corridor (in miles)	Normalized Score for Length of Segment Paralleling Railroad Corridor (weighted 30%)	Length of Segment Paralleling Existing Transmission Line (in miles)	Normalized Score for Length of Segment Paralleling Existing Transmission Line (weighted 40%)	Length Rebuild Existing Transmission Line (in miles)	Normailized Score for Length Rebuild Existing Transmission Line (in miles)	Length of Route (in miles)	Normalized Score for Length of Route	Endpoint Distance from FE Fulton Substation	Normalized Score for Endpoint Distance from FE Fulton Substation
204	190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	0	0	6	50	0.00	30	4.55	5	3.12	19	1.42	53	10.10	36	1.07	46
205	368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	0	0	7	63	2.03	22	3.13	13	1.69	31	0.00	100	11.41	61	0.15	0
206	163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	0	0	6	50	0.00	30	4.53	5	3.56	15	1.86	38	10.09	35	1.07	46
207	60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	0	0	7	63	0.00	30	1.02	24	0.98	36	0.44	85	10.26	39	2.16	100
208	87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	0	0	5	38	0.00	30	1.04	24	0.54	40	0.00	100	10.16	37	2.16	100
209	461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	0	0	7	63	0.00	30	4.78	4	2.32	25	0.00	100	9.54	25	1.13	49
210	189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	0	0	8	75	0.00	30	4.15	7	3.75	14	1.42	53	9.61	26	1.07	46
211	62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,8	0	0	8	75	0.00	30	3.11	13	2.13	27	0.44	85	10.70	47	2.16	100
212	89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	0	0	6	50	0.00	30	3.13	13	1.69	31	0.00	100	10.60	45	2.16	100
		MIN	0	0	2	0	0	0	0	0	1	0	0	0	8	0	0	0
		MAX	0	0	10	100	8	30	5	30	5	40	3	100	13	100	2	100
		RANGE	0	0	8	100	8	30	5	30	5	40	3	100	5	100	2	100

Rank	Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score
1	266	4,17,32,37,63,74,75,80	20.9	27.0	16.3	44.9	24.5
2	306	4,9,11,14,20,29,43,44,55,67,70,76,83	32.6	0.0	23.6	55.2	30.3
3	266 (Mod)	4,17,32,37,63,74,75(mod),80(mod)	40.2	12.0	17.9	50.9	30.6
4	307	4,9,11,14,20,29,43,44,59,66,67,70,83	30.1	0.0	28.2	53.1	30.9
5	500	14,20,29,43,44,55,67,70,76,78,79	32.2	39.0	16.9	53.7	31.1
6	354	4,9,14,20,29,43,44,55,67,70,76,78,81	31.9	0.0	23.9	59.8	31.1
7	133	3,11,14,20,22,28,43,44,55,67,70,76,83	31.4	39.0	25.0	39.8	31.3
8	149	3,11,16,23,25,31,33,45,47,48,52,65,67	33.4	69.0	29.9	15.7	32.0
9	178	3,14,20,22,28,43,44,55,67,70,76,78,81	30.7	39.0	25.3	44.4	32.1
10	136	3,11,14,20,29,43,44,55,67,70,76,83	38.0	39.0	23.8	37.2	32.3
11	203	3,7,8,13,28,43,44,55,67,70,76,81	33.9	39.0	21.7	48.5	32.4
12	219	3,8,10,20,29,43,44,55,67,70,76,81	33.6	39.0	23.8	45.0	32.5
13	242	3,9,17,32,37,63,74,75,80	34.1	66.0	20.4	38.5	32.7
14	519	8,10,20,29,43,44,55,67,70,76,79	35.0	39.0	17.4	57.0	32.8
15	497	11,14,20,29,43,44,55,67,70,76,79,81,83	39.5	39.0	16.6	53.2	33.0
16	181	3,14,20,29,43,44,55,67,70,76,78,81	37.5	39.0	24.1	41.8	33.1
17	303	4,9,11,14,20,22,28,43,44,55,67,70,76,83	39.2	0.0	24.8	57.8	33.3
18	498	11,14,20,29,43,44,59,66,67,70,79,81,83	37.0	39.0	21.2	51.1	33.7
19	501	14,20,29,43,44,59,66,67,70,78,79	36.4	39.0	21.5	51.6	33.7
20	522	8,10,20,22,28,43,44,55,67,70,76,79	35.0	39.0	18.6	59.6	33.8
21	355	4,9,14,20,29,43,44,59,66,67,70,78,81	36.1	0.0	28.5	57.7	33.8
22	304	4,9,11,14,20,22,28,43,44,59,66,67,70,83	36.8	0.0	29.4	55.7	33.9
23	12	2,10,20,22,28,43,44,55,67,70,76	44.2	0.0	21.1	61.3	33.9
24	503	11,14,20,22,28,43,44,55,67,70,76,79,81,83	39.5	39.0	17.8	55.8	34.0
25	506	14,20,22,28,43,44,55,67,70,76,78,79	38.8	39.0	18.1	56.3	34.1
26	351	4,9,14,20,22,28,43,44,55,67,70,76,78,81	38.6	0.0	25.1	62.4	34.1
27	35	2,8,11,14,20,29,43,44,55,67,70,76,81,83	43.1	0.0	22.3	62.1	34.3
28	80	2,8,14,20,29,43,44,55,67,70,76,78	42.5	0.0	22.6	62.6	34.3
29	410	9,17,32,37,63,74,75,79,80,81	35.4	66.0	15.7	54.5	34.4
30	525	7,8,13,28,43,44,55,67,70,76,79	42.0	39.0	15.3	60.4	34.7
31	507	14,20,22,28,43,44,59,66,67,70,78,79	36.4	39.0	22.7	54.2	34.7
32	276	4,7,8,9,13,28,43,44,55,67,70,76,81	41.8	0.0	22.3	66.5	34.7
33	352	4,9,14,20,22,28,43,44,59,66,67,70,78,81	36.1	0.0	29.7	60.3	34.8
34	18	2,7,13,28,43,44,55,67,70,76	51.2	0.0	17.8	62.2	34.9
35	15	2,10,20,29,43,44,55,67,70,76	50.8	0.0	19.9	58.7	34.9
36	137	3,11,14,20,29,43,44,59,66,67,70,83	42.2	39.0	28.4	35.1	35.0
37	18 (Mod)	2(mod),7(mod),13(mod),28,43,44,55,67,70,76	42.7	0.0	24.6	62.8	35.2
38	77	2,8,14,20,22,28,43,44,55,67,70,76,78	42.5	0.0	23.8	65.2	35.3
39	149 (Mod2)	Mod. #2 to Route 149 (scored as complete new route)	31.0	39.0	42.0	27.3	35.5
40	216	3,8,10,20,22,28,43,44,55,67,70,76,81	40.3	39.0	25.0	47.6	35.5
41	19	2,7,13,28,43,44,59,66,67,70	48.7	0.0	22.3	60.1	35.6
42	182	3,14,20,29,43,44,59,66,67,70,78,81	41.6	39.0	28.7	39.7	35.8
43	134	3,11,14,20,22,28,43,44,59,66,67,70,83	42.2	39.0	29.6	37.7	35.9
44	504	11,14,20,22,28,43,44,59,66,67,70,79,81,83	43.7	39.0	22.4	53.7	36.7
45	179	3,14,20,22,28,43,44,59,66,67,70,78,81	41.6	39.0	29.9	42.3	36.8
46	204	3,7,8,13,28,43,44,59,66,67,70,81	44.8	39.0	26.2	46.4	37.1
47	32	2,8,11,14,20,22,28,43,44,55,67,70,76,81,83	49.8	0.0	23.5	64.7	37.3
48	273	4,7,8,9,13,22,29,43,44,55,67,70,76,81	41.8	0.0	27.1	69.7	37.3
49	526	7,8,13,28,43,44,59,66,67,70,79	46.1	39.0	19.9	58.3	37.4
50	277	4,7,8,9,13,28,43,44,59,66,67,70,81	46.0	0.0	26.9	64.4	37.4
51	520	8,10,20,29,43,44,59,66,67,70,79	45.9	39.0	22.0	54.9	37.4
52	16	2,10,20,29,43,44,59,66,67,70	55.0	0.0	24.5	56.6	37.6
53	119	2,8,9,17,32,37,63,74,75,80,81	45.8	27.0	21.4	63.4	37.7
54	217	3,8,10,20,22,28,43,44,59,66,67,70,81	44.4	39.0	29.6	45.5	38.2
55	523	8,10,20,22,28,43,44,59,66,67,70,79	45.9	39.0	23.2	57.5	38.4
56	13	2,10,20,22,28,43,44,59,66,67,70	55.0	0.0	25.7	59.2	38.6
57	36	2,8,11,14,20,29,43,44,59,66,67,70,81,83	54.0	0.0	26.9	60.0	38.9
58	81	2,8,14,20,29,43,44,59,66,67,70,78	53.3	0.0	27.2	60.5	39.0
59	220	3,8,10,20,29,43,44,59,66,67,70,81	51.1	39.0	28.4	42.9	39.2
60	78	2,8,14,20,22,28,43,44,59,66,67,70,78	53.3	0.0	28.4	63.1	40.0
61	176	3,14,15,19,30,33,45,47,48,52,67,70,76,78,81,84	34.6	39.0	45.6	38.5	40.2
62	511	8,10,15,19,30,33,45,47,48,52,67,70,76,79,84	38.8	39.0	38.2	53.7	41.6
63	301	4,9,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	43.1	0.0	45.9	52.0	41.7
64	10	2,10,15,19,30,33,45,47,48,52,67,70,76,84	48.0	0.0	40.7	55.5	41.8
65	123	3,11,14,15,19,21,22,28,43,44,55,67,70,76,83	32.1	39.0	48.2	44.7	41.8
66	467	11,14,15,19,30,33,45,47,48,52,67,70,76,79,81,83,84	43.3	39.0	37.2	50.0	41.8
67	300	4,9,11,14,15,19,30,33,45,47,48,52,65,67,83	42.6	15.0	43.8	50.1	41.8
68	270	4,7,8,9,13,21,22,30,33,45,47,48,52,65,67	40.2	15.0	38.4	64.8	41.9

Rank	Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score
69	466	11,14,15,19,30,33,45,47,48,52,65,67,79,81,83	42.9	54.0	35.1	48.1	41.9
70	33	2,8,11,14,20,22,28,43,44,59,66,67,70,81,83	60.6	0.0	28.1	62.6	41.9
71	356	4,9,15,15,30,33,45,47,48,52,65,67,78,81	42.0	15.0	43.8	51.9	42.0
72	274	4,7,8,9,13,22,29,43,44,59,66,67,70,81	52.6	0.0	31.7	67.7	42.0
73	471	14,15,19,30,33,45,47,48,52,67,70,76,78,79,84	42.7	39.0	38.4	50.5	42.1
74	470	14,15,19,30,33,45,47,48,52,65,67,78,79	42.2	54.0	36.2	48.6	42.3
75	288	4,8,9,10,15,19,30,33,45,47,48,52,65,67,81	38.1	15.0	44.8	57.9	42.4
76	126	3,11,14,15,19,21,29,43,44,55,67,70,76,83	38.7	39.0	47.0	42.1	42.8
77	30	2,8,11,14,15,19,30,33,45,47,48,52,67,70,76,81,83,84	46.9	0.0	42.9	58.8	43.0
78	131	3,11,14,15,19,30,33,45,47,48,52,67,70,76,83,84	48.5	39.0	44.4	34.0	43.0
79	149 (Mod1)	Mod. #1 to Route 149 (scored as complete new route)	58.0	39.0	35.3	38.4	43.1
80	29	2,8,11,14,15,19,30,33,45,47,48,52,65,67,81,83	46.5	15.0	40.8	56.9	43.2
81	513	8,10,15,19,21,29,43,44,55,67,70,76,79	35.7	39.0	40.8	61.9	43.3
82	75	2,8,14,15,19,30,33,45,47,48,52,67,70,76,78,84	46.3	0.0	44.1	59.3	43.4
83	130	3,11,14,15,19,30,33,45,47,48,52,65,67,83	48.1	54.0	43.2	32.1	43.5
84	473	11,14,15,19,21,29,43,44,55,67,70,76,79,81,83	40.1	39.0	39.8	58.1	43.5
85	74	2,8,14,15,19,30,33,45,47,48,52,65,67,78	45.8	15.0	42.0	57.4	43.5
86	510	8,10,15,19,30,33,45,47,48,52,65,67,79	45.1	54.0	36.1	51.8	43.7
87	210	3,8,10,15,19,21,29,43,44,59,66,67,70,81	31.8	39.0	51.8	47.9	43.7
88	213	3,8,10,15,19,30,33,45,47,48,52,65,67,81	43.7	54.0	43.3	39.9	43.8
89	271	4,7,8,9,13,21,22,30,33,45,47,48,52,67,70,76,81,84	47.4	0.0	40.5	68.8	44.2
90	289	4,8,9,10,15,19,30,33,45,47,48,52,67,70,76,81,84	45.2	0.0	46.9	59.8	44.3
91	485	11,14,15,19,21,22,28,43,44,55,67,70,76,79,81,83	40.1	39.0	41.0	60.8	44.5
92	349	4,9,14,15,19,30,33,45,47,52,67,70,76,78,81,84	49.1	0.0	46.2	56.6	44.5
93	175	3,14,15,19,30,33,45,47,48,52,65,67,78,81	47.5	54.0	44.3	36.6	44.7
94	147	3,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	41.5	39.0	58.3	25.2	44.7
95	312	4,9,11,16,18,19,21,29,43,44,55,67,70,76,82	32.9	0.0	61.5	51.4	44.7
96	209	3,8,10,15,19,21,29,43,44,55,67,70,76,81	40.9	39.0	47.2	49.9	45.0
97	146	3,11,16,18,19,30,33,45,47,48,52,65,67,82	41.1	54.0	57.0	23.3	45.2
98	486	11,14,15,19,21,22,28,43,44,59,66,67,70,79,81,83	37.7	39.0	45.6	58.7	45.2
99	127	3,11,14,15,19,21,29,43,44,59,66,67,70,83	42.9	39.0	51.6	40.0	45.4
100	5	2,10,15,19,21,29,43,44,55,67,70,76	51.5	0.0	43.3	63.6	45.5
101	317	4,9,11,16,18,19,30,33,45,47,48,52,67,70,76,82,84	42.7	0.0	60.6	43.2	45.7
102	22	2,8,11,14,15,19,21,22,28,43,44,55,67,70,76,81,83	43.8	0.0	46.7	69.6	45.8
103	455	11,16,18,19,30,33,45,47,48,52,67,70,76,79,81,82,84	42.9	39.0	51.9	41.2	45.8
104	316	4,9,11,16,18,19,30,33,45,47,48,52,65,67,82	42.3	15.0	58.5	41.3	45.8
105	9	2,10,15,19,30,33,45,47,48,52,65,67	60.9	15.0	38.6	53.5	45.9
106	454	11,16,18,19,30,33,45,47,48,52,65,67,79,81,82	42.5	54.0	49.8	39.3	45.9
107	206	3,8,10,15,19,21,22,28,43,44,55,67,70,76,81	40.9	39.0	48.4	52.5	46.0
108	474	11,14,15,19,21,29,43,44,59,66,67,70,79,81,83	44.3	39.0	44.4	56.1	46.2
109	516	8,10,15,19,21,22,28,43,44,55,67,70,76,79	42.4	39.0	42.0	64.5	46.3
110	124	3,11,14,15,19,21,22,28,43,44,59,66,67,70,83	42.9	39.0	52.8	42.7	46.4
111	2	2,10,15,19,21,22,28,43,44,55,67,70,76	51.5	0.0	44.5	66.2	46.5
112	25	2,8,11,14,15,19,21,29,43,44,55,67,70,76,81,83	50.5	0.0	45.5	67.0	46.8
113	129	3,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	39.4	39.0	58.9	38.0	46.9
114	46	2,8,11,16,18,19,30,33,45,47,48,52,67,70,76,81,82,84	46.5	0.0	57.6	50.1	47.0
115	458	11,18,19,30,33,45,47,48,52,65,67,77,83	39.7	54.0	51.3	47.4	47.3
116	139	3,11,16,18,19,21,22,28,43,44,55,67,70,76,82	38.3	39.0	62.1	36.0	47.4
117	313	4,9,11,16,18,19,21,29,43,44,59,66,67,70,82	37.1	0.0	66.1	49.3	47.4
118	476	11,16,18,19,21,29,43,44,55,67,70,76,79,81,82	39.8	39.0	54.5	49.4	47.5
119	192	3,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	38.1	39.0	61.8	37.8	47.6
120	7	2,10,15,19,30,33,45,47,48,52,53,69,80	59.9	16.0	39.9	61.0	47.7
121	309	4,9,11,16,18,19,21,22,28,43,44,55,67,70,76,82	39.6	0.0	62.7	54.0	47.7
122	514	8,10,15,19,21,29,43,44,59,66,67,70,79	46.5	39.0	45.4	59.8	48.0
123	366	4,9,18,19,30,33,45,47,48,52,65,67,77,78,81	38.8	15.0	60.4	53.9	48.1
124	329	4,9,11,18,19,21,29,43,44,55,67,70,76,77,83	36.8	0.0	63.1	59.4	48.2
125	6	2,10,15,19,21,29,43,44,59,66,67,70	55.8	0.0	47.9	61.5	48.2
126	23	2,8,11,14,15,19,21,22,28,43,44,59,66,67,70,81,83	48.0	0.0	51.3	67.5	48.4
127	142	3,11,16,18,19,21,29,43,44,55,67,70,76,82	45.0	39.0	60.9	33.4	48.4
128	165	3,11,18,19,30,33,45,47,48,52,67,70,76,77,83,84	45.4	39.0	60.7	33.2	48.4
129	207	3,8,10,15,19,21,22,28,43,44,59,66,67,70,81	45.1	39.0	53.0	50.5	48.7
130	41	2,8,11,16,18,19,21,29,43,44,55,67,70,76,81,82	43.4	0.0	60.2	58.2	48.7
131	164	3,11,18,19,30,33,45,47,48,52,65,67,77,83	44.9	54.0	59.4	31.3	48.9
132	482	18,19,21,29,43,44,55,67,70,76,77,78,79	36.4	39.0	56.4	57.9	49.0
133	517	8,10,15,19,21,22,28,43,44,59,66,67,70,79	46.5	39.0	46.6	62.4	49.0
134	363	4,9,18,19,21,29,43,44,55,67,70,76,77,78,81	36.1	0.0	63.4	64.0	49.0
135	334	4,9,11,18,19,30,33,45,47,48,52,67,70,76,77,78,83,84	46.5	0.0	62.2	51.3	49.1
136	143	3,11,16,18,19,21,29,43,44,59,66,67,70,82	42.5	39.0	65.5	31.3	49.1

Rank	Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score
137	45	2,8,11,16,18,19,30,33,45,47,48,52,65,67,81,82	52.7	15.0	55.5	48.2	49.1
138	157	3,11,18,19,21,22,28,43,44,55,67,70,76,77,83	35.6	39.0	64.5	44.0	49.2
139	212	3,8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,81,84	41.6	39.0	59.1	45.8	49.2
140	459	11,18,19,30,33,45,47,48,52,67,70,76,77,79,81,83,84	46.8	39.0	53.5	49.3	49.2
141	299	4,9,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,83,84	47.3	0.0	59.6	56.0	49.2
142	333	4,9,11,18,19,30,33,45,47,48,52,56,67,77,83	46.1	15.0	60.0	49.4	49.2
143	269	4,7,8,9,13,21,22,30,33,45,47,48,52,55,59,66,67,70,81,84	44.9	0.0	53.4	72.8	49.4
144	463	18,19,30,33,45,47,48,52,67,70,76,77,78,79,84	46.1	39.0	54.6	49.8	49.5
145	468	11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,79,81,83,8	47.5	39.0	51.7	54.0	49.6
146	472	14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,79,84	46.9	39.0	52.0	54.5	49.7
147	462	18,19,30,33,45,47,48,52,65,67,77,78,79	45.7	54.0	52.5	47.9	49.7
148	174	3,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,81,84	45.4	39.0	59.3	42.5	49.7
149	367	4,9,18,19,30,33,45,47,48,52,67,70,76,77,78,81,84	46.0	0.0	62.5	55.8	49.9
150	184	3,18,19,21,22,28,43,44,55,67,70,76,77,78,81	34.9	39.0	64.8	48.6	50.0
151	191	3,18,19,30,33,45,47,48,52,65,67,77,78,81	44.3	54.0	60.6	35.9	50.1
152	140	3,11,16,18,19,21,22,28,43,44,59,66,67,70,82	42.5	39.0	66.6	33.9	50.1
153	160	3,11,18,19,21,29,43,44,55,67,70,76,77,83	42.2	39.0	63.3	41.4	50.2
154	477	11,16,18,19,21,29,43,44,59,66,67,70,79,81,82	44.0	39.0	59.1	47.3	50.2
155	310	4,9,11,16,18,19,21,22,28,43,44,59,66,67,70,82	43.8	0.0	67.3	51.9	50.4
156	488	11,16,18,19,21,22,28,43,44,55,67,70,76,79,81,82	46.5	39.0	55.7	52.0	50.5
157	63	2,8,11,18,19,30,33,45,47,48,52,65,67,77,81,83	50.0	15.0	57.1	56.2	50.6
158	90	2,8,18,19,30,33,45,47,48,52,65,67,77,78	49.3	15.0	58.2	56.7	50.9
159	479	11,18,19,21,29,43,44,55,67,70,76,77,79,81,83	43.7	39.0	56.1	57.4	50.9
160	187	3,18,19,21,29,43,44,55,67,70,76,77,78,81	41.6	39.0	63.6	46.0	51.0
161	326	4,9,11,18,19,21,22,28,43,44,55,67,70,76,77,83	43.4	0.0	64.3	62.0	51.2
162	491	11,18,19,21,22,28,43,44,55,67,70,76,77,79,81,83	42.2	39.0	64.5	44.0	51.2
163	489	11,16,18,19,21,22,28,43,44,59,66,67,70,79,81,82	43.9	39.0	60.3	49.9	51.2
164	3	2,10,15,19,21,22,28,43,44,59,66,67,70	62.4	0.0	49.1	64.1	51.2
165	315	4,9,11,16,18,19,30,33,45,47,48,52,55,59,66,67,70,82,84	40.2	0.0	74.2	47.2	51.2
166	26	2,8,11,14,15,19,21,29,43,44,59,66,67,70,81,83	61.3	0.0	50.1	64.9	51.4
167	42	2,8,11,16,18,19,21,29,43,44,59,66,67,70,81,82	47.6	0.0	64.8	56.2	51.4
168	483	18,19,21,29,43,44,59,66,67,70,77,78,79	40.5	39.0	61.0	55.8	51.6
169	8	2,10,15,19,30,33,45,47,48,52,55,59,66,67,70,84	58.8	0.0	55.2	59.5	51.6
170	38	2,8,11,16,18,19,21,22,28,43,44,55,67,70,76,81,82	50.1	0.0	61.4	60.8	51.7
171	494	18,19,21,22,28,43,44,55,67,70,76,77,78,79	43.1	39.0	57.6	60.5	51.9
172	360	4,9,18,19,21,22,28,43,44,55,67,70,76,77,78,81	42.8	0.0	64.6	66.6	52.0
173	59	2,8,11,18,19,21,29,43,44,55,67,70,76,77,81,83	47.3	0.0	61.8	66.3	52.2
174	64	2,8,11,18,19,30,33,45,47,48,52,67,70,76,77,81,83,84	57.1	0.0	59.2	58.1	52.4
175	145	3,11,16,18,19,30,33,45,47,48,52,59,66,67,70,82,84	45.6	39.0	72.8	29.2	52.5
176	91	2,8,18,19,30,33,45,47,48,52,67,70,76,77,78,84	56.4	0.0	60.3	58.6	52.8
177	330	4,9,11,18,19,21,29,44,59,66,67,70,77,83	47.6	0.0	67.7	57.4	52.8
178	161	3,11,18,19,21,29,43,44,59,66,67,70,77,83	46.4	39.0	67.9	39.3	52.8
179	73	2,8,14,15,19,30,33,45,47,48,52,55,59,66,67,70,78,84	57.1	0.0	57.8	63.3	52.9
180	512	8,10,15,19,30,33,45,47,48,52,55,59,66,67,70,79,84	56.4	39.0	52.7	57.7	53.4
181	480	11,18,19,21,29,43,44,59,66,67,70,77,79,81,83	47.8	39.0	60.7	55.3	53.6
182	456	11,16,18,19,30,33,45,47,48,52,59,66,67,70,79,81,82,84	47.1	39.0	66.4	45.2	53.6
183	364	4,9,18,19,21,29,43,44,59,66,67,70,77,78,81	47.0	0.0	68.0	61.9	53.7
184	57	2,8,11,18,19,21,22,28,43,44,59,66,67,70,77,81,83	44.8	0.0	67.6	66.8	53.8
185	278	4,8,9,10,15,18,19,30,33,45,47,48,52,55,59,66,67,70,81,84	56.1	0.0	60.6	63.8	53.8
186	327	4,9,11,18,19,21,22,28,44,59,66,67,70,77,83	47.6	0.0	68.9	60.0	53.8
187	158	3,11,18,19,21,22,28,43,44,59,66,67,70,77,83	46.4	39.0	69.1	41.9	53.8
188	84	2,8,18,19,21,22,28,43,44,59,66,67,70,77,78	44.2	0.0	67.9	67.3	53.9
189	86	2,8,18,19,21,29,43,44,55,67,70,76,77,78	53.3	0.0	62.1	66.8	54.2
190	39	2,8,11,16,18,19,21,22,28,43,44,59,66,67,70,81,82	54.3	0.0	66.0	58.8	54.4
191	495	18,19,21,22,28,43,44,59,66,67,70,77,78,79	47.2	39.0	62.2	58.4	54.6
192	332	4,9,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	44.1	0.0	75.8	55.3	54.6
193	361	4,9,18,19,21,22,28,43,44,59,66,67,70,77,78,81	47.0	0.0	69.2	64.5	54.7
194	28	2,8,11,14,15,19,30,33,45,47,48,52,55,59,66,67,70,81,83,8	64.5	0.0	57.4	62.8	54.9
195	464	18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,79,84	43.7	39.0	68.3	53.8	55.1
196	56	2,8,11,18,19,21,22,28,43,44,55,67,70,76,77,81,83	54.0	0.0	63.0	68.9	55.2
197	83	2,8,18,19,21,22,28,43,44,55,67,70,76,77,78	53.3	0.0	63.3	69.4	55.2
198	188	3,18,19,21,29,43,44,59,66,67,70,77,78,81	52.4	39.0	68.2	43.9	55.7
199	492	11,18,19,21,22,28,43,44,59,66,67,70,77,79,81,83	54.5	39.0	61.8	58.0	56.6
200	185	3,18,19,21,22,28,43,44,59,66,67,70,77,78,81	52.4	39.0	69.4	46.5	56.7
201	162	3,11,18,19,30,33,45,47,48,52,53,69,77,80,83	64.0	55.0	60.7	38.8	56.7
202	44	2,8,11,16,18,19,30,33,45,47,48,52,59,66,67,70,81,82,84	57.4	0.0	72.1	54.1	56.9
203	460	11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,79,81,83,8	51.0	39.0	68.0	53.3	57.0

Rank	Routes	Study Segments	Normalized Ecological Score (30%)	Normalized Cultural Score (10%)	Normalized Land Use Score (40%)	Normalized Technical Score (20%)	Final Score
204	190	3,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,81,84	48.9	39.0	75.5	41.8	57.1
205	368	4,9,18,19,30,33,47,48,52,55,59,66,67,70,77,78,81,84	50.1	0.0	76.2	59.8	57.5
206	163	3,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,83,84	56.2	39.0	75.2	37.3	58.3
207	60	2,8,11,18,19,21,29,43,44,59,66,67,70,77,81,83	64.8	0.0	66.4	64.2	58.8
208	87	2,8,18,19,21,29,43,44,59,66,67,70,77,78	64.2	0.0	66.7	64.7	58.9
209	461	18,19,30,33,45,47,48,52,53,69,77,78,79,80	71.4	55.0	53.8	55.3	59.5
210	189	3,18,19,30,33,45,47,48,52,53,69,77,78,80,81	70.0	55.0	61.8	43.4	59.9
211	62	2,8,11,18,19,30,33,45,47,48,52,55,59,66,67,70,77,81,83,8	61.3	0.0	73.7	62.1	60.3
212	89	2,8,18,19,30,33,45,47,48,52,55,59,66,67,70,77,78,84	67.3	0.0	74.0	62.6	62.3

4906-5-05 PROJECT DESCRIPTION

(A) PROJECT AREA DESCRIPTION

The map provided in Section 4906-5-07 (Figure 7-1) includes a description of the Project Area's geography, topography, population centers, major industries, and landmarks.

(1) Project Area Map

Figure 7-1 provides a map at 1:24,000-scale, showing the Preferred and Alternate Routes for the Project. This map includes a 1,000-foot corridor on each side of the proposed transmission centerlines (hereafter referred to as the 2,000-foot corridor). The map depicts the proposed transmission lines (Preferred and Alternate Routes), Melbourne Substation, Tie Lines, a related line extension project that will be submitted in a separate construction notice application for the Board's review, roads and railroads, major institutions, parks, and recreational areas that are publicly identified and owned, existing gas pipeline and electric transmission line corridors, named lakes, reservoirs, streams, canals, and rivers, and population centers and legal boundaries of cities, villages, townships, and counties. The map utilizes the Delta and Swanton, Ohio, U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles as a base map.

The information on the map was updated by reviewing digital, georeferenced aerial photography, property parcel data from the Fulton County Auditor's Office, and field reconnaissance conducted in June 2021.

(2) Proposed Right-of-Way, Transmission Length, and Properties Crossed

The proposed permanent ROW width is 150 feet, with 75 feet on either side of the centerline of the proposed route, except where the Preferred Route parallels the existing Fulton – North Star 345 kV Transmission Line. In the area of this shared corridor, the amount of new permanent ROW required is approximately 90 feet for a maximum 240-foot-wide permanent ROW. Table 5-1 provides information about the Preferred and Alternate Route ROW acreage, length, and properties crossed based on the proposed ROW. Table 5-2 provides information about the ROW acreage, length, and properties crossed based on the proposed centerline for the Tie Lines connecting the proposed Melbourne Substation and existing Sydney Substation.

Appendix 5-1 is ATSI's standard easement form for acquisition of the right-of-way and land rights necessary for this Project.

Table 5-1: Right-of-way Area, Length, and Number of Properties Crossed for the Preferred Route

	Preferred
Proposed ROW area (in acres)	172.6
Length (in miles)	9.46
Number of properties crossed by ROW	42

Table 5-2: Right-of-way Area, Length, and Number of Properties Crossed for the Preferred Route Tie Lines

	Preferred Route Tie Lines
Proposed ROW area (in acres)	28.0
Length (in miles)	1.02
Number of properties crossed by ROW	3

(B) ROUTE OR SITE ALTERNATIVE FACILITY LAYOUT AND INSTALLATION

(1) Site Clearing, Construction, and Reclamation

The following paragraphs provide information on the proposed site clearing, construction methods, and reclamation operations for the Project.

(a) Surveying and Soil Testing

The transmission line selected by the OPSB will be surveyed to establish the centerline location. The surveying will be completed using conventional and/or aerial methods. The location of significant topographic features and human-made structures along or near the centerline of the transmission line that may affect the design of the transmission line will be identified during the survey. Some minimal clearing of small trees and brush may be required if the surveyor's line of sight is obstructed. Offsets will be used to survey around large trees and other large obstructions. Profile measurements will also be obtained by conventional or aerial methods. Structure locations will be staked prior to construction.

Soil and/or rock tests will be performed along portions of the final approved route as necessary based on final engineering design. In the locations where steel structures on concrete foundations are necessary, geotechnical soil testing using truck-mounted drilling equipment may be utilized. These locations will be identified during the detailed engineering design phase of the Project, which will occur concurrently with the OPSB's review of the Application. A professional geotechnical contractor will be retained to coordinate and conduct the geotechnical investigation with ATSI oversight. If suitable access is available, truck-mounted drilling equipment will be utilized. Soil tests will be performed using a drop hammer to drive a sampler tube. Soil bearing capacity is tested by the number of blows required to drive the tube 12 inches into the ground. Soil samples taken with a split-spoon at 5-foot intervals will be used to determine soil type. Typically, the testing will be performed to a depth of between 20 to 40 feet. If rock is encountered,

a carbide-tipped bit will be used to drill an exploratory boring 5 to 10 feet into the rock. Once the geotechnical investigation is complete, recovered soil samples will be evaluated in a laboratory to determine soil characteristics which are then used for foundation analysis and design using an industry standard software program.

(b) Grading and Excavation

No significant grading is anticipated to construct the transmission line on either route. The existing terrain within the planned ROW for the Preferred and Alternate Routes generally provides a suitable surface for construction vehicle operation. Some minor local leveling may be necessary for designated laydown and set-up areas for construction equipment; however, any grading would be restricted to the immediate area.

Each pole installation requires a machine-drilled hole for placement of the pole foundation. The excavation for these structures will be approximately 6 to 10 feet in diameter and 20 to 40 feet deep. The excess material will be placed around the structure or hauled offsite to an approved spoils disposal facility.

(c) Construction of Temporary and Permanent Access Roads and Trenches

Construction access will be required for the stringing of the conductor cable or wire and installation of the structures. Access roads will require affected property owners' input and approval. Access roads for the Preferred and Alternate Route will extend from existing public roads in close proximity to, or crossed by, the transmission line ROW unless otherwise agreed to by the property owner during negotiations.

Proposed access roads for the Preferred Route are identified in Figures 8-2A though Figure 8-2C. The location of these access roads cannot be finalized until after a route is approved and ATSI meets with affected property owners. Where access across wetlands or streams is necessary, construction matting or equivalent will be used to minimize disturbance. If field conditions necessitate the modification of the finalized access road locations during construction, the concurrence of the affected property owner will be obtained, necessary environmental field studies will be performed, and necessary permits will be updated.

(d) Stringing of Cable

Conductor installation for the proposed transmission line will be accomplished using the tension stringing method. Lightweight guy cables or ropes will be fed through the stringing sheaves of the sections of line that require stringing. Conductors will then be pulled through under sufficient tension to keep the conductor off the ground. This protects the conductor from surface damage.

Temporary guard or clearance poles will be used as a safety precaution at locations where the conductors could create a hazard to either crewmembers or the general public. The locations and heights of clearance poles will be such that conductors are held clear of other electric distribution lines, communication cables, railroads, and roadways. The stringing operation will be observed by

transmission line construction crew members at all times. The observers will be in radio or visual contact with the operator of the stringing equipment.

(e) Installation of Electric Transmission Line Poles and Structures, Including Foundations

Generally, the Project will be constructed using steel monopoles with concrete foundations. In these locations, a machine-drilled hole for placement of the pole's concrete foundation will be necessary.

(f) Post-Construction Reclamation

After construction is complete, the Project workspace will be restored to pre-construction conditions or better. This includes the restoration of drainage ditches; repair or replacement of any pre-existing or damaged fencing or field drainage tiles (or damage thereto); the seeding and mulching of disturbed non-cultivated areas; and the removal of temporary soil erosion and sedimentation control measures after vegetative cover has been established. Disturbed areas adjacent to streams and wetlands will be re-vegetated using methods to minimize soil erosion and degradation.

Lawn or garden areas or paved areas damaged during the construction of the transmission line will be restored to original condition. Landscaping or landscape plantings damaged during construction will also be restored to original condition or replaced to the extent possible and practical as requested by the affected property owner.

Temporary and permanent seeding will be coordinated with construction activities to provide re-vegetation and soil stabilization at the earliest reasonable time. Following construction, all pole locations, material storage sites, and temporary access roads will be restored and seeded with a suitable grass seed mixture as specified in the erosion and sediment control plan.

(g) Transmission Line Route and Substation Map

Figures 8-2A through 8-2K, and 8-3A through 8-3J show maps at 1:6,000-scale of the Preferred and Alternate Routes, respectively. These maps contain the data required by Ohio Administrative Code (OAC) 4906-5-05(A)(1). Although the additional information required by OAC 4906-5-05 (B)(2)(a) (e.g., pole structure locations, temporary access roads, etc.) will not be finalized until final engineering design is complete, preliminary locations are provided for the Preferred Route, as illustrated in Figures 8-2A through 8-2K.

A new electric power substation is being proposed for this Project, which will be known as the Melbourne Substation. The graded area for this substation will be approximately 7 acres and include a fenced area of 380' x 463' as well as a retention basin. Drawings of the substation are provided in Appendix 5-2.

ATSI has not yet finalized or determined staging areas and laydown areas for the Project.

(h) Proposed Layout Rationale

A detailed description of the reasons for the proposed layout (i.e., the Preferred and Alternate Routes) is presented in Section 4906-5-04.

(i) Plans for Future Modifications

Except as otherwise described in this Application, ATSI currently has no specific plans for future modifications of the proposed Project.

(C) DESCRIPTION OF PROPOSED TRANSMISSION LINES OR PIPELINES

(1) Electric Power Transmission Lines

The majority of the Project will be installed using steel pole construction. The exact number and location of these structures will be determined during detailed engineering design, if the Board approves the Project. Preliminary structure locations for the Preferred Route are depicted on Figure 8-2.

(a) Design Voltage

The Project will be designed for and operated at 345 kV.

(B) Tower Designs, Pole Structures, Conductor Size And Number Per Phase, And Insulator Arrangement

The proposed new transmission line will be supported on multiple structure types. The general features of these structures are described in the following sections. The following structure descriptions will be utilized on both the Preferred and Alternate Routes and the Tie Lines, as shown in Figure 5-1 (A through F).

1. Figure 5-1A conceptually shows a typical single circuit suspension delta steel structure. The structure utilizes three (3) suspension insulators and is used to support the transmission line at tangent and light angle locations. A concrete foundation is utilized to support the structure.

2. Figure 5-1B conceptually shows a typical single circuit suspension delta steel structure. The structure utilizes three (3) suspension insulators and is used to support the transmission line at medium angle locations. A concrete foundation is utilized to support the structure.

3. Figure 5-1C conceptually shows a typical single circuit delta dead end structure. The structure utilizes six (6) strain insulators and is used to support the transmission line at a tangent and light angle locations. A concrete foundation is utilized to support the structure.

4. Figure 5-1D conceptually shows a typical single circuit delta dead end structure. The structure utilizes six (6) strain insulators and three (3) suspension insulators and is used

to support the transmission line at heavy angle locations. A concrete foundation is utilized to support the structure.

5. Figure 5-1E conceptually shows a typical double circuit dead end vertical tap steel structure. The structure utilizes fifteen (15) strain insulators and is used to create a tap along the transmission line. A concrete foundation is utilized to support the structure.

6. Figure 5-1F conceptually shows a typical single circuit dead end vertical steel structure. This structure is used to support the transmission line where it is desirable to terminate a section of transmission line wire at tangent or light angle locations and includes three (3) strain insulators and three (3) suspension insulators. A concrete foundation is utilized to support the structure.

At this time, engineering evaluation of the Project has not revealed the need for any types of structures other than those shown in Figures 5-1A through 5-1F. It is possible that detailed design engineering for the Project may reveal the need for other structure types to meet the needs of the Project. However, ATSI does not anticipate that any such structures will be substantially different from those depicted in the Application.

The conductor used for both the Preferred and Alternate Routes will be designed and constructed for 345 kV operation and will utilize double-bundled 954 thousand circular mils (kcmil) 45/7 aluminum conductor steel-reinforced cable (ACSR) per phase. This conductor has a maximum strength of approximately 25,900 pounds. 7#6 Alumoweld Overhead Shield Wire and Optical Ground Wire ("OPGW") will be installed above the conductor phases to provide lightning protection. The phase conductors and overhead ground wires will be installed in accordance with the latest version of the National Electrical Safety Code (NESC).

(c) Base And Foundation Design

A select number of steel structures on concrete foundations will be necessary. The excavation for each concrete foundation will be range from 6 feet to 10 feet in diameter and 25 feet to 40 feet in depth.

(d) Cable Type and Size, where Underground

No underground cables are associated with this Project; therefore, this section is not applicable.

(e) Other Major Equipment or Special Structures

No other major equipment or special structures are required for the Project.

(2) Diagram of Electric Power Transmission Substations

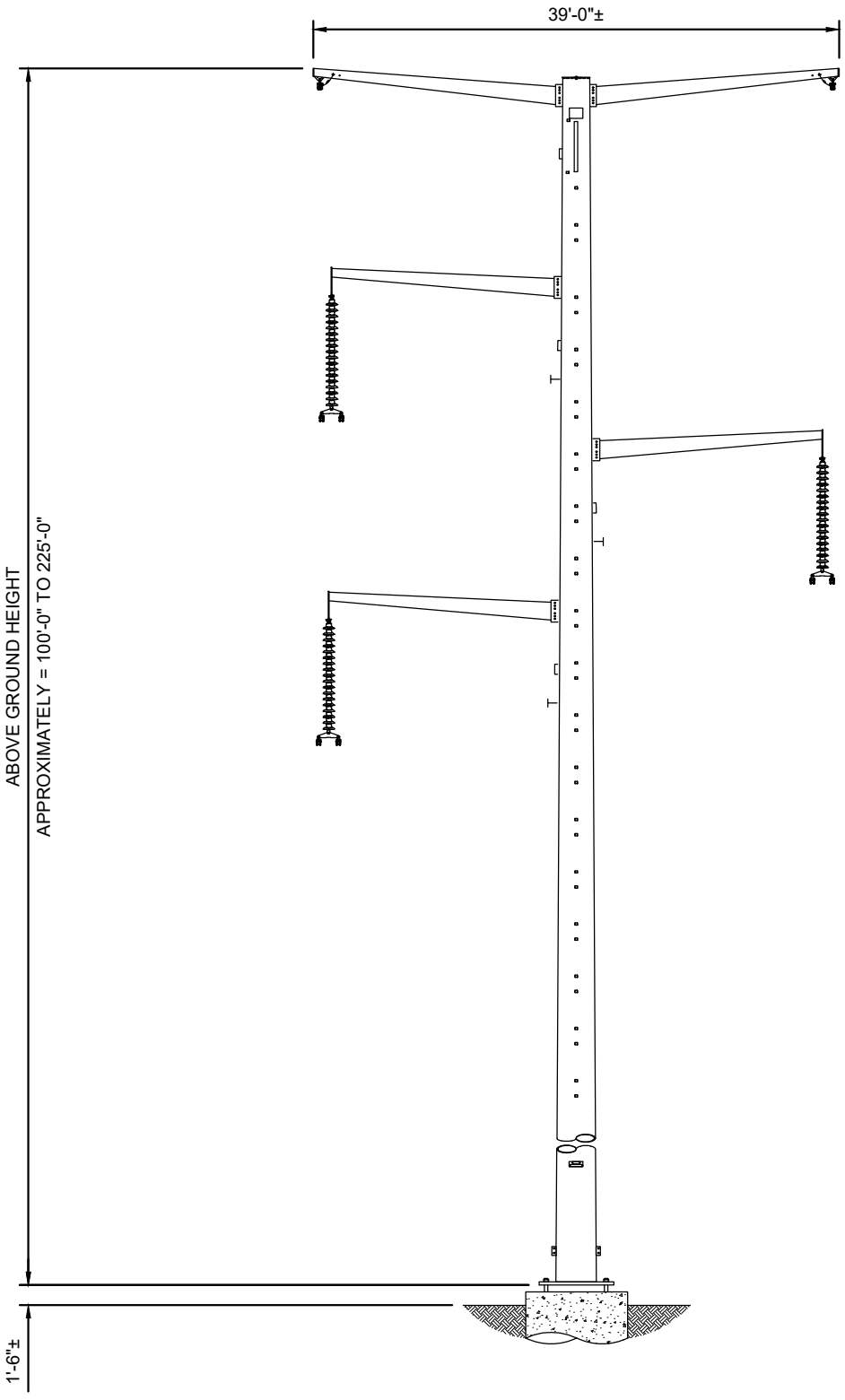
The Project includes the construction of the proposed Melbourne Substation. The graded area for the proposed substation will be approximately 7 acres and will include a fenced area of 380 feet x 463 feet as well as a retention basin. The limits of disturbance during construction will extend

outside of the proposed substation fence with an anticipated total disturbance area of approximately 7.6 acres. Drawings of the proposed substation are provided in Appendix 5-2.

The following equipment will be part of this substation installation:

- 345 kV Circuit Breakers – (4)
- 345 kV Breaker Disconnect Switches – (10) Sets of 3
- 345 kV Line Exit GOAB – (4) Sets of 3
- 345 kV Capacitive Voltage Transformer "CCVT" – (4) Sets of 3
- 345 kV Wave Trap – (4)
- Control Enclosure (23'x37') – (1)

Figures



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

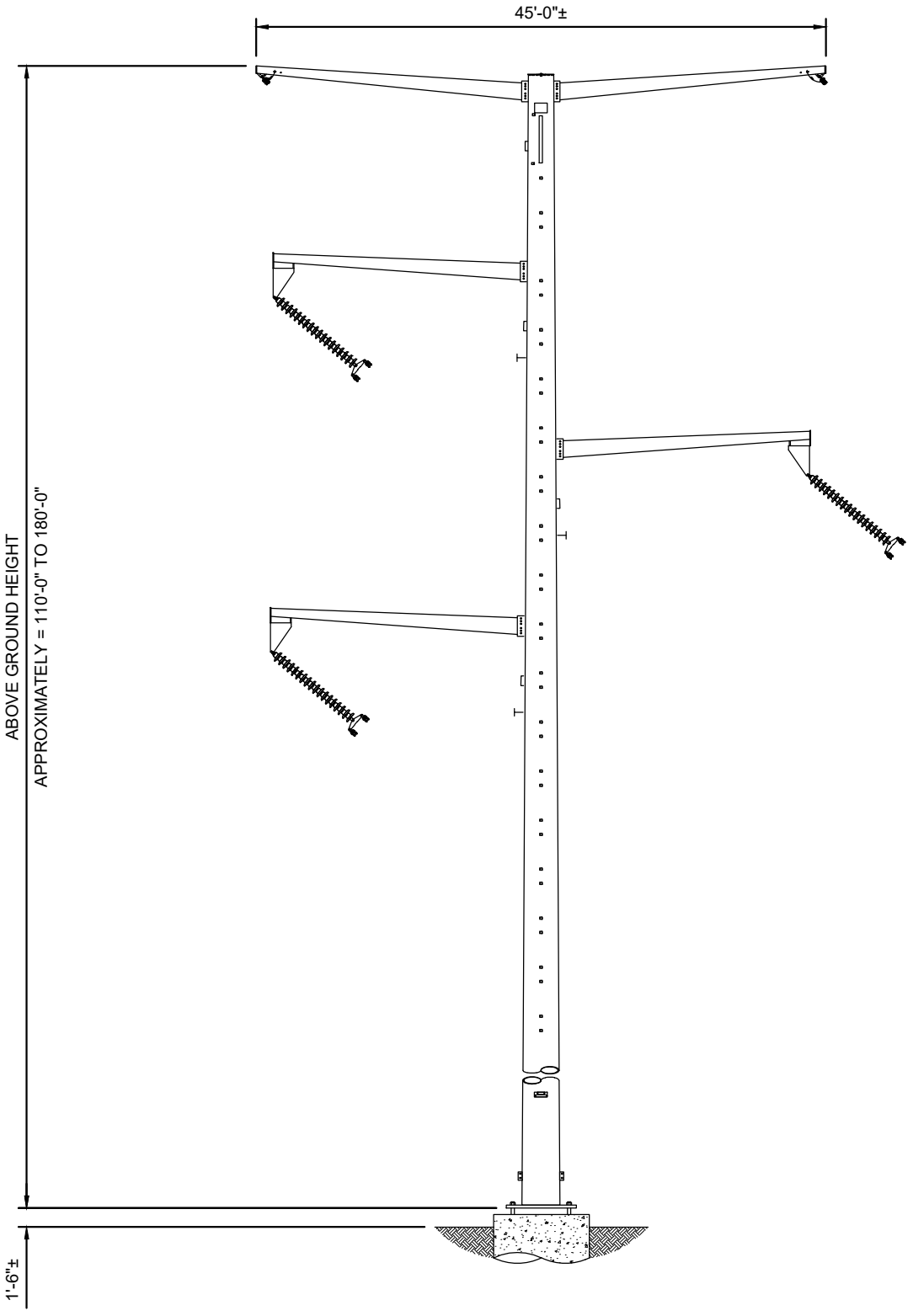
DOWLING-FULTON 345KV TRANSMISSION LINE
TAP TO MELBOURNE SUBSTATION

345KV SINGLE CIRCUIT TUBULAR STEEL STRUCTURE
SUSPENSION, ANGLES 0° TO 30°

Figure 5-1A

SCALE: N.T.S.

PAPER SIZE 8.5X11



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

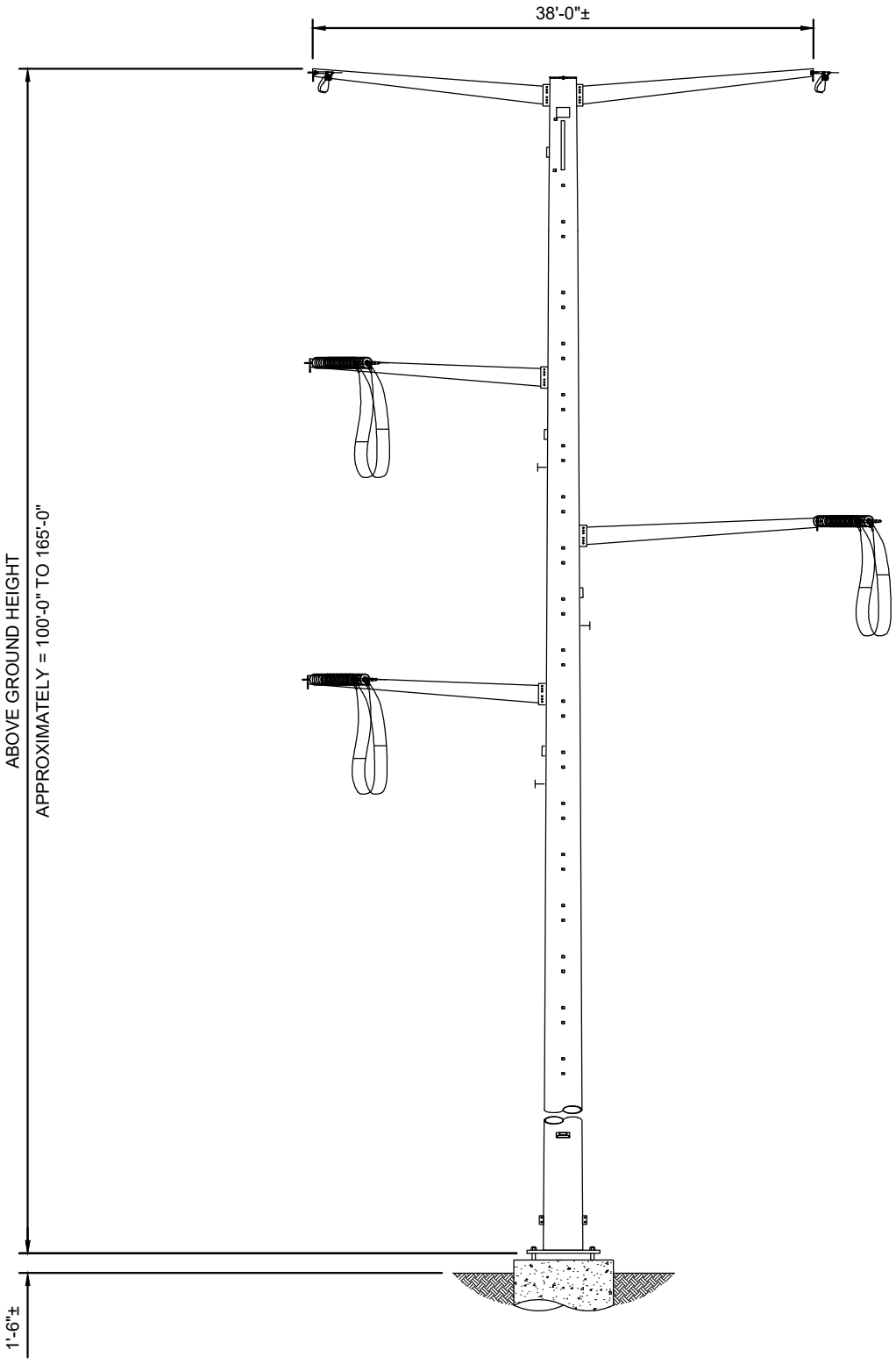
DOWLING-FULTON 345KV TRANSMISSION LINE
TAP TO MELBOURNE SUBSTATION

345KV SINGLE CIRCUIT TUBULAR STEEL STRUCTURE
SUSPENSION, ANGLES 30° TO 50°

Figure 5-1B

SCALE: N.T.S.

PAPER SIZE 8.5X11



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

DOWLING-FULTON 345KV TRANSMISSION LINE
TAP TO MELBOURNE SUBSTATION

345KV SINGLE CIRCUIT TUBULAR STEEL STRUCTURE
DEADEND, ANGLES 0° TO 50°

Figure 5-1C

SCALE: N.T.S.

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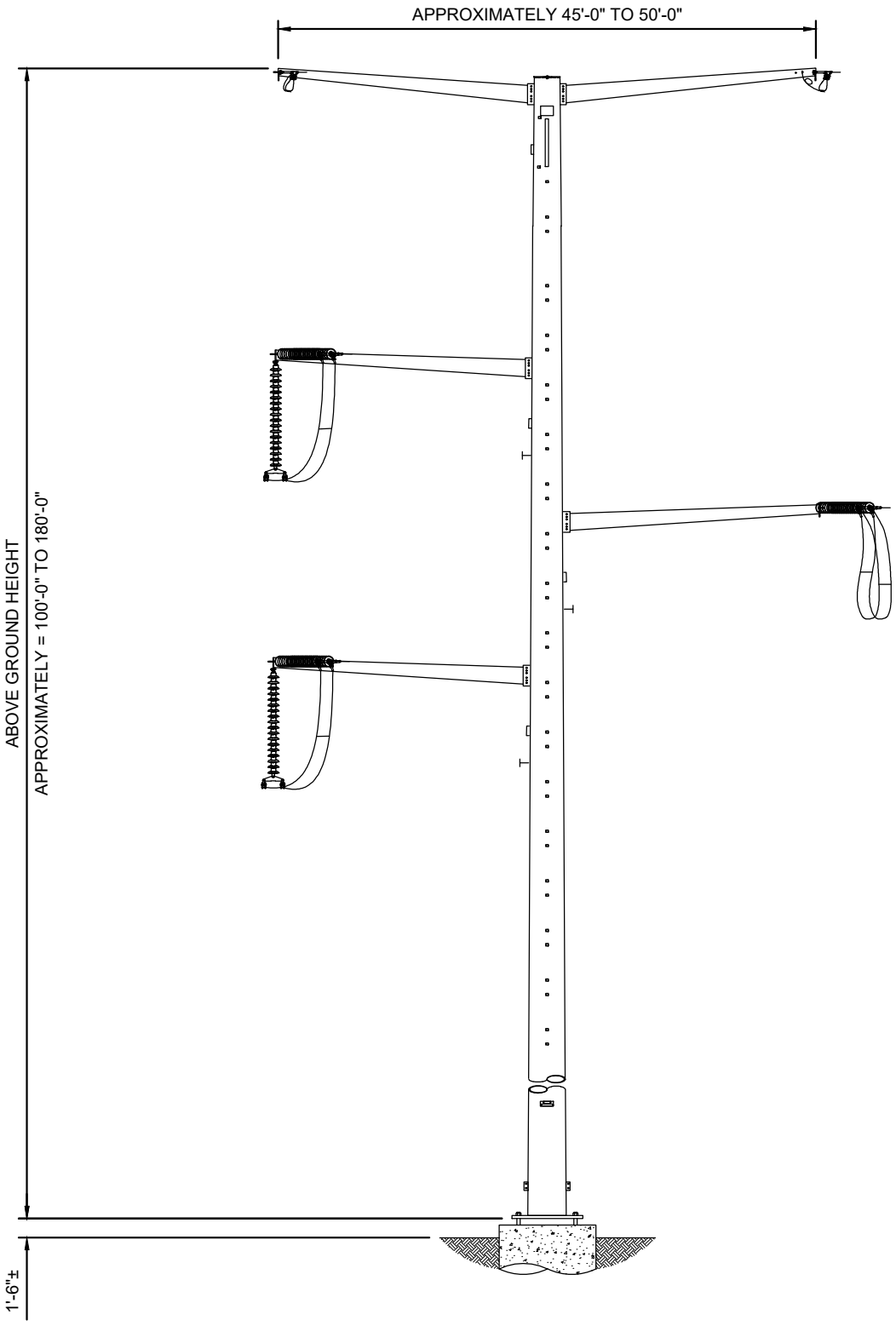

ATSI
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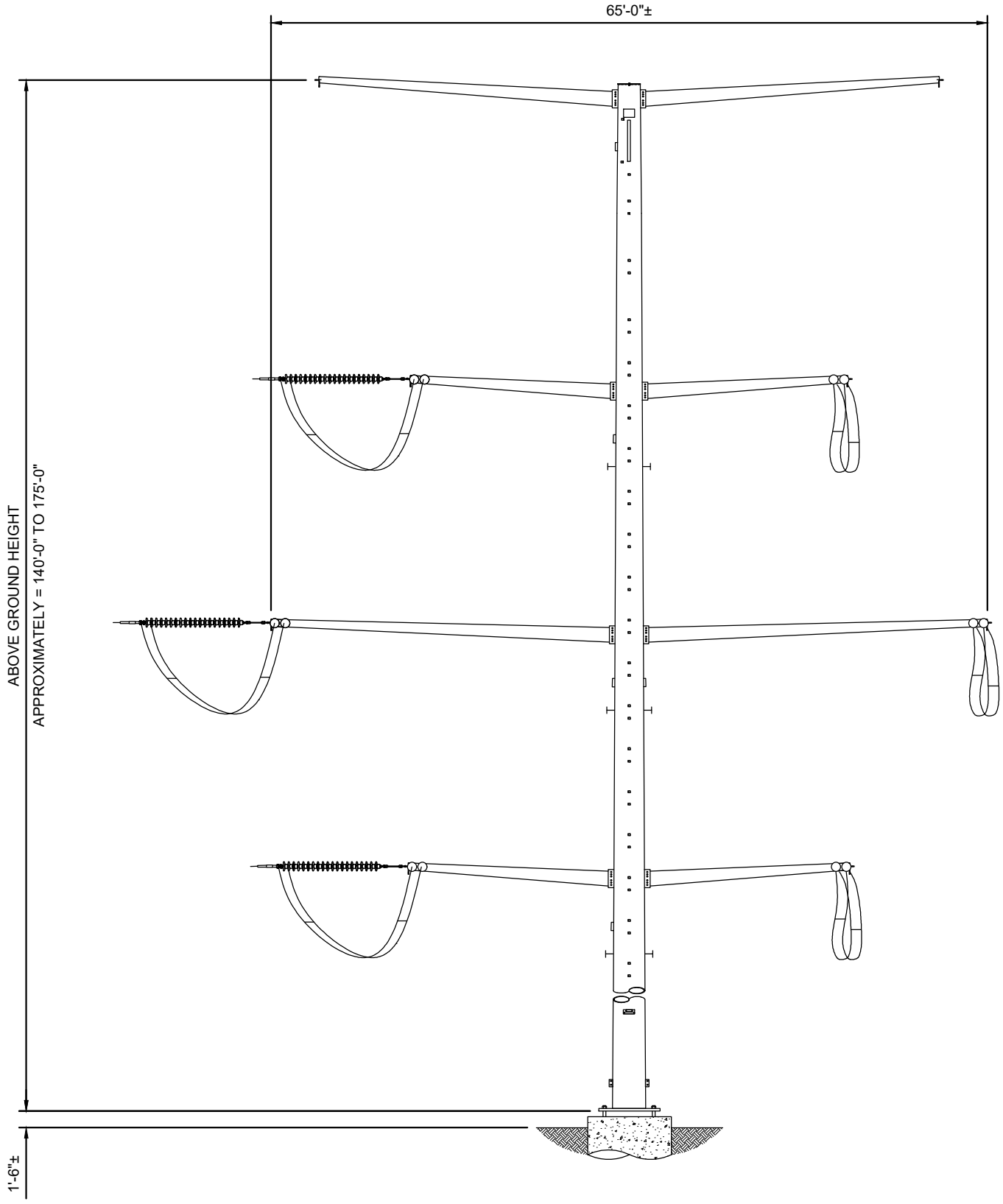
DOWLING-FULTON 345KV TRANSMISSION LINE
TAP TO MELBOURNE SUBSTATION

345KV SINGLE CIRCUIT TUBULAR STEEL STRUCTURE
DEADEND, ANGLES 50° TO 105°

Figure 5-1D

SCALE: N.T.S.

PAPER SIZE 8.5X11



ATSI
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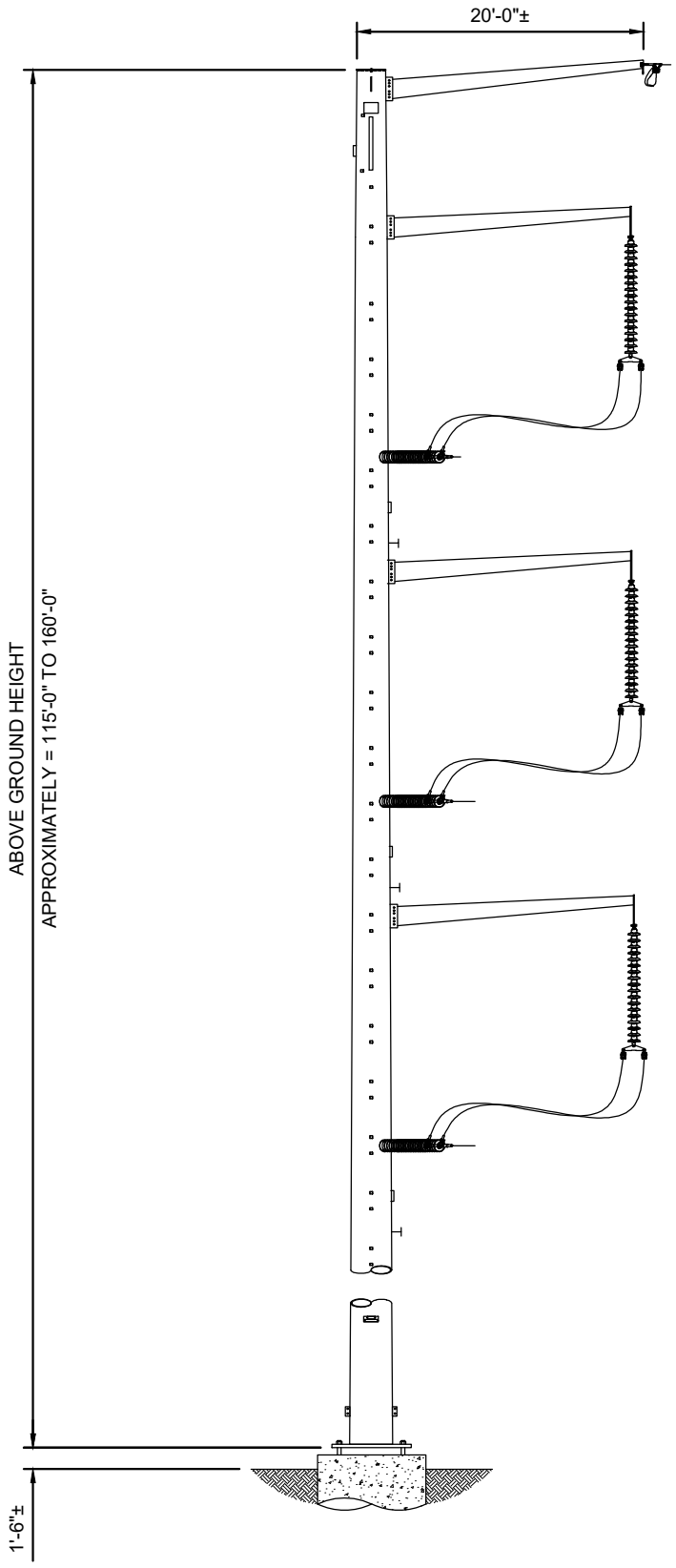
DOWLING-FULTON 345KV TRANSMISSION LINE
TAP TO MELBOURNE SUBSTATION

345KV SINGLE CIRCUIT TUBULAR STEEL STRUCTURE
IN-LINE DEADEND, TAP

Figure 5-1E

SCALE: N.T.S.

PAPER SIZE 8.5X11



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

DOWLING-FULTON 345KV TRANSMISSION LINE
TAP TO MELBOURNE SUBSTATION

345KV SINGLE CIRCUIT TUBULAR STEEL STRUCTURE
VERTICAL DEADEND, ANGLES 0° TO 60°

Figure 5-1F

SCALE: N.T.S.

PAPER SIZE 8.5X11

Appendix 5-1
Easement Form

EASEMENT

KNOW ALL MEN BY THESE PRESENTS, That **COMPANY NAME**, with a mailing address of XXX, hereinafter referred to as "GRANTOR", claiming title by virtue of instrument recorded in Volume XXX, Page XXX, as recorded in the County of XXX, for and in consideration of the sum of One Dollar ($1.00) and other valuable considerations received to my full satisfaction of **AMERICAN TRANSMISSION SYSTEMS, INCORPORATED,** an Ohio corporation, having its principal place of business at 76 South Main Street, Akron, OH 44308, hereinafter referred to as "GRANTEE", does hereby grant unto Grantee, its successors and assigns, an easement and right of way, together with the rights and privileges hereinafter set forth, for the lines for the transmission and distribution of electric current, including communication facilities, upon, over, under and across the following described premises:

Situated in the Township of XXX, County of XXX, State of Ohio; known as Permanent Parcel Number XXX.

The right of way referred to above is described on Exhibit "A", attached hereto and made a part hereof.

The easement and rights herein granted shall include the right to erect, inspect, operate, replace, remove, protect, relocate, repair, patrol, add to, and permanently maintain upon, over, under and along the above-described right of way across said premises all necessary structures, wires, cables and travel ways used for or in connection with the transmission and distribution of electric current, including communications, together with the rights to install any necessary guy wires, anchors and other usual fixtures and appurtenances within or adjacent to the right of way herein granted wherever necessary.

Grantee shall have the right of ingress and egress upon, over and across said premises for access to and from its facilities and the right of way, together with the full authority and unqualified right to trim, remove, clear, keep clear, and otherwise control (by such methods as Grantee, in its sole judgment, may deem necessary or proper, including but not limited to the use of herbicides) any and all trees, underbrush, or other vegetation located within the right of way that are not currently being used for agriculture purposes. Grantee shall also have the full authority and right, in its sole discretion, to trim, cut or remove, any or all trees adjacent to said right of way, that, in the opinion of Grantee, may interfere or threaten to interfere with the construction, operation, maintenance, or repair of Grantee's facilities ("Priority Trees"). Such Priority Trees include those that are dead, dying, diseased, structurally defective, leaning or significantly encroaching where the transmission facilities are at risk of arcing or failing should the tree or portions of the tree (i) fall near or into the transmission facilities or (ii) grow towards or into the transmission facilities.

Grantor Initials _____

Except as provided herein, Grantor reserves the right to use the lands encumbered by this Easement in any manner that is not inconsistent with the rights granted to Grantee by this Easement and provided that said use does not violate the National Electrical Safety Code clearances. Grantor agrees that no building, obstruction or impediment of any kind shall be placed within said right of way or between said structures or beneath said wires. Grantee shall have the full authority and right, in its sole discretion, to remove, or to compel the removal, of any buildings or other structures within the right of way that, in the opinion of the Grantee, may interfere or threaten to interfere with the construction, operation, maintenance, or repair of Grantee's facilities or with ingress or egress upon, over and across said premises for access to and from its facilities and the right of way. To the extent that any buildings or other structures within the right of way must be removed under the terms of the Easement, Grantors and their successors shall be solely responsible for the cost of removing said buildings or other structures from the right of way, and any damages arising therefrom.

The parties hereto acknowledge that any right of Grantee to trim, remove and/or clear any trees, underbrush, vegetation or other buildings or structures as set forth herein, does not create or place a duty upon Grantee to do so, or shift any duty that the Grantors owe to the Grantee, any third party and/or the general public.

The Grantee will repair or replace all fences, gates, lanes, driveways, drains and ditches damaged or destroyed by it on said premises or pay Grantors for all damages to fences, gates, lanes, driveways, drains and ditches, crops and stock on said premises caused by the construction or maintenance of said lines.

TO HAVE AND TO HOLD the said easement, rights and right of way and its appurtenances to said Grantee, and to its successors and assigns, forever, and the Grantor represents that he/she is the lawful owner of said premises and has full power to convey the rights and easement herein granted, that the same are free and clear of all encumbrances and that he/she will warrant and defend the same against all lawful claims and demands whatsoever, except current taxes and assessments not yet due and payable, easements, restrictions and reservations of record, and zoning ordinances, if any.

[SIGNATURE PAGE TO FOLLOW]

Acknowledged, **COMPANY NAME**, has executed this easement by its duly authorized officers as of the _____ day of _____, 20_____.

GRANTOR:

Grantor Initials _____

COMPANY NAME

By: _____
SIGNATURE

_____
PRINTED NAME

Its: _____
TITLE

STATE OF _____ §

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20_____, by _____, acting as _____ on behalf of **COMPANY NAME**, known to be the person(s) whose name(s) is/are signed to the written instrument hereto annexed and acknowledged before in my said County that he/she/they executed the same for the purposed therein contained.

_____
Notary Public

Prepared by: American Transmission Systems, Incorporated

Exhibit “A”

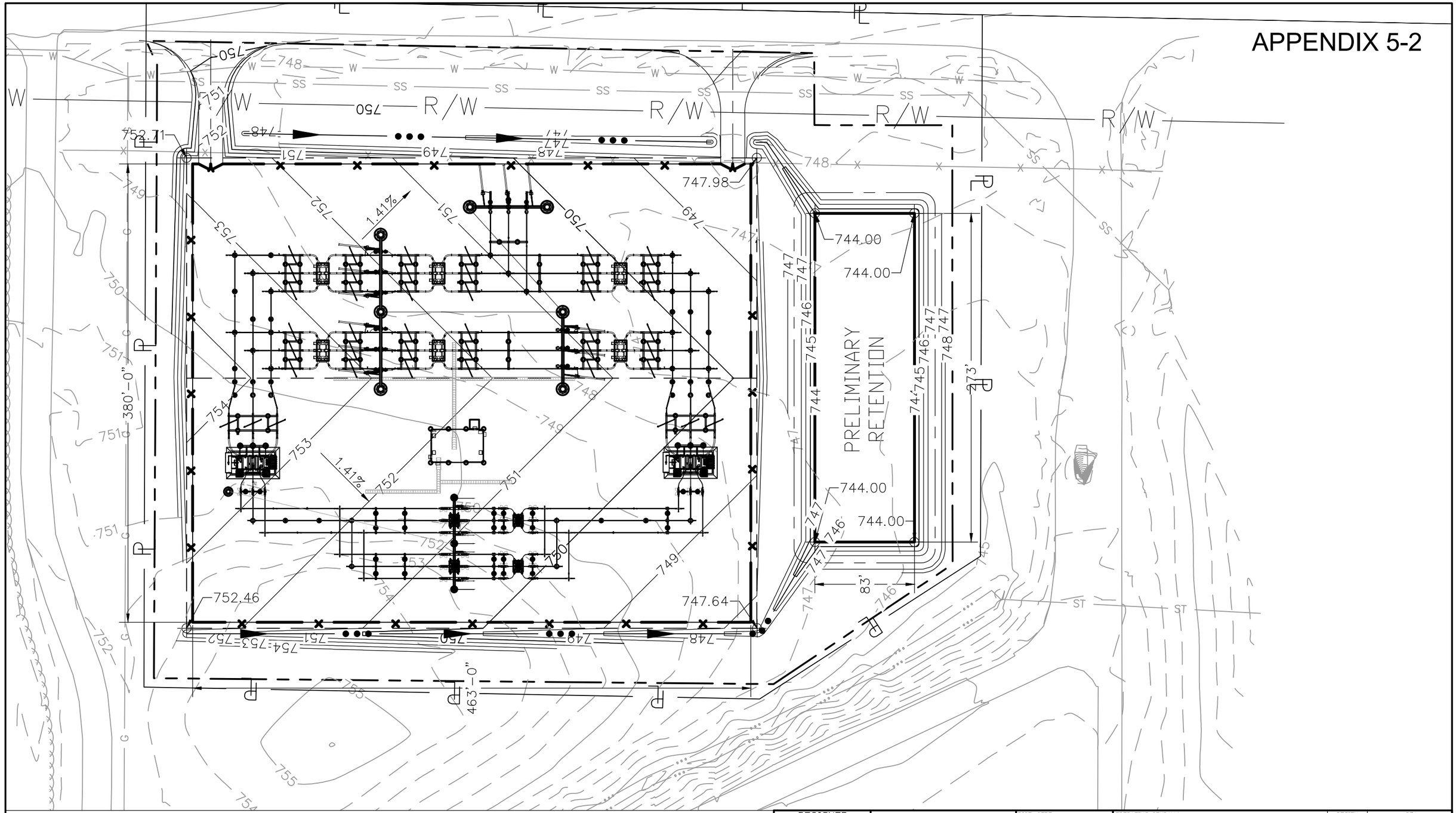
Grantor Initials _____

A description of Exhibit “A” to be created prior to easement signing, that will describe the area generally depicted in Exhibit “1” of the Option for Transmission Line Easement.

Grantor Initials _____

Appendix 5-2
Melbourne Substation Drawing

APPENDIX 5-2



NORTH

BY: DESIGNER APP: REVIEWER DATE: --/--/-- ISSUE: For Bid	FirstEnergy Energy Delivery Technical Services	DIST. CODE: SCALE: 1:80 SIZE: 11x17	OPERATING COMPANY: TOLEDO EDISON [TE]	REGION: XX-XX AREA: Xxxx
			FACILITY: MELBOURNE	
DRAWING BY BURNS & McDONNELL.			TITLE: GRADING PLAN SWITCHYARD	
RevisionNote			SAP NETWORK NO.: 16734273	DOC. ID: D-1256-04-02 REV.: -

4906-5-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP OF PROPOSED FACILITY

ATSI will construct, own, operate, and maintain the proposed Project. ATSI's purchase of a 9-acre site for the proposed Melbourne Substation is underway. The 345 kV Transmission Line and Tie Lines will be built pursuant to new easement rights that ATSI will acquire, generally through negotiation, from affected property owners. In general, ATSI will obtain any easements necessary for the ROW through negotiation with property owners (see Appendix 5-1 for copy of form Easement Agreement). Acquiring property rights by fee purchase of land or other types of agreements may also occur.

Although ATSI prefers to reach an amicable agreement with all impacted property owners, appropriation of easement rights may be necessary in some instances.

(B) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR ELECTRIC POWER TRANSMISSION FACILITY ALTERNATIVES

Table 6-1 includes estimates of applicable intangible and capital costs for both the Preferred and Alternate Routes, the 345 kV Tie Lines, the proposed Melbourne Substation, and a related line extension project that will be presented in a separate construction notice application. Project cost estimates are provided only for those items listed in the rule that are applicable to this Project.

Table 6-1: Estimates of Applicable Intangible and Capital Costs for Both the Preferred and Alternate Routes[1]

FERC Account Number	Description	Preferred Route	Alternate Route
350	Land and Land Rights	$9,766,000	$20,100,000.
352	Structures and Improvements	$9,602.000	$9,602,000.
353	Substation Equipment	$15,667,000.	$15,667,000.
354	Towers and Fixtures	0	0
355	Poles and Fixtures	$63,762,000.	$64,563,000
356	Overhead Conductors and Devices	$5,545,000.000	$5,614,000.000
357	Underground Conductors and Insulation	0	0
358	Underground-to-Overhead Conversion Equipment	0	0
359	ROW Clearing and Roads, Trails or Other Access	0	0
TOTAL		$104,342,000.00[2]	$115,546,000.00[3]

FERC = Federal Energy Regulatory Commission

(C) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR GAS TRANSMISSION FACILITY ALTERNATIVES

This Application is for an electric transmission line; therefore, this section is not applicable.

(D) PUBLIC INTERACTION AND ECONOMIC IMPACT

This section of the Application provides information regarding public interaction and the economic impact for each of the route alternatives.

(1) Counties, Townships, Villages, and Cities within 1,000 feet

The Preferred and Alternate Routes, the Melbourne Substation, and the 345 kV tie-lines from Melbourne Substation to the Sydney Substation within the North Star Steel facility are in Fulton County. Additionally, the Project lies within the Townships of Pike, Fulton, Swan Creek, and York, and the Alternate Route crosses a portion of the Village of Delta. Both the Preferred Route and Alternate Route begin within 1,000 feet of the Village of Swanton.

[1] Estimates of Applicable Intangible and Capital Costs for both the Preferred and Alternate Routes include non-jurisdictional substation and network activities at Dowling and Fulton substations.

[2] Approximately $5,150,300 is associated with a jurisdictional portion of the project that will be submitted in a future filing with the Ohio Power Siting Board should the Preferred Route be Certificated.

[3] Approximately $5,296,000 is associated with a jurisdictional portion of the project that will be submitted in a future filing with the Ohio Power Siting Board should the Alternate Route be Certificated.

(2) Public Officials Contacted

ATSI contacted several local officials to discuss the Project. Appendix 6-1 provides a list of the local public officials, including their office addresses and office telephone numbers, who have been contacted to date or will be provided a digital or hard copy of the Application, once accepted by the OPSB.

(3) Planned Public Interaction

ATSI mailed letters to residents, tenants, and elected officials, issued a public notice and a news release to the local media, and created a project website. Additionally, ATSI hosted an informal open house on August 24, 2022, and the required public informational meeting on December 7, 2022. ATSI's website for the Project included a fact sheet, a virtual open house containing similar information as presented during the in-person meetings, and an interactive map allowing the public to view details of proposed routes in relation to the viewer's property. ATSI will complete all necessary notice requirements associated with the filing of this application and the subsequent public and adjudicatory hearings as required by the OPSB's rules.

During the construction of this Project, ATSI will maintain the Project website with updates and retain ROW land agents to discuss project timelines, construction, and restoration activities with affected owners and tenants. Copies of informational materials available at the required public informational meeting and virtual open house are included in Appendix 6-2.

To access the project's website, please visit
https://www.firstenergycorp.com/about/transmission_projects/ohio/dowling-fulton.html

During this Project, the public may direct questions or comments to the FirstEnergy Transmission Projects hotline at 1-888-311-4737, or email transmissionprojects@firstenergycorp.com. ATSI requests that any communications concerning the Project include the Project name.

For copies of this Application, the public can do any of the following:

- Go to the local library, copies provided to Delta Public Library and Swanton Public Library;
- Go to http://opsb.ohio.gov/ and search for the Project's case number (22-0248-EL-BTX); or
- Access the Projects website on: https://www.firstenergycorp.com/about/transmission_projects/ohio/dowling-fulton.html and follow the directions to obtain a copy.

ATSI is logging comments and information provided through its public interaction program and this information will be shared with the OPSB staff, if requested.

At least 7 days before start of any construction activities, an ATSI ROW land agent will notify the landowner or the tenant by mail, telephone, or in person.

(4) Liability Insurance or Compensation

FirstEnergy, as the parent company of ATSI, currently self-insures against Commercial general liability and property damage exposure, as well as Commercial liability exposure in connection with its automobile operations. ATSI purchases excess Commercial General Liability insurance covering indemnity in the amount of at least $35,000,000 This insurance is on a per occurrence basis and is arranged under a broad form that includes automobile and contractual liability. Present coverage is arranged with AEGIS and is renewable on a year-to-year basis.

(5) Tax Revenues

The Preferred and Alternate Routes for the Project, as well as the 345 kV tie lines, Melbourne Substation, and a related line extension project that will be submitted in a separate construction notice, as described in 4906-5-06(A) above, are located within Fulton County. Local school districts, park districts, and fire departments will receive tax revenue from the Project. ATSI will pay property taxes on utility facilities in each jurisdiction. The approximate annual property taxes associated with the Preferred Route over the first year after the Project is completed is $5,644,572. The approximate annual property taxes associated with the Alternate Route over the first year after the Project is completed is $5,671,516.

Based on the 2022 tax rates, the following information includes preliminary estimates for these taxing authorities.

(a) Preferred Route

Fulton County	$172,060
York Township	$107.828
Pike Township	$144,923
Fulton Township	$264.228
Evergreen Local School District	$1,455,271
Pike-Delta-York Local School District	$951,472
Swanton Local School District	$2,548,788
	TOTAL $5,644,572

(b) Alternate Route

Fulton County	$190,535
York Township	$233,837
Delta Village	$42,826
Swan Creek Township	$144,648
Swanton Local School District	$2,994,660
Pike-Delta-York Local School District	$2,065,010
	TOTAL $5,671,516

Appendix 6-1
List of Public Official Points of Contact

APPENDIX 6-1

Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
Officials to Be Served a Copy of the Certified Application

Fulton County

Commissioner Jon Rupp,
President
Fulton County Commissioners
152 S. Fulton St., Suite 270
Wauseon, OH 43567

Commissioner Jeff Rupp,
Vice President
Fulton County Commissioners
152 S. Fulton St., Suite 270
Wauseon, OH 43567

Commissioner Joe Short,
Fulton County Commissioners
152 S. Fulton St., Suite 270
Wauseon, OH 43567

Frank T. Onweller
Fulton County Engineer
9120 Co. Rd. 14
Wauseon, OH 43567

Vond T. Hall
Fulton County Administrator
152 S. Fulton St., Suite 270
Wauseon, OH 43567

Christy Shadbolt, Director
Fulton County Regional Planning Commission
152 S. Fulton St., Suite 100
Wauseon, OH 43567

Julie Brink, Director
Fulton County Visitors Bureau
8848 State Route 108, Suite 108
Wauseon, OH 43567

Delta Village

Frank Wilton
Mayor, Delta Village
401 Main Street
Delta, OH 43515

Arthur Thomas
Delta Village Council
401 Main Street
Delta, OH 43515

Brad Peebles
Delta Village Administrator
401 Main Street
Delta, OH 43515

Andy Welch
Delta Village Planning Commission
401 Main Street
Delta, OH 43515

Stephanie Mossing
Delta Village Finance Director
401 Main Street
Delta, OH 43515

Village of Swanton

Neil Toeppe
Mayor, Village of Swanton
219 Chestnut Street
Swanton, OH 43558

Shannon Shulters
Village of Swanton Administrator
219 Chestnut Street
Swanton, OH 43558

Dianne Westhoven, President Pro-Tempore
Swanton Village Council
219 Chestnut Street
Swanton, OH 43558

M. Jason Vasko
Village of Swanton Finance Director
219 Chestnut Street
Swanton, OH 43558

York Township

Mark Jones, Trustee
York Township
6955 Co. Rd. FG
Delta, OH 43515

Jeffrey Mazurowski, Trustee
York Township
6955 Co. Rd. FG
Delta, OH 43515

Robert W. Trowbridge, Trustee
York Township
6955 Co. Rd. FG
Delta, OH 43515

Karen S. Miller, Fiscal Officer
York Township
6955 Co. Rd. FG
Delta, OH 43515

Swan Creek Township

Rick Kazmierczak, Trustee
Swan Creek Township
5565 County Road D
Delta, OH 43515

Brian Meyer, Trustee
Swan Creek Township
5565 County Road D
Delta, OH 43515

Gene Wilson, Trustee
Swan Creek Township
5565 County Road D
Delta, OH 43515

Jo Stultz, Fiscal Officer
Swan Creek Township
5565 County Road D
Delta, OH 43515

Fulton Township

Scott Gillen, Trustee
Fulton Township
10555 Co. Rd. 4
Swanton, OH 43558

Bernard Wanner, Trustee
Fulton Township
10555 Co. Rd. 4
Swanton, OH 43558

Julie Szabo, Fiscal Officer
Fulton Township
10555 Co. Rd. 4
Swanton, OH 43558

Joe E. Gombash, Trustee
Fulton Township
10555 Co. Rd. 4
Swanton, OH 43558

Pike Township

Jon Ersham, Trustee
Pike Township
10810 County Road 10-2
Delta, OH 43515

Jack Wagner, Trustee
Pike Township
10810 County Road 10-2
Delta, OH 43515

Ted Howard, Trustee
Pike Township
10810 County Road 10-2
Delta, OH 43515

Dennis N. Savage, Fiscal Officer
Pike Township
10810 County Road 10-2
Delta, OH 43515

Libraries

Candy Baird, Director
Delta Public Library
402 Main Street
Delta, OH 43515

Staci Treece, Acting Director
Swanton Public Library
305 Chestnut Street
Swanton, OH 43558

Appendix 6-2
Public Information Meeting Materials

76 South Main Street
Akron, Ohio 44308

November 18, 2022

[Name]
[Address 1]
[Address 2]

[Parcel(s)]

Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project
NOTICE OF PUBLIC INFORMATIONAL MEETING

Dear Property Owner/Resident:

American Transmission Systems, Incorporated ("ATSI"), a FirstEnergy company, invites you and members of your community to a local public meeting that we are hosting to provide you with an opportunity to learn more about the proposed Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project ("Project"). ATSI will host this public informational meeting on Wednesday, December 7, 2022, from 6:00-8:00 p.m. in the American Legion Hall located at 5939 State Route 109, Delta, OH 43515. The purpose of this public informational meeting is to provide information about need/construction/land for the Project, to answer questions, and to solicit input concerning the Project.

In this Project, ATSI is considering the construction of a new 345 kV four-breaker ring bus substation ("Melbourne Substation") and one new 345 kV transmission line to connect the Melbourne Substation with the existing 345 kV electric transmission system. The line will extend approximately 9 miles from the existing Dowling-Fulton 345 kV Transmission Line to the Melbourne Substation. ATSI will also construct two approximately 0.5 mile long 345 kV transmission lines to connect the existing, customer-owned Sydney Substation to the proposed Melbourne Substation. The transmission lines will be constructed primarily on single steel monopoles. The Project is needed to enhance electric service reliability for existing customers, add redundancy to the network, and allow for future load growth.

ATSI has carefully studied the general area for the proposed Project to identify potentially sensitive locations and land uses. Accounting for these attributes, ATSI determined a 9-acre site for the proposed Melbourne Substation. From there, multiple potential route segments have been evaluated to develop two potential route alternatives to connect the proposed Melbourne Substation to the existing Dowling-Fulton 345 kV Transmission Line, as shown on the enclosed map. As you may recall, ATSI presented potential routes to the public at an informal open house held August 24, 2022. At that meeting, ATSI received comments and engaged in meaningful dialogue with members of the community. ATSI then considered and investigated the comments received and further adapted its route alternatives.

As a landowner within or adjacent to at least one the potential transmission line routes or substation, you are invited to attend this public informational meeting to learn more about the Project, review the proposed route alternatives, ask questions of ATSI personnel and offer your comments on the Project.

76 South Main Street
Akron, Ohio 44308

In order to construct the Project, ATSI must obtain the approval of the Ohio Power Siting Board ("OPSB"). To obtain this approval, ATSI will prepare and submit an application to the OPSB that will include information on the proposed Melbourne Substation and both a preferred and alternate route for the new transmission line component of this Project.

The OPSB is legally obligated to review the Application and, if certain legal criteria are met, it may approve the Project. OPSB approval is obtained through the issuance of a Certificate of Environmental Compatibility and Public Need. For more information on the OPSB, its composition, and the process it will follow in reviewing the application for the Project, please visit their website at www.opsb.ohio.gov. You can also contact OPSB Staff via e-mail at contactopsb@puco.ohio.gov, by phone at 866-270-6772, or by mailing correspondence to 180 East Broad Street 11th Floor, Columbus, Ohio 43215. Once ATSI has completed the application for this Project and submitted it to the OPSB, more information about how to provide the OPSB with comments will follow.

We encourage you to attend the public informational meeting, as it will be an opportune time for in-person discussion of details about the proposed Project.

Alternatively, however, a virtual presentation can be viewed at your convenience. The virtual platform contains the same information that will be available at the in-person public informational meeting. In addition, there is an interactive map and multiple ways to leave input/comments. The virtual public meeting can be found at:

https://firstenergy.consultation.ai/melbourne/

Please feel free to submit questions or comments you may have to transmissionprojects@firstenergycorp.com or by phone at 1-888-311-4737.

Up-to-date Project information also can be found online at:
https://firstenergycorp.com/content/fecorp/about/transmission_projects/ohio/dowling-fulton.html.

Sincerely,

Nataliya Bryksenkova, Engineer
Transmission Siting
FirstEnergy Service Company

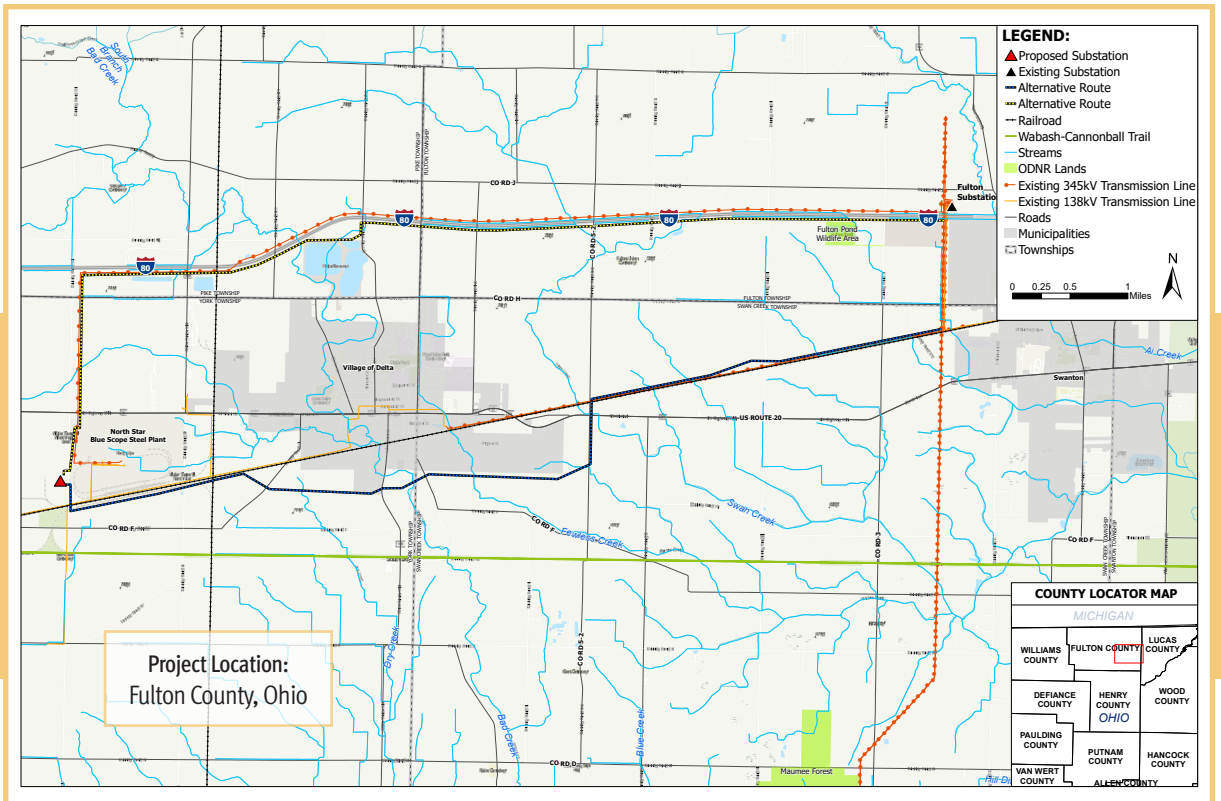
Dowling-Fulton 345-Kilovolt Transmission Line to Melbourne Substation Project

At FirstEnergy, it's our responsibility to deliver the power our customers depend on in their daily lives. American Transmission Systems, Inc. (ATSI), a FirstEnergy company, has identified a need for a new substation and 345-kilovolt (kV) transmission line in Fulton County, Ohio, to enhance electric service reliability for existing customers, add redundancy to the network and allow for future growth.

Project Overview

ATSI has completed an evaluation of the existing 345-kV transmission system in Fulton County and identified the need to build a new 345-kV transmission line that will extend nine miles from the existing Dowling-Fulton 345-kV transmission line to the proposed Melbourne Substation. The transmission line will be supported primarily by steel monopole structures. ATSI will also construct two additional 345-kV transmission lines, each approximately half a mile in length, to connect the existing Sydney Substation to the proposed Melbourne Substation.

PJM, the regional transmission system operator, and the PJM stakeholders have reviewed the proposed project, which has been assigned the supplemental upgrade identification number s2237. More information about the project can be found at www.pjm.com.



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COMM9874-11-22-CV
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American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Transmission Line Siting and Approvals

A detailed routing study was performed to identify potential routes for the project. These routes were carefully evaluated to minimize impacts to environmentally sensitive areas, property owners and communities. ATSI will seek approval from the Ohio Power Siting Board ("OPSB") for the project.

As part of the siting process, detailed wetland, stream and other environmental and cultural resource evaluations will be performed. Necessary permits will be secured from local, state and federal agencies before construction.

Easements

ATSI will negotiate with property owners to acquire necessary easements and vegetation management rights to support the new transmission line. Field agents will contact property owners to discuss transmission line easements and/or any temporary access needed during construction.

Preliminary Project Timeline

Informal Public Open House . . . . . August 2022

OPSB-Required Public Informational Meeting . . . . . December 2022

OPSB Application Filed . . . . . First Quarter 2023

Anticipated OPSB Order, Opinion and Certificate . . . . . First Quarter 2024

Anticipated Start of Construction . . . . . Second Quarter 2024

Anticipated Project Completion. . . . . Second Quarter 2025

Energizing the Future

In addition to localized transmission projects like this one, FirstEnergy is upgrading and strengthening the transmission grid through its Energizing the Future initiative to meet the existing and future needs of our customers and communities. Projects are focused on upgrading or replacing aging equipment to harden our transmission infrastructure, reduce outages and cut maintenance costs; enhancing performance by building a smarter, more secure transmission system; and adding flexibility by building in redundancy and allowing system operators to react more swiftly to changing grid conditions.

For more information about *Energizing the Future*, visit firstenergycorp.com/transmission.

Dowling-Fulton 345 Kilovolt (kV) Transmission Line Project

December 7, 2022

Name: _____

Address: _____

City: _____ State: _____ Zip code: _____

Phone: _____ Email: _____

Comments:

Name of Representative Taking Inquiry (if applicable):

Please direct questions to and share your comments on the project with a FirstEnergy representative. In addition, please add your questions or comments about the project on this form and give it to one of the representatives before leaving this meeting. If you choose to provide comments after the meeting, please send those comments to Nataliya Bryksenkova, 76 S. Main St., Akron, Ohio 44308. Providing your written questions and comments provides the best opportunity for us to identify your questions and to consider your comments. Thank you.

FirstEnergy®

Transmission

Energizing the Future

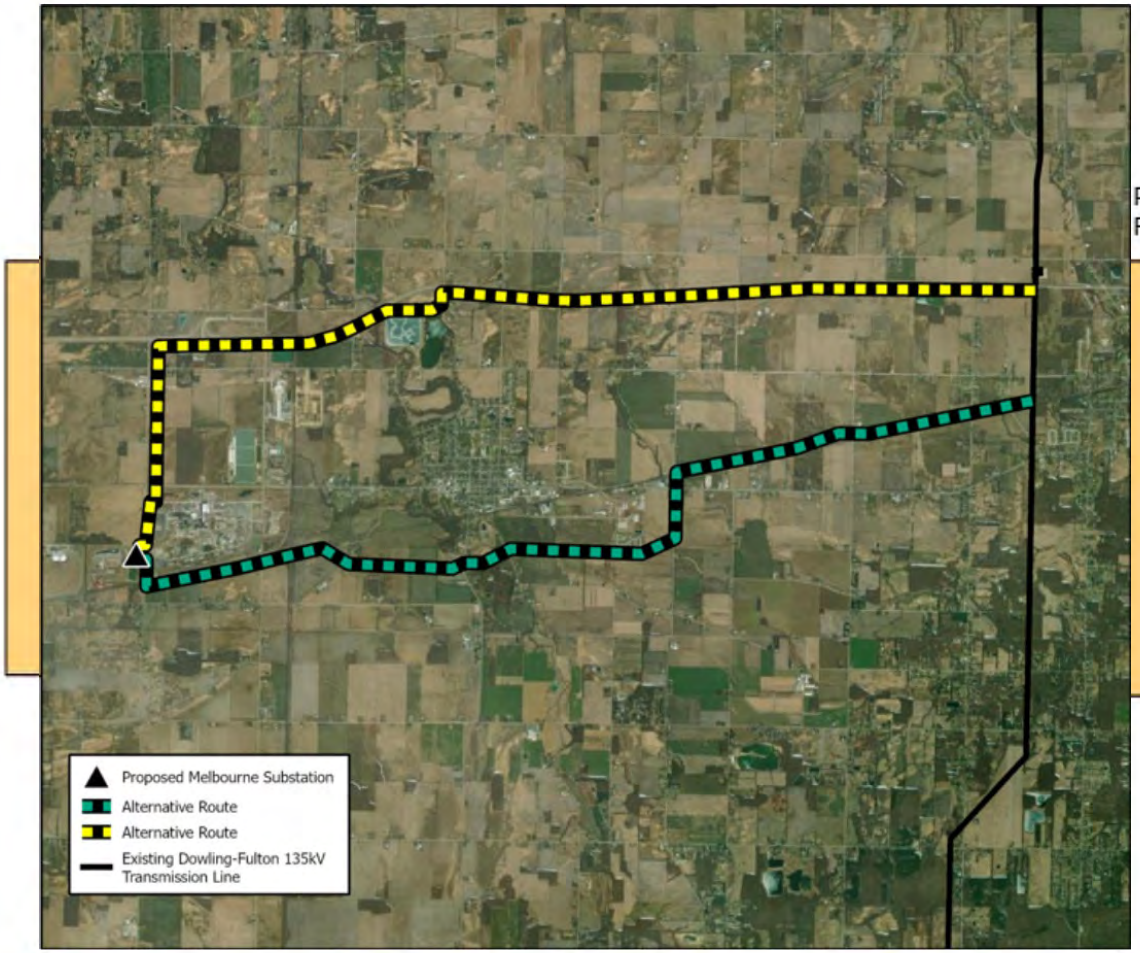
Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

Public Meeting

December 2022

Energizing the FUTURE

Project Overview



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a subsidiary of FirstEnergy Corp.

Project Location:
Fulton County, Ohio

- **345 kV transmission line connecting the Dowling-Fulton 345 kV and proposed Melbourne Substation in Fulton County, OH.**

Need and Benefits

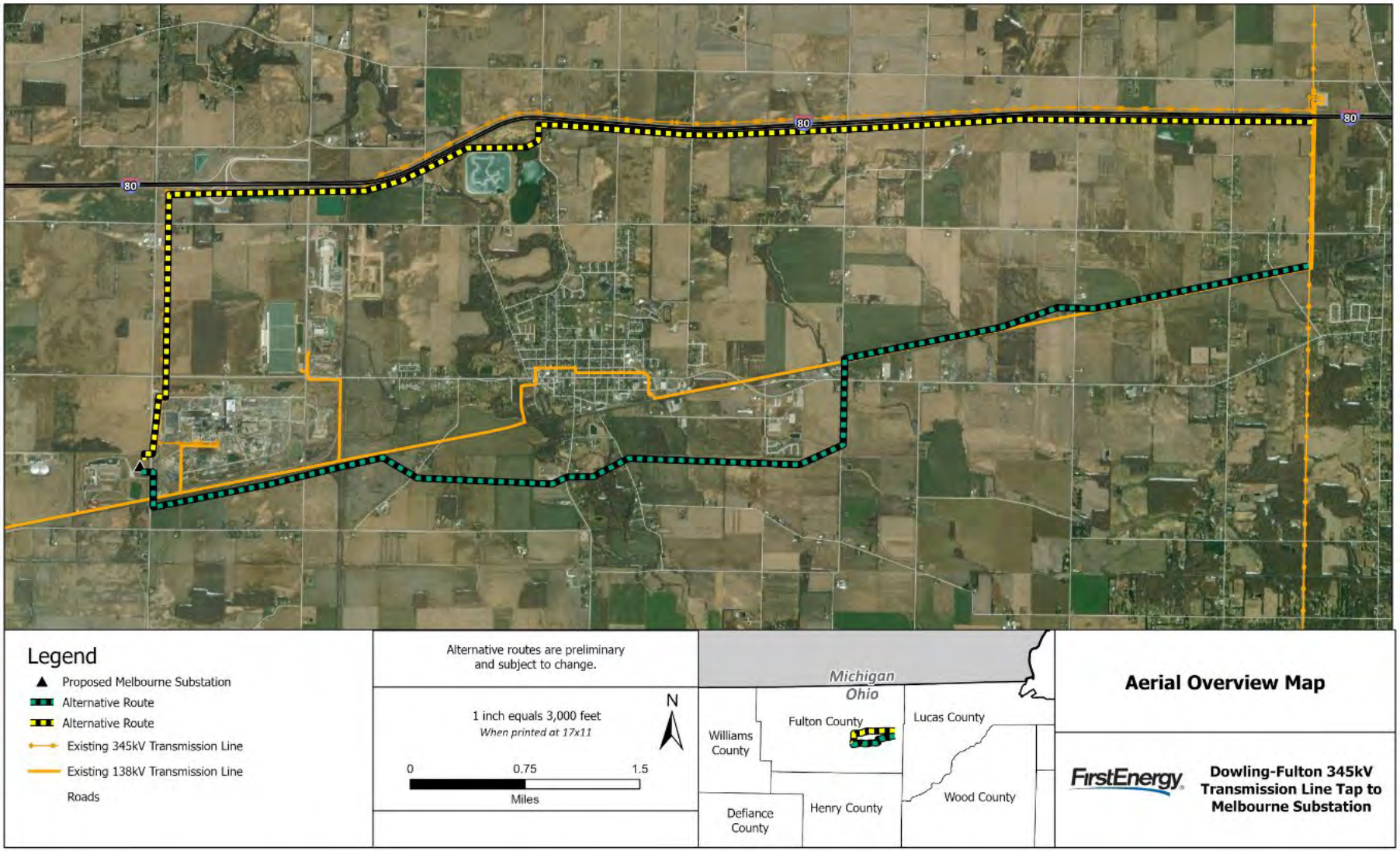
The Project's Objectives:

- **Construct a new approximately 9-mile, 345 kV transmission line from the existing Dowling-Fulton 345 kV Transmission Line to the proposed Melbourne Substation that will improve the transmission system reliability in the service area.**
- **Alleviate a potential 300-megawatt load loss, a PJM Planning Criteria Violation, as a result of increased load on the transmission system.**

These improvements will:

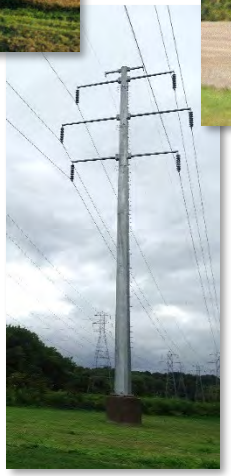
- **Allow for greater operational flexibility.**
- **Add redundancy to the network.**
- **Enhance electric service reliability for existing customers.**
- **Allow for future load growth.**

Alternate Routes



Engineering Design Structure Types

Steel Monopoles
Height: 100’-225’




Real Estate Negotiations

- **Right-of-Way width (ROW) Required for the Transmission Line is 150’**
  - ATSI will negotiate with property owners to obtain any necessary easements or vegetation management rights to support the new transmission line.

- **Examples of land rights acquisition:**
  - Easement agreements
  - Priority tree rights
  - Access roads

- **ATSI’s goal is to work with the property owners to obtain all necessary rights to construct the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation. However, should that not occur, ATSI may seek these rights through eminent domain as a last resort.**

Vegetation Management

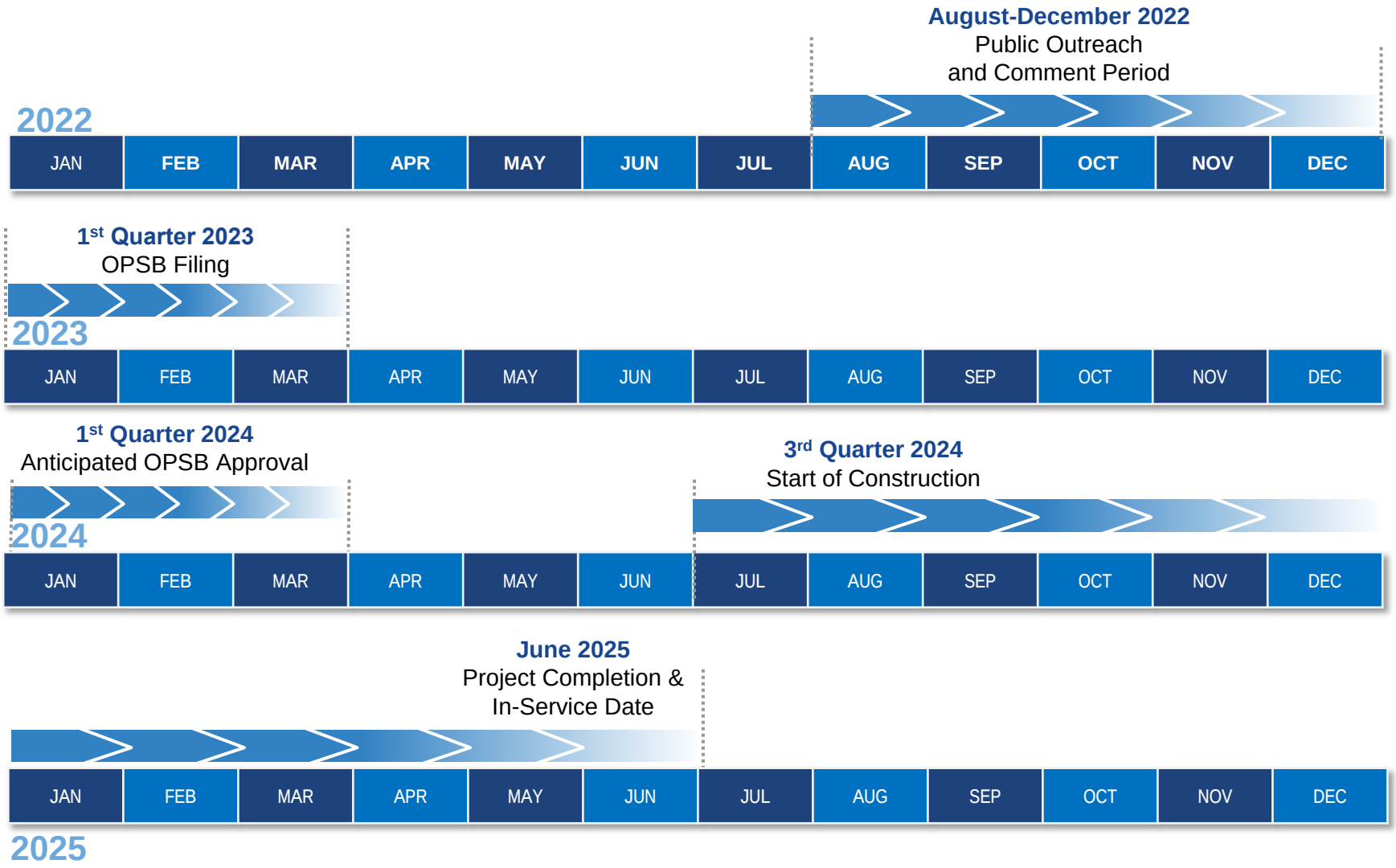
- **Proper vegetation management is an important part of ensuring electric system reliability.**
- **ATSI focuses on responsible vegetation management to create a sustainable, compatible low-growing habitat that supports reliable electric service.**

Environmental Permitting

Principal Regulatory Agencies

- U.S. Army Corps of Engineers
- U.S. Fish & Wildlife Service
- Ohio Environmental Protection Agency
- Ohio Department of Natural Resources
- State Cultural Resource Agencies
- County and Municipal Agencies

Proposed Construction Schedule



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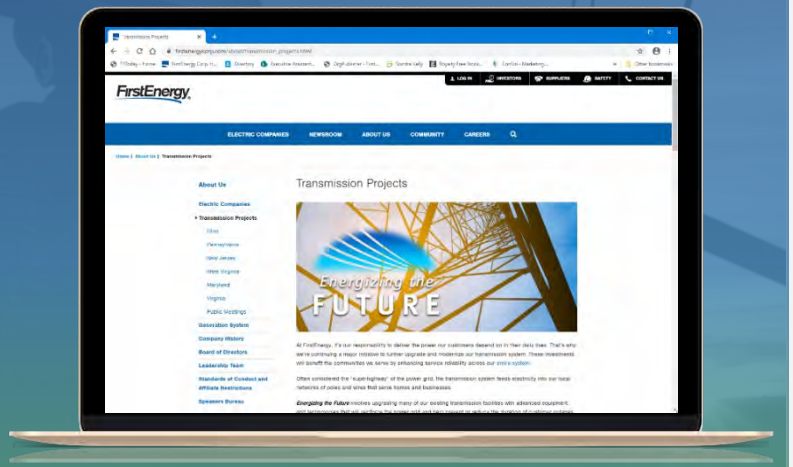


Energizing the Future

Contact Information

- **Visit the project website for additional information**
- **Contact us if you'd like to schedule an individual meeting for further discussion**

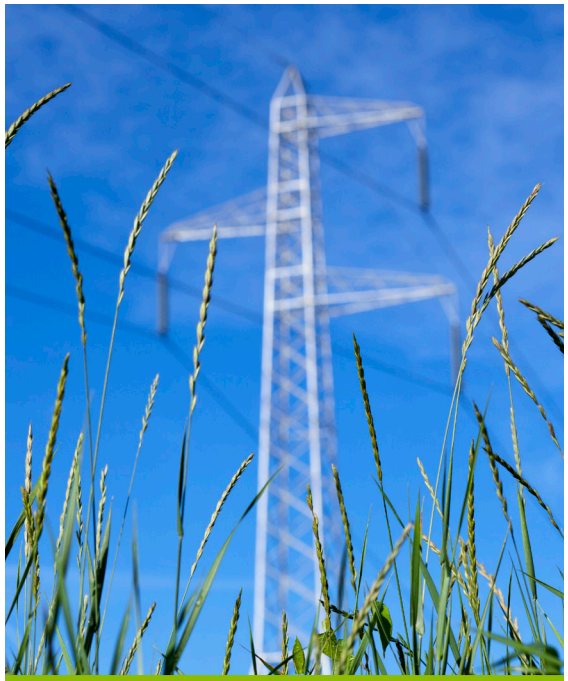
Email: transmissionprojects@firstenergycorp.com

Phone: 1-888-311-4737

Websites:
firstenergycorp.com/about/transmission_projects/ohio/dowling-fulton.html

Virtual Public Meeting Room:
firstenergy.consultation.ai/melbourne

Interactive Map:
arcg.is/1SWD9X



What Are Electric and Magnetic Fields?

Electric and magnetic fields surround anything that generates, transmits, or uses electricity. **Electric fields** result from voltage that pushes electric current through an electrical wire. **Magnetic fields** are produced when electrical current flows through wires and electrical devices. Together, these electric and magnetic fields from electric power sources are commonly referred to as EMF.

Since electricity plays an important role in modern life and in almost everything we do, EMF can be found almost everywhere. The electricity system that is used to transmit and distribute electricity (e.g., transmission lines, distribution lines, and substations) is a source of EMF. When we use electricity in our homes, offices, schools, workplaces, hospitals, and public areas to power the many appliances, devices, and equipment we use for work, leisure, and transportation, EMF also are present.

Are There Guidelines That Limit Exposure to EMF?

There are no federal exposure limits in the United States and no state agency has adopted exposure limits based on a finding that EMF causes adverse health effects. Scientific organizations, however, have recommended exposure guidelines to protect the general public and workers from very high EMF levels, that have the potential to cause nerve and muscle stimulation, which are short-term and reversible effects. EMF levels found in our environment, including those near high-voltage power lines, however, are far too low to cause these effects.

Where Can I Find More Information?

Health Canada

http://healthycanadians.gc.ca/healthy-living-vie-saine/environment-environnement/home-maison/emf-cem-eng.php

National Cancer Institute

http://www.cancer.gov/cancertopics/factsheet/Risk/magnetic-fields

World Health Organization

http://www.who.int/peh-emf/en/

National Institute of Environmental Health Sciences

http://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

European Commission – SCENIHR

http://ec.europa.eu/health/scientific_committees/consultations/public_consultations/scenihr_consultation_19_en.htm

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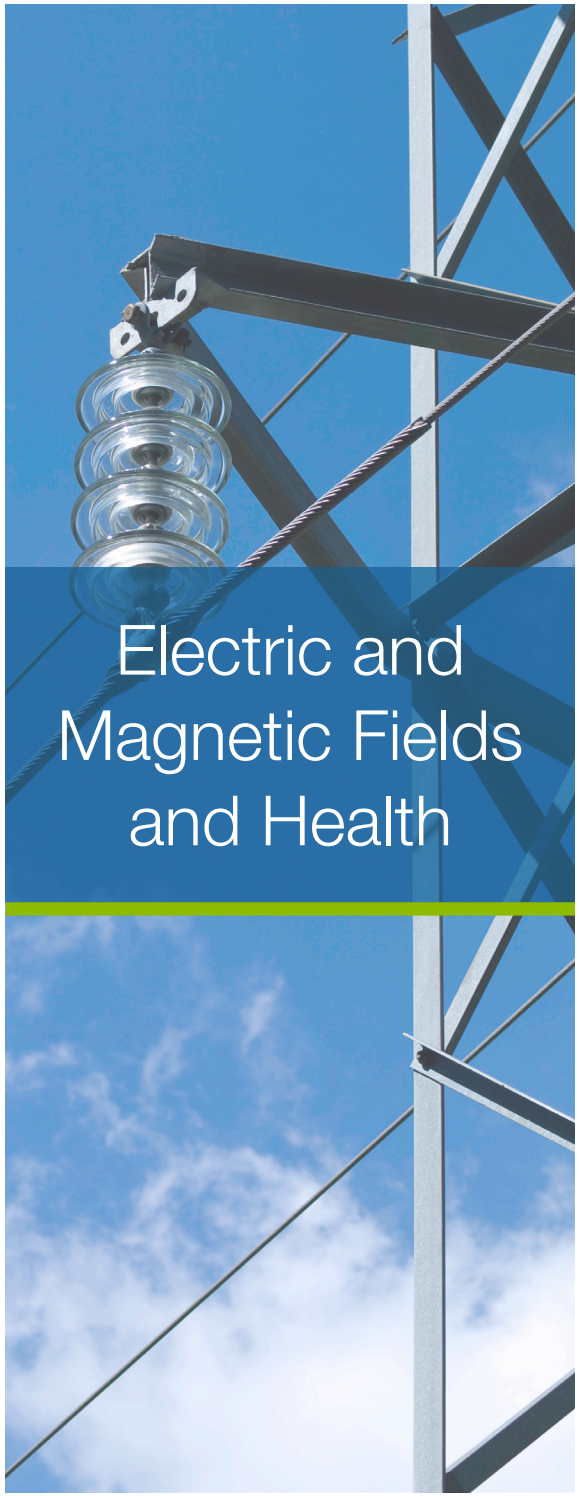
Prepared by Exponent for FirstEnergy | January 2016



Electric and Magnetic Fields and Health

How Is EMF Measured and What Are Typical Levels in the Home?

Electric fields are measured in units of volts per meter (V/m) and magnetic fields are measured in milligauss (mG), microtesla (μT) or millitesla (mT) (1 mG = 0.1 μT = 0.0001 mT). The highest levels of EMF are measured directly near the source, and decrease rapidly with distance. Since electric fields are easily blocked or weakened by walls or other objects, more research has been conducted on magnetic fields.

In our homes, magnetic fields are generated from appliances, the wiring that powers those appliances, the distribution lines that deliver electricity to the home, and any currents flowing on water pipes. Magnetic fields from nearby transmission lines also have the potential to contribute to the magnetic-field levels inside a home, but since magnetic fields decrease rapidly as you get farther away from the source, the contribution of transmission lines to a home's magnetic-field level may be less than from other closer sources. The typical average level of magnetic fields in homes in the United States measured away from appliances is approximately 1 mG, while in close proximity to common appliances that are in use, the magnetic-field level can range from tens to hundreds of mG (Table 1).

Table 1. Magnetic Fields Measured from Appliances

Source	Distance from Source*		
	6 inches (mG)	1 foot (mG)	2 feet (mG)
Can Opener	600	150	20
Vacuum Cleaner	300	60	10
Hair Dryer	300	1	–
Portable Heater	100	20	4
Electric Range	30	8	2
Dishwasher	20	10	4
Toaster	10	3	–
Coffee Maker	7	–	–

Source: EMF Questions and Answers (NIEHS, 2002)

* The numbers represent the median magnetic field (i.e., half of the appliances tested had higher levels and half had lower levels than those shown in the figure).

Equipment within substations also produces magnetic fields, but here too, the fields drop off quickly with distance. At the boundary of substation sites, the magnetic field from substation equipment is typically within the range of levels found inside our homes. The dominant source of magnetic fields near substation boundaries is the power lines serving the substation.

How Are Potential Health Effects Studied?

There are three main approaches that scientists use to study potential effects of exposure to any physical, chemical, or biological agent, including EMF. Over the past 35 years, thousands of studies have been published in research areas related to EMF.

Epidemiologic studies are conducted among people to observe if persons with a disease (such as cancer) experienced higher exposures to EMF than persons without that disease.

Laboratory animal studies (also called *in vivo* studies) are conducted in laboratory animals, most commonly mice and rats, to test whether extended exposures to high levels of EMF cause increased rates of disease or toxic effects.

Laboratory studies of cells and tissues (also called *in vitro* studies) are conducted to see if exposure to EMF can cause any changes in biological processes that could lead to disease.

How Are Scientific Conclusions Drawn from Health Studies?

First and foremost, no single study or a selected small group of studies can form the sole basis of a valid scientific assessment. The method that scientists use to conduct health risk assessments involves the evaluation of all relevant studies in the three main research areas discussed above. The three areas have varying strengths and limitations, thus, they contribute different information to a scientific evaluation and have to be weighed together. Because epidemiologic studies are conducted among people, the main interest of health research, they provide highly relevant scientific evidence. *In vivo* studies can be well controlled by the investigators and can expose animals to high levels of exposure for long time periods up to the entire lifetime of the animals. While animal studies require extrapolation between species, these tests form the primary basis for assessing the safety of all drugs and medicines. *In vitro* laboratory studies may contribute to better scientific understanding of biological processes and potential exposure effects on a cellular level; however, because cells and tissues may not react the same way in experimental settings as in intact organisms, no direct conclusions can be drawn from *in vitro* studies about disease and adverse health effects. In the overall evaluation, scientists look for overall patterns within and across the three research areas. Epidemiology and *in vivo* studies have primary importance, while *in vitro* studies contribute secondary information in the assessment of scientific evidence. Studies also vary greatly in their quality, thus, each study contributes different weight in the overall evaluation. Higher quality studies contribute more weight, while lower quality studies contribute less weight, and studies with very poor methods may not contribute at all.

What Have Authoritative Scientific Organizations Concluded?

Numerous scientific organizations have assembled groups of independent scientists with expertise in a variety of disciplines to perform comprehensive reviews of EMF research. These organizations include the International Agency for Research on Cancer, the International Commission on Non-Ionizing Radiation, the National Institute of Environmental Health Sciences, the World Health Organization, and most recently in 2015, a Scientific Committee of the European Commission. Overall, the conclusions of these panels are consistent and can be summarized generally, as follows:

- The research does not support the conclusion that EMF causes any long-term, adverse health effects.
- Some epidemiologic studies have reported a statistical association between high, average magnetic-field levels and childhood leukemia. No authoritative agency has concluded, however, that magnetic fields cause childhood leukemia due to the limitations of these studies and the lack of evidence from laboratory studies.
- The *in vivo* studies, overall, do not report an increase in cancer among animals exposed to high levels of EMF even after lifetime exposures.
- The *in vitro* studies provide no explanation as to how magnetic fields could cause disease.

SENIOR CENTER NEWS

The Fulton County Senior Center is now offering dine-in and take out meals. There are locations in Wauseon, Swanton, Delta, Archbold, and Fayette.

Meal reservations are required and can be made by calling 419-337-9299. Lunches are served at noon and the suggested donation is $3. Call at least one business day in advance to reserve a meal.

Menu

Tuesday, Nov. 22: Sausage and sauerkraut, smashed red potatoes, peas, mixed fresh fruit.

Wednesday, Nov. 23: Baked chicken, mashed potatoes, green bean casserole, orange cranberry Jell-O, pumpkin pie.

Thursday, Nov. 24: Closed for Thanksgiving

Friday, Nov. 25: Closed for Thanksgiving

Monday, Nov. 28: Tomato basil soup, tuna salad sandwich, three bean salad, Hawaiian fruit salad.

Tuesday, Nov. 29: Pot roast, boiled potatoes, carrots, oranges.

Honors

From page 2

Reid Moser, Alexis Myers*, Angel Myers, Emalyne Neifer, Kassidy Noonan, Aiden Oberhaus*, Lillian Parks, Brynlee Poorman, Layla Rice*, Landon Ringenberg*, Bentlei Rocha*, Owen Rufenacht, Cayden Ruffer, Carly Rupp*, Maddox Schneider*, Sullivan Schuster, Zenas Siefker, Owen Smeltzer*, Jaxton Smith, Jett Smith, Hayden Stewart, Jackson Stoner, Micah Strader*, Breah Teal, Bethani Tibbs*, Liam Tripp*, Alexander Vajen, Dominic Vahanu, Clete Van Etten, Camden Vasvery, Leland Wanless, Colton Ward*, Kaiden Willeman, Parker Wilson, Nathan Wonderly*, Aiden Wood, Hallie Woodard*, Natalie Woodruff, Lamyia Wright*, Lainey Zientek*.

Grade 8

Gage Amoss, Addison Baldwin, Gabriel Bandeen, Mia Barajas, Brooklyn Binkley*, Keegan Boughton, Kenlee Bronson, Tristan Burkholder, Harold Chavez, Brody Chittenden, Luke Conrad, Alayna Corley, Kadence Croninger, Camden Custard*, Victor Dearcia, Natasha Edwards*, Addison Fisher, Lauren Foltz, Brady Fry, Kassandra Gigax, Ethan Gomez, Lucas Hanak, Caiden Heffern, Remington Heiney, Alyson Heller, Logan Henricks, Harlie Hensley, Slade Inderrieden, John James, Christopher Jarvis, Ezekiel Jimenez, Shaylyn Kessler, Abigail Kissel*, Jacob Klopfenstein*, Brynlee Knapp, Tucker Knierim, Hayden Konieczka*, Karsyn Lavinder, Gavin Ledyard, Lola Liechty, Dulce Martinez*, Jacob Miller, Liliana Molina*, Xzavier Molina, Laela Mullins, Wainani Neifer*, Sidney O'Dell*, Camryn O'Neill, Kelby Parsons, Tristan Pena*, Kyson Powers, Thad Reckner, Malachi Reeder, Riley Riegsecker*, Drew Ringenberg*, Tyler Rodriguez, Josephine Russell, Laynee Sanford, Lane Schindler, Justin Schmunk*, Caleb Shadbolt, Connor Shadbolt*, Brody Shehorn, Camden Sherman, Weston Smith*, Madyson Sommers, Kyli Spessefer, Shaun-Stasa, Hallie Stevens, Logan Stinner, Jackson Strader, Tyler Tester, Addison Thatcher*, Ella Tule*, Ricardo Vazquez, Marcus Ward, Clay Wasnich, Elizabeth Willman, Malachi Wyse*, Nathan Young, Presley Zeigler*.

Veterans honored at NSCC

Photo provided

Northwest State Community College hosted a special Veterans Luncheon on Nov. 10 on the Archbold campus. Kerry Patrick Clark provided music and entertainment, and James Creager shared a powerful presentation titled "Freedom is Not Free." Pictured are the veterans in attendance.

NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

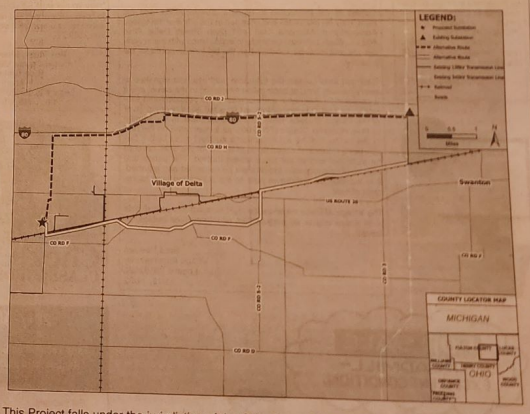
American Transmission Systems, Incorporated ("ATSI"), a FirstEnergy company, is hosting a public informational meeting to discuss ATSI's proposed electric transmission facilities, referred to as the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project ("Project"). This meeting will be held on Wednesday, December 7, 2022, from 6:00-8:00 p.m. in the American Legion Building located at 5939 State Route 109, Delta, OH 43515.

This Project, located in Fulton County, will install a new 345 kV substation ("Melbourne Substation") and one new 345 kV transmission line along either a Preferred Route or Alternate Route, which will connect the new Melbourne Substation with ATSI's existing 345 kV electric transmission system. As shown on the map accompanying this public notice, the new 345 kV transmission line will extend approximately 9 miles from the existing Dowling-Fulton 345 kV Transmission Line to the proposed Melbourne Substation. ATSI will also construct two approximately 0.5 mile long 345 kV transmission lines to connect the existing, customer-owned Sydney Substation to the proposed Melbourne Substation. The transmission lines will be constructed primarily on single steel poles.

The Project is needed to enhance electric service reliability for existing customers, add redundancy to the network, and allow for future growth.

At the public informational meeting, ATSI will provide an overview of the entire Project and will have information available related to need for the Project, construction issues/sequencing, and right-of-way acquisition.

ATSI has carefully studied the general area for the proposed Project to identify potentially sensitive locations and land uses. Accounting for these attributes, ATSI determined the optimal site for the proposed Melbourne Substation. From there, multiple potential route segments have been evaluated to develop two potential route alternatives to connect the proposed Melbourne Substation to the existing Dowling-Fulton 345 kV Transmission Line, as shown on the below map. ATSI presented potential routes to the public at an informal open house held August 24, 2022. At that meeting, ATSI received comments and engaged in meaningful dialogue with members of the community. ATSI then considered and investigated the comments received and further adapted its route alternatives.



This Project falls under the jurisdiction of the Ohio Power Siting Board (OPSB). Therefore, before construction can begin, ATSI must obtain approval from the OPSB and will therefore submit an Application for a Certificate of Environmental Compatibility and Public Need. ATSI plans to file this Application in Case No. 22-0248-EL-BTX before the end of the first quarter 2023. Copies of all filings in the proceeding can be accessed through the OPSB's website at http://www.opsb.ohio.gov. The OPSB can also be reached by phone at (866) 270-6772, by e-mail at contactOPSB@puco.ohio.gov, or by mail at 180 East Broad Street, 11th Floor, Columbus, Ohio 43215.

Contingent on receipt of Board approval and acquisition of necessary land rights, ATSI expects to begin construction on the Project in early 2024 and to place the Project in service by June 2025.

For more information about the Project, or if you are unable to attend the meeting in-person, a virtual public meeting platform can be viewed at your convenience. The virtual public meeting contains the same information that will be available at the in-person meeting. In addition, there is an interactive map and multiple ways to leave input/comments. The virtual public meeting can be found at: https://firstenergy.consultation.ai/melbourne/

Please feel free to submit questions or comments you may have to transmissionprojects@firstenergycorp.com or by phone at 1-888-311-4737.

Up-to-date Project information also can be found online at: https://firstenergycorp.com/content/fecorp/about/transmission_projects/ohio/dowling-fulton.html.

Bison spread as tribes reclaim stewardship

Once on the brink of extinction, some 20,000 now roam the U.S. in 65 herds

ASSOCIATED PRESS

BADLANDS NATIONAL PARK, S.D. — Perched atop a fence at Badlands National Park, Troy Heinert peered from beneath his wide-brimmed hat into a corral where 100 wild bison awaited transfer to the Rosebud Indian Reservation.

Descendants of bison that once roamed North America's Great Plains by the tens of millions, the animals would soon thunder up a chute, take a truck ride across South Dakota, and join one of many burgeoning herds Mr. Heinert has helped re-establish on Native American lands.

Mr. Heinert nodded in satisfaction to a park service employee as the animals stomped their hooves and kicked up dust in the cold wind. He took a brief call from Iowa about another herd being transferred to tribes in Minnesota and Oklahoma, then spoke with a fellow trucker about yet more bison destined for Wisconsin.

By nightfall, the last of the American buffalo shipped from Badlands were being unloaded at the Rosebud reservation, where Mr. Heinert also lives. The next day, he was on the road back to Badlands to load 200 bison for another tribe, the Cheyenne River Sioux.

"Buffalo, they walk in two worlds," said Mr. Heinert, 50. "Are they commercial or are they wildlife? From the tribal perspective, we've always deemed them as wildlife, or to take it a step further, as a relative."

Now 82 tribes across the U.S. have more than 20,000 bison in 65 herds — and that's been growing along with the desire among Native Americans to reclaim stewardship of an animal their ancestors depended upon for millennia.

European settlers destroyed that balance, driving bison nearly extinct until conservationists including Teddy Roosevelt intervened to re-establish a small number of herds.

The long-term dream for some Native Americans: return bison on a scale rivaling herds that roamed the continent in numbers that shaped the landscape itself. Mr. Heinert, a South Dakota state senator and director of the InterTribal Buffalo Council, views his job more practically: Get bison to tribes that want them, whether two animals or 200.

"All of these tribes relied on them at some point," he said. "Those tribes are trying to go back to that, re-establishing that connection."

Bison for centuries set rhythms of life for the Lakota and other nomadic tribes. Hides for clothing and teepees, bones for tools and weapons, horns for ladles, hair for rope — a steady supply of bison was fundamental.

At so-called "buffalo jumps," herds would be run off cliffs, then butchered over days and weeks.

European settlers brought a new level of industry to the enterprise — and bison killing dramatically increased, their parts used in machinery, fertilizer, and clothing. By 1889, only about 1,000 remained.

"We wanted to populate the western half of the United States because there were so many people in the East," U.S. Interior Secretary Deb Haaland, the first Native American cabinet member, said in an interview. "They wanted all of the Indians dead so they could take their land away."

The thinking at the time, she added, was "'if we kill off the buffalo, the Indians will die. They won't have anything to eat.'"

The day after the bison transfer from the Badlands,

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Troy Heinert, executive director of the InterTribal Buffalo Council and a South Dakota state senator, views his job practically: Get bison to tribes that want them, whether two animals or 200.

Mr. Heinert's son, T.J., had his rifle fixed on a large bull bison at the Wolakota Buffalo Range. The tribal enterprise in just two years has restored about 1,000 bison to 28,000 acres of rolling, scrub-covered hills near the Nebraska-South Dakota border.

The 28-year-old had talked all morning about the need for a perfect shot in 40 mph winds. The first bullet went into the animal's ear, but it lumbered away a couple hundred yards to join a larger group of bison, with the hunter following in an all-terrain vehicle.

After the animal finally went down, Mr. Heinert drove up close, put the rifle behind its ear for a shot that stopped its thrashing.

"We got him down," he said. "That's all that matters."

The Rosebud Sioux are intent on expanding the reservation's herds as a reliable food source.

Others have grander visions: The Blackfeet in Montana and tribes in Alberta want to establish a "transboundary herd" ranging over the Canada border near Glacier National Park. Other tribes propose a "buffalo commons" on federal lands in central Montana where the region's tribes could harvest animals.

"What would it look like to have 30 million buffalo in North America again?" said Cristina Mormorunni, a Metis Indian who's worked with the Blackfeet to restore bison.

Ms. Haaland said there's no going back completely — too many fences and houses. But her agency has emerged as a primary bison source, transferring more than 20,000 to tribes and tribal organizations over 20 years.

Transfers sometimes draw objections from cattle ranchers who worry bison carry disease and compete for grass. Yet demand from the tribes is growing, and Ms. Haaland said the transfers will continue. That includes about 1,000 bison trucked this year from Badlands, Grand Canyon National Park, and several national wildlife refuges.

Back at Wolakota range, Mr. Heinert sprinkled chewing tobacco along the back of the bison he'd just shot and prayed. Then the half-ton animal was hoisted onto a flatbed truck for the bouncy ride to ranch headquarters.

About 20 adults and children gathered as the bison was lowered onto a tarp.

"This relative gave of itself to us, for our livelihood, our way or life," said tribal elder Duane Hollow Horn Bear.

Soon the tarp was covered with bloody footprints from people butchering the animal. They quartered it, sawing through bone, then sliced meat from the legs, rump, and the animal's huge hump. Children, some only 6, were given knives to cut away skin and fat.

Katrina Fuller, who helped guide the butchering, dreams of training others so the reservation's 20 communities can come to Wolakota for their own harvest. "Maybe not now, but in my lifetime," she said. "That's what I want for everyone."

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Bison walk in a herd inside a corral at Badlands National Park. The animals were prepared for transfer to Native American tribes, part of an effort by indigenous groups working with federal officials to expand the number of bison on reservations.

4906-5-07 HEALTH AND SAFETY, LAND USE, AND REGIONAL DEVELOPMENT

(A) HEALTH AND SAFETY

(1) Compliance with Safety Regulations

The construction, operation, and maintenance of the Project will comply with the requirements of applicable state and federal statutes and regulations related to safety, including requirements specified in the NERC Mandatory Reliability Standards and the National Electrical Safety Code (NESC), as well as those adopted by PUCO. Applicant will also comply with applicable safety standards established by the Occupational Safety and Health Administration (OSHA).

(2) Electric and Magnetic Fields

In accordance with the Ohio Power Siting Board (OPSB) requirements specified in OAC 4906-5-07(A)(2), the following subsections provide an analysis of the electric and magnetic fields (EMF) associated with the Project.

(a) Calculated Electric and Magnetic Field Strength Levels

The following calculations provide an approximation of the magnetic and electric field strengths utilizing various corridor configurations along the Preferred and Alternate routes that are either within 100 feet of an occupied residence or institution or represents more than ten percent of the total line length. The calculations provide an approximation of the electric and magnetic field levels and are based on specific assumptions utilizing the Electric Power Research Institute (EPRI) EMF Workstation 2015 program software.

Factors affecting the magnetic and electric field levels that are considered in the modeling include variance in the daily and projected long-term transmission line loading, operating voltage, contingency operations, phase configuration, direction of current flows, conductor sag, ground elevation, unbalance conditions, and other nearby magnetic field sources or conductors of neutral current, including water mains, metallic fences, and railroad tracks. Electric field computations used for this modeling also assume that shrubs, trees, buildings, and other objects are not in close proximity to the facilities, as they produce significant shielding effects. Finally, other transmission or distribution facilities near the transmission line will also affect the calculated magnetic and electric fields.

The model and calculations used in this Application also include a number of assumptions including the following:

- Current flows are assumed in the direction expected under normal system operating conditions;
- The location of transmission line poles, the attached conductors and static wire, and line phasing are based on preliminary engineering layouts for tangent (Figure 5-1A) to tangent conductor configuration; and,

- The calculated field levels assume a reference point approximately 3 feet (1 meter) aboveground.

Using these assumptions, three loading conditions were modeled for the proposed transmission line: 1) the winter normal conductor rating (Latest RTEP Base Case Flow), 2) emergency line loading (N-1 from RTEP Case), and 3) normal maximum loading. The winter normal conductor rating represents the maximum current flow that the conductor can withstand during winter conditions. It is not anticipated that the transmission line would be operated at the winter normal conductor rating level of current flow. The emergency maximum loading represents the maximum current flow in the transmission line under unusual circumstances and only for a short period of times. The normal maximum loading represents the routine maximum loading at which the transmission line would be operated. Daily current load levels would fluctuate below this level.

The transmission line loadings used in the calculations are presented in Table 7-1. The conductor configurations and right-of-way width are the same over the entire lengths of the Preferred and Alternate Routes. Field strengths were modeled for all configurations under consideration for the portions of both routes that would be within 100 feet of a residential structure or would occupy more than 10% of the respective proposed route.

Table 7-1: Transmission Line Loadings

Line Name	Winter Conductor Rating (Amps)	Emergency Loading (Amps)	Normal Loading (Amps)
Dowling-Melbourne 345 kV Transmission Line (Proposed)	2922	562.9	283.9
Fulton-North Star Steel 345 kV Transmission Line	2922	532.09	232.25
Melbourne-North Star Steel #1 345 kV Transmission Line (Tie Line)	2922	506.66	254.8
Melbourne-North Star Steel #2 345 kV Transmission Line (Tie Line)	2922	506.66	254.8
Delta-Wauseon 138 kV Transmission Line	1444	177.4	104.1
Delta-Fulton 138 kV Transmission Line	1444	186.2	95.4

The first configuration modeled involves a single 345 kV line within a 150-foot-wide right of way This configuration can be found on both the Preferred and Alternate Routes. The calculated electric and magnetic fields for these configurations are shown in Table 7-2 and Exhibit 7-1

Table 7-2: EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-1) Span Configuration for the Preferred and Alternate Routes of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

Line EMF Calculations		Electric Field (kV/meter)	Magnetic Field (mGauss)
Normal Loading	Under Lowest Conductors	1.849	20.89
	At Right-of-Way Edge	0.805 / 0.92	8.68 / 9.28
Emergency Loading	Under Lowest Conductors	1.849	41.42
	At Right-of-Way Edge	0.805 / 0.92	17.2 / 18.5
Winter Rating	Under Lowest Conductors	1.849	215.01
	At Right-of-Way Edge	0.805 / 0.92	89.31 / 96.15

A portion of the Preferred Route parallels the existing Fulton-North Star Steel 345 kV Transmission Line for the last 1.7 miles before entering the Melbourne Substation. The model used a shared right of way width of 240 feet. The calculated electric and magnetic fields for these configurations are shown in Table 7-3 and on Exhibit 7-2.

Table 7-3: EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-2) Span Configuration within the shared right-of-way of the Fulton-North Star Steel 345 kV Transmission Line and the Preferred Route of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

Line EMF Calculations		Electric Field (kV/meter)	Magnetic Field (mGauss)
Normal Loading	Under Lowest Conductors	1.997	20.76
	At Right-of-Way Edge	0.864 / 1.06	8.78 / 11.88
Emergency Loading	Under Lowest Conductors	1.997	40.09
	At Right-of-Way Edge	0.864 / 1.06	21.15 / 22.5
Winter Rating	Under Lowest Conductors	1.997	208.78
	At Right-of-Way Edge	0.864 / 1.06	115.5 / 118.6

A portion of the Alternate Route parallels the Delta-Fulton 138 kV Transmission Line for approximately 3.1 miles before the route turns south at County Road 5-2. This model used a shared right of way width of 195 feet. The calculated electric and magnetic fields for this configuration are shown the Table 7-4 and Exhibit 7-3.

Table 7-4: EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-3) Span Configuration within the shared right-of-way of the Delta-Fulton 138 kV Transmission Line and the Alternate Route of the Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation

Line EMF Calculations		Electric Field (kV/meter)	Magnetic Field (mGauss)
Normal Loading	Under Lowest Conductors	1.847	21.35
	At Right-of-Way Edge	0.259 / 0.803	5.03 / 9.45
Emergency Loading	Under Lowest Conductors	1.847	42.33
	At Right-of-Way Edge	0.259 / 0.803	9.91 / 18.89
Winter Rating	Under Lowest Conductors	1.847	217.23
	At Right-of-Way Edge	0.259 / 0.803	63.55 / 92.25

The following calculations provide an approximation of the magnetic and electric field strengths utilizing various corridor configurations associated with the 345 kV transmission tie lines between the Melbourne Substation and North Star Bluescope Steel's Sydney Substation.

The first configuration modeled involves the Melbourne-North Star Steel #1 345 kV Transmission tie line and the Melbourne-North Star Steel #2 345 kV Transmission tie line sharing a corridor with the existing Delta-Wauseon 138kV Transmission Line as the lines enter into North Star Bluescope Steel's Sydney Substation. The model used a right of way width of 330 feet. The calculated electric and magnetic fields for this configuration are shown the Table 7-5 and Exhibit 7-4.

Table 7-5: EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-4) Span Configuration within the shared right-of-way of the with the Delta-Wauseon 138 kV Transmission Line and the Melbourne-North Star Steel #1 345 kV Transmission tie line and Melbourne-North Star Steel #2 345 kV Transmission tie line

Line EMF Calculations		Electric Field (kV/meter)	Magnetic Field (mGauss)
Normal Loading	Under Lowest Conductors	1.87	17.22
	At Right-of-Way Edge	0.81 / 0.92	8.13 / 9.22
Emergency Loading	Under Lowest Conductors	1.87	33.65
	At Right-of-Way Edge	0.81 / 0.92	17.5 / 17.9
Winter Rating	Under Lowest Conductors	1.87	192.55
	At Right-of-Way Edge	0.81 / 0.92	100.01 / 102.5

A portion of the Preferred Routes for the Melbourne-North Star Steel #1 and the Melbourne-North Star Steel #2 345 kV Transmission tie-lines share a common right of way as they exit the Melbourne Substation, cross County Road 10 and enter the property of North Star BlueScope Steel. The model used a right of way width of 240 feet. The calculated electric and magnetic fields for this configuration are shown the Table 7-6 and Exhibit 7-5

Table 7-6: EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-5) Span Configuration within the shared right-of-way for the Preferred Routes of the Melbourne-North Star Steel #1 345 kV Transmission Tie Line and Melbourne-North Star Steel #2 345 kV Transmission Tie Line

Line EMF Calculations		Electric Field (kV/meter)	Magnetic Field (mGauss)
Normal Loading	Under Lowest Conductors	1.99	18.57
	At Right-of-Way Edge	0.865 / 1.01	9.43 / 10.75
Emergency Loading	Under Lowest Conductors	1.99	35.70
	At Right-of-Way Edge	0.865 / 1.01	18.85 / 19.95
Winter Rating	Under Lowest Conductors	1.99	205.88
	At Right-of-Way Edge	0.865 / 1.01	112.20 / 114.12

The last configuration for the 345 kV transmission tie lines involves a single 345 kV transmission line within a 150- foot-wide right of way. The calculated electric and magnetic fields for this configuration are shown the Table 7-7 and Exhibit 7-6.

Table 7-7: EMF Calculations for a Typical Tangent - Tangent (Exhibit 7-6) Span Configuration in independent right-of-way for the Melbourne-North Star Steel #1 345 kV Transmission Tie Line and the Melbourne-North Start Steel #2 345 kV Transmission Tie Line

Line EMF Calculations		Electric Field (kV/meter)	Magnetic Field (mGauss)
Normal Loading	Under Lowest Conductors	1.849	18.82
	At Right-of-Way Edge	0.806 / 0.919	7.50 / 8.50
Emergency Loading	Under Lowest Conductors	1.849	36.61
	At Right-of-Way Edge	0.806 / 0.919	15.44 / 15.65
Winter Rating	Under Lowest Conductors	1.849	211.15
	At Right-of-Way Edge	0.806 / 0.919	89.07 / 90.12

Typical cross section profiles of the normal calculated electric fields and magnetic fields at normal loading, emergency loading and winter conductor rating for all scenarios considered are shown in Exhibits 7-1 through 7-6 (Appendix 7-1).

(b) Current State of EMF Knowledge

Electric and magnetic fields are naturally occurring in the environment and can be found in the Earth's interior and in the human body. They are generated essentially anywhere where there is a flow of electricity, including electrical appliances and power equipment. Electric fields are associated with the voltage of the source; magnetic fields are associated with the flow of current in a wire. The strength of these fields decreases rapidly with distance from the source. EMFs associated with electricity use are not disruptive to cells like x-rays or ultraviolet rays from the sun. EMF fields are thought to be too weak to break molecules or chemical bonds in cells.

Scientists have conducted extensive research over the past several decades to determine whether EMFs are associated with adverse health effects. These organizations include the International Agency for Research on Cancer, the International Commission on Non-Ionizing Radiation, the National Institutes of Environmental Health Sciences (NIEHS), the World Health Organization and most recently in 2015, a Scientific Committee of the European Commission. Overall, the conclusions of these panels are consistent and can be summarized, generally as follows:

- The research does not support the conclusion that EMF causes any long-term, adverse health effects.
- Some epidemiological studies have reported a statistical association with high, average magnetic field levels and childhood leukemia. No authoritative agency has concluded, however, that magnetic field cause childhood leukemia due to the limitations of these studies and the lack of evidence from laboratory studies.
- The *in vivo* studies (studies performed in a whole living organism), overall, do not report an increase in cancer among animals exposed to high levels of electric and magnetic field even after lifetime exposures.
- The *in vitro* studies (studies performed outside the living organism in a controlled environment) provide no explanation as to how magnetic fields could cause disease.

The following websites sponsored by federal agencies or other organizations provide additional information on EMF:

- Centers for Disease Control/National Institute for Occupational Safety and Health: http://www.cdc.gov/niosh/topics/emf/
- NIEHS: http://www.niehs.nih.gov/health/topics/agents/emf/
- World Health Organization: http://who.int/peh-emf/en/

(c) Line Design Considerations

To minimize the EMFs associated with the construction of the Project, ATSI uses design considerations to further reduce the strength of EMFs. For instance, the strength of EMFs can potentially be reduced by installing the transmission line conductors in a compact configuration.

For this Project, ATSI plans to complete final engineering of the facilities according to the requirements of the NESC. The pole heights and configuration were chosen based on NESC specifications, engineering parameters, and cost and should help minimize EMF strength.

Information on EMF was available at the informal open house and the Public Information Meeting held for the Project on August 24, 2022, and December 7, 2022, respectively. This information included a discussion of basic information on electric magnetic field theory, scientific research activities and EMF levels in everyday life. Appendix 6-2 contains copies of this information. Similar materials will be available upon request to persons along the Project routes.

(3) Estimate of Radio, Television, and Communications Interference

No radio or television interference is expected to occur from the operation of the proposed transmission line along either the Preferred or Alternate Routes. Overhead transmission lines do not generally interfere with normal radio or television reception; though, during operation, gas type discharges (corona) could result in radio frequency interference (RFI) noise or television interference (TVI) noise under certain conditions. The conductor hardware that will be used for this Project is designed to reduce corona, and therefore reduce interference. Furthermore, corona-related electrical noise decreases with distance from the transmission line and with higher frequencies. Widely used FM radio is not subject to corona-related interference as it operates at these higher frequencies. Also, due to the Digital Transition and Public Safety Act of 2005, broadcasting analog television has ceased. Interference with modern digital and cable and satellite television is unlikely. Consequently, for this Project the potential for radio or television interference is very low.

Further, although radio frequency noise level of the transmission line during heavy rain is greater than the fair-weather noise level, the quality of radio reception under typical heavy rain conditions is affected more by atmospheric conditions than by operation of transmission lines. Therefore, the construction of the Project is not expected to increase radio frequency noise levels.

Finally, the gas-type (corona) discharges that can produce RFI and TVI are typically localized effects, resulting primarily from defective hardware (ball and socket hardware in insulators, hardware-to-hardware, line to hardware, etc.) and may be easily and quickly detected. Once detected, the hardware will be repaired or replaced, thus eliminating the interference source.

(4) Noise from Construction, Operations, and Maintenance

(a) Blasting Activities

Blasting activities will not be necessary during construction of the Project.

(b) Operation of Earth Moving and Excavating Equipment

Applicant expects that excavation and earth moving will be limited to drilling auger holes for the steel poles. A vehicle-mounted auger and/or excavator will be used to bore holes for the concrete foundations that will be approximately 6 to 10 feet in diameter, and approximately 20 to 40 feet deep. This activity will result in a temporary increase in noise in the vicinity of the Project. Construction activity will generally be limited to daylight hours and will conform to OSHA noise standards. Thus, noise effects are anticipated to be localized, minimal and of short duration.

(c) Driving of Piles, Rock Breaking or Hammering, and Horizontal Directional Drilling

No driving of piles, rock breaking or hammering, or horizontal directional drilling is anticipated during construction of the Project.

(d) Erection of Structures

Pole structures will be installed by vehicle-mounted cranes or equivalent equipment. Self-supporting steel poles will require delivery of concrete for foundation construction, including excavation work for the foundation. The noise associated with these activities will be localized, temporary and generally not louder than the noise generated by earth moving equipment.

(e) Truck Traffic

An increase in truck traffic is anticipated during the construction of the Project for equipment access and equipment delivery. No other additional traffic is anticipated for the Project beyond infrequent, ongoing maintenance.

(f) Installation of Equipment

The equipment will be installed using standard practices and equipment. The noise associated with this activity will be localized, temporary and generally not louder than the noise generated by earth moving equipment.

(B) LAND USE

(1) Map of the Site and Route Alternatives

An application for a Certificate of Environmental Compatibility and Public Need for electric transmission facilities is required to evaluate both the Preferred and Alternate Routes for the transmission line within the Application. Maps at 1:24,000 scale, including the area 1,000 feet on either side of the centerline, are presented as Figures 7-1 and 7-2 and include the following information for the Preferred Route and Alternate Route, respectively:

- Proposed centerline and right-of-way (ROW)
- Proposed substation location
- Land use types, road names, structures, and incorporated areas and population centers

(2) Impacts on Identified Land Uses

Land use in the Project Area (i.e., within 1,000 feet of each transmission line) consists of commercial/industrial, residential, and existing roadway ROW. Comparisons of the various land use types and land use features for the Preferred and Alternate Routes are included in Tables 7-8 through 7-10. The estimates of each land use type being crossed by the transmission line or land uses within the 150-foot-wide permanent ROW (linear feet, acreage, and percentages) were determined using geographic information system (GIS) software and field observations.

The potential disturbance area during construction activities (vegetation clearing, pole installations, etc.) is limited to a 150-foot-wide permanent ROW. The ROW will be restored through soil grading, seeding, and mulching; thus, the permanent impact on the ROW will be limited to the removal of existing trees and other vegetation. Property owners may continue to use most of the ROW area for general uses that will not affect the safe and reliable operation of

the transmission line. These general uses include lawn maintenance, crop cultivation, and maintaining livestock.

Table 7-8: Length and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route [a]		Alternate Route [a]	
	Linear Feet	Percent	Linear Feet	Percent
Agriculture	32,075	64%	35,151	77%
Commercial	0	0%	1,084	2.4%
Industrial	2,874	5.7%	995	2.2%
Institutional	0	0%	1,337	2.9%
Herbaceous (old field)	2,230	4.4%	372	0.8%
Pavement	1,701	3.4%	770	1.7%
Recreational	2,563	5.1%	0	0%
Residential	7,254	15%	4,117	9.0%
Utility ROW	169	0.3%	253	0.5%
Woodlot	192	0.4%	943	2.1%
Delineated Wetland	743	1.5%	443	0.9%
Delineated Stream	201	0.4%	165	0.3%
Delineated Pond	104	0.2%	0	0%
Open Water	0	0%	0	0%
Total[b]	50,105	100%	45,627	100%

[a] Numbers in the table are for the route centerlines.

[b] Totals may vary slightly from the sum of their parts due to rounding.

Table 7-9: Acreage and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route [a]		Alternate Route [a]	
	Acreage	Percent	Acreage	Percent
Agriculture	107.4	62.2%	118.3	75.3%
Commercial	0	0%	3.7	2.4%
Industrial	9.1	5.2%	2.9	1.8%
Institutional	0	0%	3.6	2.3%
Herbaceous (old field)	6.7	3.8%	2.7	1.7%
Pavement	6.9	4.0%	4.4	2.8%
Recreational	9.3	5.4%	0	0%
Residential	23.3	13.5%	14.2	9.0%
Utility ROW	5.6	3.2%	1.1	0.7%
Woodlot	0.6	0.4%	3.3	2.1%
Delineated Wetland	2.3	1.3%	1.9	1.2%
Delineated Stream	1.0	0.6%	0.6	0.4%
Delineated Pond	0.3	0.2%	0.2	0.1%
Open Water	0	0%	0	0%
Total[b]	172.5	100%	157.1	100%

[a] Numbers in the table are for the planned potential disturbance area which is a nominal 150-foot-wide corridor centered on the route.

[b] Totals may vary slightly from the sum of their parts due to rounding.

Table 7-10: Number of Sensitive Features within or near the Potential Disturbance Area for the Route Alternatives

Sensitive Features	Route Alternatives	
	Preferred	Alternate
Length (in miles)	9.5	8.6
Features within the Potential Disturbance Area of Route Alternatives [a]		
Historic Structures (OHI)	0	0
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	0
Residences	0	0
Commercial Buildings	0	0
Industrial Buildings	0	0
Schools and Hospitals	0	0
Churches and Civic Buildings	0	0
Recreational Lands	30	0
Airports	0	0
Features within 1,000 feet of Route Alternatives (centerline)		
Historic Structures (OHI)	5	4
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	8	4
Residences	35	163
Commercial Buildings	15	16
Industrial Buildings	4	11
Schools and Hospitals	0	0
Churches and Civic Buildings	0	0
Recreational Land	4	0
Airports	0	0

Notes:

[a] The planned potential disturbance area is a nominal 150-foot-wide corridor centered on the route.

OHI = Ohio Historic Inventory

(a) Residential

No residences are located within the planned potential disturbance area. As shown on Table 7-10, there are 35 residences within 1,000 feet of the Preferred Route and 163 residences within 1,000 feet of the Alternate Route. As shown in Table 7-9, 13.5 percent of the Preferred Route ROW and 9.0 percent of the Alternate Route ROW consists of residential land.

(b) Commercial

No commercial buildings are located within the planned potential disturbance area. As shown on Table 7-10, there are 15 commercial buildings within 1,000 feet of the Preferred Route and 16 commercial buildings within 1,000 feet of the Alternate Route. As shown in Table 7-9, none of the Preferred Route ROW consists of commercial land while the Alternate Route ROW consists of 2.4% commercial land.

(c) Industrial

No industrial buildings are located within the planned potential disturbance area. As shown on Table 7-10, there are 4 industrial buildings within 1,000 feet of the Preferred Route and 11 industrial buildings within 1,000 feet of the Alternate Route. As shown in Table 7-9, 5.2 percent of the Preferred Route ROW and 1.8 percent of the Alternate Route ROW consists of industrial land.

(d) School and Hospitals

No schools or hospitals are located within the planned potential disturbance area or within 1,000 feet of the Preferred or Alternate Route.

(e) Churches and Civic Buildings

No churches or civic buildings are located within the planned potential disturbance area or within 1,000 feet of the Preferred or Alternate Route.

(f) Recreational

Three properties that contain recreational areas or recreational facilities are located within the planned potential disturbance area. These are the Delta Reservoir property, the Izaak Walton League Campground property, and the Delta Raceway property. Tree clearing will be required on all three parcels for construction of the Preferred Route. Placement of the Preferred Route on Delta Raceway property utilizes forested areas to minimize impacts to operations at that facility. No impacts to recreational usage are expected from installation of the transmission line on the Preferred Route. One additional recreational feature is present within 1,000 feet of the Preferred Route, the ODNR Fulton Pond. The Preferred Route and right-of-way are located on the parcel directly north of the ODNR parcel containing the Fulton Pond. No tree clearing is planned on the ODNR parcel and thus no impacts are expected. There are no recreational areas or facilities located within the planned disturbance area or within 1,000 feet of the Alternate Route. As shown in Table 7-9, 9.3 acres of the Preferred Route ROW consists of recreational land.

(g) Agricultural

As shown in Table 7-9, approximately 62.2 percent (107.4 acres) of the Preferred Route and 75.3 percent (118.3 acres) of the Alternate Route cross agricultural land. A discussion of agricultural land and Agricultural District Land is provided in Section (C).

(3) Impacts on Identified Nearby Structures

No agricultural structures are located within the planned potential disturbance area. There are 15 agricultural buildings or structures within 1,000 feet of the Preferred Route; there are two agricultural structures within 1,000 feet of the Alternate Route. Agricultural structures are shown on Figure 7-2.

(a) Structures within 200 Feet of Proposed Right-of-Way

There is one agricultural structure within 200 feet of the proposed ROW for the Preferred Route. There are no agricultural structures within 200 feet of the proposed ROW for the Alternate Route. Agricultural structures are shown on Figure 7-2.

(b) Mitigation Procedures

Mitigation for the prohibition of the future installation of structures within the ROW and for vegetative clearing and maintenance activities for the transmission line will be determined as part of ATSI's acquisition of the ROW for this Project (Form Easement Agreement provided in Appendix 5-1), as part of the negotiated settlement between ATSI and the property owner, or as determined in appropriation proceedings. If an existing septic system located in the transmission ROW is affected by construction, operation, or maintenance of the proposed Project, the septic system will be repaired or replaced by ATSI as necessary to meet the appropriate installation requirements.

(C) AGRICULTURAL LAND IMPACTS

The potential impacts of the Project on agricultural land use from the transmission lines are largely limited to construction and could include damage to crops, disturbance of underground field drainage systems, compaction of soils, and temporary reduction of crop productivity.

Agricultural land used for crop cultivation within the Preferred and Alternate Routes ROW is estimated at 107.4 acres and 118.3 acres, respectively. Other herbaceous land that could be used for grazing comprises 6.7 acres of the Preferred Route and 2.7 acres of the Alternate Route.

Soil compaction resulting from construction activities is typically a temporary issue and is resolved within a few seasons of plowing and tilling. ATSI will work with the agricultural landowners to resolve conflicts with drainage tiles and irrigation systems that are affected by the Project where necessary.

(1) Agricultural Land Map

The various categories of agricultural land use and Agricultural District lands are depicted on Figure 7-2 for the Preferred and Alternate Routes.

(2) Impacts on Agricultural Lands and Agricultural Districts

The Fulton County Auditor's Office was contacted to obtain information on current Agricultural District land records. The data were received from the Fulton County Auditor's Office on January 17, 2023. The provided data fulfill the requirement of OAC 4906-5-07 (C)(1)(b), which states that these data must be collected not more than 60 days prior to submittal.

The Agricultural District parcels crossed by the Preferred and Alternate Routes are primarily characterized by large fields used for row crop agriculture or pasture.

(a) Acreage Impacted

Table 7-9 provides the quantification of the acreage affected for agricultural land use (crop cultivation and herbaceous land). The agricultural land use was based on aerial imagery and field observations. There are 957 acres of Agricultural District lands within 1,000 feet of the Preferred Route and 952 acres of Agricultural District lands within 1,000 feet of the Alternate Route. Agricultural land use and agricultural district parcels are shown on Figure 7-2.

(b) Evaluation of Construction, Operation, and Maintenance Impacts

The following subsections include an evaluation of the impact of the construction, operation, and maintenance of the proposed transmission line on agricultural facilities and practices within the Project Area, where present.

(i) Field Operations

Agricultural field operations, such as plowing, planting, cultivating, spraying, and harvesting of cultivated crops may be interrupted in the area of active Project construction during construction of the Project. Property owners will be compensated for crop damages resulting from ATSI's construction activities. Additionally, no significant impacts on livestock operations or grazing areas are anticipated. Property owners may continue to use most of the ROW area for general uses after construction, such as lawn maintenance, crop cultivation, and livestock, contingent upon the use having no adverse impact on the safe and reliable operation of the transmission line.

(ii) Irrigation

No known irrigation systems are within the proposed ROW for the either route. ATSI will identify the presence of any such systems through contact with property owner once the final route is approved. ATSI will coordinate with any property owner if an irrigation system must be relocated to minimize impacts on the irrigation system's operation. ATSI will ensure that the relocation of any irrigation systems will be at no cost to the property owner.

(iii) Field Drainage Systems

Damage to field tile systems is unlikely given the process for installation of proposed steel poles, but ATSI will restore any drainage systems damaged by the construction to their pre-construction condition. ATSI will also work with the agricultural landowners to resolve problems relating to with field drainage systems that are crossed by the Project, where necessary.

(iv) Structures Used for Agricultural Operations

One structure within 200 feet of the Preferred Route ROW may be used for agriculture. Adverse impacts on the structure are not anticipated because an approximately 13-foot section of the structure is within 200 feet of the Preferred Route ROW, and access to the structure will remain unimpeded. There are no agricultural structures within 200 feet of the Alternate Route ROW.

(v) Agricultural Land Viability for Agricultural Districts

The Preferred Route ROW crosses 14 Agricultural District parcels (comprising 975 acres), and the Alternate Route ROW crosses 22 Agricultural District parcels (comprising 952 acres). Most agricultural operations (crop production) may continue within the ROW. Agricultural District parcels are shown on Figure 7-2.

(c) Mitigation Procedures

Mitigation for damage to existing crops and the compaction of soils is provided as compensation to the property owner as specified in the easement for the ROW. The specific terms of the easement regarding crop damage or soil compaction are determined as part of ATSI's acquisition of the ROW for the Project (Form Easement Agreement provided in Appendix 5-1), as part of the negotiated settlement between ATSI and the property owner, as set forth in the attached template, or as otherwise determined in a court of competent jurisdiction for appropriation. Additionally, ATSI and the contractors hired to work on the Project have extensive experience in transmission line construction. Both ATSI and the selected contractors will work to minimize agricultural impacts during construction of the Project.

(i) Avoidance or Minimization of Damage

To minimize impacts on agricultural operations, ATSI has considered pole placement where the Preferred and Alternate Routes must cross agricultural fields. Where feasible, poles will be installed at the edges of agricultural fields. Where poles are located within agricultural fields, use of steel monopoles will cause minimal disruption to agricultural activities. In instances where there is a permanent prohibition on use within the ROW, compensation for this impact will be provided to the property owner.

(ii) Field Tile System Damage Repairs

Concerns will be addressed on a case-by-case basis with the individual property owner. Generally, however, ATSI will provide mitigation for damage to underground drainage systems caused by the construction, operation, and maintenance activities by repairing or replacing damaged sections of the drainage systems as necessary.

(iii) Segregation and Restoration of Topsoil

Excavated topsoil will be segregated and stockpiled where necessary to maintain long-term agricultural uses. Topsoil will also be de-compacted and restored to original conditions, unless otherwise agreed to by the property owner.

(D) LAND USE PLANS AND REGIONAL DEVELOPMENT

This section of the Application provides information regarding land use plans and regional development.

(1) Impacts on Regional Development

This Project is expected to support regional development in Fulton County through increased reliability and availability of electric power to residential, commercial, institutional, and industrial users throughout the region. No negative impacts on regional development are foreseen for this Project. A more detailed discussion of the need for this Project and the ways in which it will affect regional development is included in Section 4906-5-03 of this Application.

(2) Compatibility of Proposed Facility with Current Regional Land Use Plans

Based on existing land use, it does not appear that construction of the Project will affect current land uses. Fulton County prepared and adopted a Comprehensive Development Plan in 1998 and adopted a natural resources amendment in 2011. Based on the robust route selection study completed for the Project, ATSI considers the alignments for the Preferred and Alternate Routes to be among the least impactful of the route alternatives and compatible with the county's land use plan.

(E) CULTURAL AND ARCHAEOLOGICAL RESOURCES

Cultural resources studies of the Preferred Route were conducted on behalf of ATSI. These studies included a background records check and literature review using data files from the Ohio Historic Preservation Office (OHPO), a Phase I archaeological reconnaissance survey, and architectural and historical resources survey for the Preferred Route. The results of the Phase I archaeological reconnaissance field investigation and architectural and historical resources surveys will be provided to the OPSB.

(1) Cultural Resources Map

Based on the cultural resources desktop study, Jacobs identified 51 Ohio Archaeological Inventory (OAI)-listed sites, 16 OHI-listed resources, and five Ohio Genealogical Society (OGS)-listed resources within the Preferred Route's one-mile study area. No resources listed on the National Register of Historic Places (NRHP) or Determination of Eligibility (DOE) list are located within the Preferred Route's one-mile study area. There are no resources located within the Area of Potential Effect (APE). Additionally, it was documented that 19 previous cultural resources surveys were performed within the Preferred Route's study area. Seven of these surveys covered portions of the current APE. Cultural resources already in the public domain (e.g., OHI-listed resources and OGS-recorded cemeteries) are identified on Figure 7-2.

Cultural resources data was also reviewed for the Alternate Route. The results of these reviews are not included within the Phase I archaeological report. The Alternate Route does not have any resources listed on the NRHP within the one-mile study area. However, there are two cultural resources on the DOE list within the Alternate Route's study area. Additionally, there are 39 previously identified OHI-listed resource, 4 (OGS)-listed resources, 17 (OAI)-listed sites and 20 instances of previous cultural survey within the study area.

(2) Cultural Resources in Study Corridor

Cultural resources studies to date have involved background research using data files from the OHPO online mapping system, a Phase I archaeological reconnaissance survey, and an architectural and historical resources survey for the Preferred Route.

Background research was conducted using the OHPO online database to locate previously recorded cultural resources and surveys within or near the APE. A 1.6-kilometer (1-mile) buffer was used to identify previously recorded cultural resources and to provide information on the probability of identifying cultural resources within the APE. The OHPO online mapping database included a review of the OAI, OHI, DOE files, the NRHP, OGS cemetery files, historic bridges, National Historic Landmarks, and previous cultural resources surveys.

Fifty-one OAI-recorded sites, 16 OHI-recorded resources, and five OGS-recorded resources are located within the study area. No resources that are listed on the NRHP or eligible for inclusion on the NRHP, and no DOE-listed resources, are located within the study area. No resources that are listed on the NRHP or DOE-listed resources are located within the APE. Additionally, 19 previous cultural resources surveys have been documented within the study area.

Prehistoric archaeological sites include lithic scatters, camps, habitations, isolates, and burials. Sites with a known temporal affiliation include Early Archaic through the Late Woodland periods. Five historic sites are within the study area and consist of artifact scatters and house sites dating from the 19th through 20th centuries.

One archaeological site, 33FU0235, is adjacent to the APE. Site 33FU0235 is a historic artifact scatter representing a residential site dating from the late 19th through 20th centuries. The site consists of a gravel driveway and eight artifacts. Artifacts recovered include stoneware, a nail, and a screw. Historic atlases from 1858 and 1888 show the property owner as Philip Boyce, and a house is mapped at the site location into the mid-20th century (Site Form 2016). The site is located along the northern side of US Route 20A, approximately 170 meters east of the intersection of US Route 20A and County Road 10, and approximately 5 meters east of the APE.

Of the 16 OHI-recorded resources, 5 resources (OHI FUL31411, FUL31511, FUL31611, FUL45411, FUL45511) are located within 1,000 feet (304.8 meters) of the Project. Three of the five resources (OHI FUL31411, FUL31511, FUL31611) are demolished, and the remaining two resources (OHI FUL45411, FUL45511) have an undetermined NRHP-eligibility. The OHI-recorded resources include late 19th and early 20th century dwellings and outbuildings. Additional historic and

architectural resources were identified within 1,000 feet (304.8 meters) of the Project, including late 19th to mid-20th century dwellings and outbuildings. The architectural and historical resources identified within 1,000 feet (304.8 meters) have not been evaluated for listing on the NRHP.

The APE was subjected to standard Phase I archaeological survey guidelines from OHPO (1994). To identify archaeological sites within the APE, Jacobs conducted a walkover of the entire APE to evaluate visible ground disturbance and to identify potential areas of undisturbed soils that could be subjected to standard Phase I archaeological survey guidelines from OHPO (1994). Visible disturbance was photo-documented, and the appropriate field forms were completed by the field crew. In areas where the visibility of surface soils was less than 50 percent and undisturbed, systematic shovel testing was conducted and consisted minimally of 50- by 50-centimeter (19.6-by 19.6-inch) test pits excavated to 50 centimeters (19.6 inches) below the surface or until sterile soil was encountered. Shovel tests were excavated at 15-meter (49-foot) intervals across the APE. In areas with eroded or anthropogenically altered soil contexts, larger-interval shovel testing (30 meters [98.4 feet]) was used to verify disturbance.

No archaeological sites were identified during the Phase I archaeological survey, and there are no adjacent affected sites. Therefore, ATSI's consultant recommends a finding of "No Historic Properties Affected" for the Project, and no adverse effects or significant impacts are expected to occur on cultural resources within the APE based on the Project's construction, implementation, or operation. If cultural resources are discovered during construction, work in the immediate area will be stopped, and a qualified archaeologist will be consulted.

The APE was also subject to an architectural and historical resources survey. Field reconnaissance involved a systematic survey of architectural and historical resources within the viewshed of the Project, resulting in the survey of the two OHI-recorded resources and an additional 12 architectural resources that required consideration. Pursuant to OHPO's 2014 architectural survey guidelines, these resources, including the primary buildings and any contributing outbuildings, were photographed and mapped where property access and full visibility were available. The field team recorded the architectural style, condition, and important features of each resource and noted any major changes or alterations.

The viewshed was assessed from the route corridor to identify any intact, aboveground resources greater than 50 years of age within a maximum of 1,000 feet (305 meters) of the Preferred Route centerline. Locations from which the proposed transmission line could be viewed (defined as the indirect APE) were photo documented to the extent practicable (based on property access or visibility from public ROWs when access was not available). Additionally, notes were taken on construction methods and materials, as well as additions and alterations that may compromise their architectural integrity. Using a combination of representative landscape photographs and digital terrain data, staff evaluated the potential for any visual impacts on any resources maintaining potential architectural and/or historical significance, with consideration given to topographic or vegetative features, as well as existing intrusions on the viewshed. The results of

this analysis were used to develop recommendations for any additional architectural and historical resources work that might be needed for the Project.

Based on the architectural and historical resources survey conducted in January 2023, 14 new architectural resources were identified within the APE, including residences, farm-related structures, and outbuildings. None of the resources were previously listed on the NRHP or determined to be eligible for inclusion on the NRHP. These resources were evaluated for their historic and/or architectural significance according to NRHP criteria, as well as their level of integrity. Based on the results of this evaluation, none of the resources are recommended eligible for listing because the resources do not reflect significant historical themes or associations, have lost integrity, or both. Based on the consultant's study results, no architectural or historical resources will be affected by the Project, and no further work is recommended. The Phase I archaeological reconnaissance survey report and the architectural and historical resources survey reports were submitted to OHPO for review and concurrence on February 28, 2023, and March 7, 2023, respectively. The OHPO's concurrence and comments letter will be provided to the OPSB upon receipt.

(3) Construction, Operation, and Maintenance Impacts on Cultural Resources

The Preferred Route will be constructed next to an existing transmission line for approximately 3 miles within mostly agricultural land. Most of the remaining route parallels the ROW for Interstate (I)-80. No archaeological sites were identified during the Phase I archaeological survey of the Preferred Route and there are no adjacent sites within the path of the proposed construction. No architectural or historical resources were identified during the reconnaissance survey that are listed on the NRHP or qualify for inclusion on the NRHP. Therefore, ATSI's consultant recommends a finding of "No Historic Properties Affected" for the Project, and no adverse effects or significant impacts are expected to occur on cultural resources within the APE as a result of Project construction, implementation, or operation.

(4) Mitigation Procedures

Based on the surveys conducted to date, no adverse impacts on known or recorded historic properties are anticipated for the Project; therefore, no mitigation is proposed at this time. Future changes to the project may require that additional cultural resource studies be conducted to identify potential impacts on significant resources, and any necessary mitigation procedures will be developed in consultation with the OHPO and OPSB.

(5) Aesthetic Impacts

(a) Visibility of the Proposed Facility

The viewsheds along the Preferred Route from residences and potentially sensitive vantage points may be altered by the presence of the transmission line. The Project Area consists of flat to gently rolling topography. Many roads in the area are paralleled by wood and steel poles supporting electric transmission lines and/or distribution lines. The addition of the proposed Project will not have a significant impact on the overall visual landscape because the Project largely parallels an

existing transmission line and interstate highway. At locations where tree clearing may be required, visual impacts will be greater because of the removal of screening provided by trees.

(b) Facility Effect on Site and Surrounding Area

Construction of the proposed Project has the potential to affect the existing visual aesthetics of the area through which it passes, primarily in areas where the removal of trees from the ROW may be required, but also by the introduction of a new human-made element on the landscape. The degree of visual impact of a new human-made element will vary with the setting; the impact can be evaluated by comparing the amount of contrast resulting from the construction of the new element and the existing landscape and electric transmission infrastructure. For example, if the transmission line were screened from view, then the aesthetic impact would be minimal, and if the transmission line were placed in an existing open area, it would have a comparatively higher aesthetic impact. In areas where the new transmission line parallels, or is close to, similar existing transmission lines, the aesthetic impact will be reduced because the new line will create only a minor incremental visual change to the existing visual setting.

(c) Visual Impact Minimization

The ability to minimize the visual impacts of the Preferred and Alternate Routes is constrained by engineering requirements and the fact that the existing land use is mostly agricultural. ATSI has limited the potential aesthetic impacts of the new transmission line to the extent possible through the route selection process, and where practical, by paralleling the new line with existing transmission lines and linear infrastructure, such as the I-80 corridor.

Figures

Fulton-North Star Steel 345kV T-Line

Delta Motorsports Park

Delta Reservoir

Izaak Walton League Campground

Delta

Fulton County

Delta Substation

Delta-Fulton 138kV T-Line

Proposed Melbourne Substation

Delta-Wauseon 138kV T-Line

Delta Wings Airport

Sandpit

King Cem

Creek

PENN CENTRAL

MAIN ST

MADISON

TAYLOR

CO RD 10-2

CO RD 6-2

CO RD HJ

SR-109

TOLEDO

CO RD 5-1

CO RD 7-2

CO RD 7

CO RD H

CO RD 8

CO RD 6-2

CO RD 10

CO RD 5

CO RD G

CO RD 6-3

CO RD F

CO RD 6

CO RD FG

N

0 1,000 2,000 4,000

Feet

Legend

- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Fulton-North Star Steel 345 kV Transmission Line Extension to Melbourne Substation (Future Filing)
- Melbourne Station-Sydney Station 345 kV Tie Lines (Tie-Lines for Both Preferred/ Alternate Shown)
- Existing Substation
- OGS Cemeteries
- Commercial Building
- Industrial Building
- Residential Building
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- Government Building
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Existing 138 kV Transmission Line
- Roads
- Railroad
- Interstates
- 1,000 Foot Buffer
- County Boundary
- Corporation Limits
- Recreation Areas

Land Use Types

- Agricultural
- Commercial
- Delineated Pond
- Delineated Stream
- Delineated Wetland
- Herbacious
- Industrial
- Institutional
- Open Water
- Pavement
- Recreation
- Residential
- Utility ROW
- Woodland

Base Map Source:
USGS Topographic
Delta and Swanton Quads

Roads:
ODOT Road Inventory 2022

Data sources included in Appendix A.
GIS Data Sources

Coordinate System:
StatePlane Ohio North
NAD 1983
Scale 1:24,000

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

Figure 7-1 a
Land Use Map

3/3/2023

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

Fulton-North Star Steel 345kV T-Line
Fulton Substation
Fulton Pond Wildlife Area
Fulton County
Delta-Wauseon 138kV T-Line
Delta-Fulton 138kV T-Line
Delta Substation
Delta Wings Airport
Dowling-Fulton 345 kV Transmission Line
CO RD J
CO RD H
CO RD G
CO RD F
CO RD F6
CO RD 41
CO RD 5
CO RD 4
CO RD 3
CO RD 2
CO RD 22
MAIN ST
DODGE
HARDING
Swanton
Delta
Radio Tower
Memorial Park
Centerville Cem
LEE HIGH
GLEN-MAR
STATE RESERVATION
Fulton Creek
Creek

N
0 1,000 2,000 4,000
Feet

Legend

- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Fulton-North Star Steel 345 kV Transmission Line Extension to Melbourne Substation (Future Filing)
- Melbourne Station-Sydney Station 345 kV Tie Lines (Tie-Lines for Both Preferred/ Alternate Shown)
- Existing Substation
- OGS Cemeteries
- Commercial Building
- Industrial Building
- Residential Building
- Ohio Historic Inventory (OHI)-listed architectural and historical resources
- Government Building
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Existing 138 kV Transmission Line
- Roads
- Railroad
- Interstates
- 1,000 Foot Buffer
- County Boundary
- Corporation Limits
- Recreation Areas

Land Use Types
- Agricultural
- Commercial
- Delineated Pond
- Delineated Stream
- Delineated Wetland
- Herbacious
- Industrial
- Institutional
- Open Water
- Pavement
- Recreation
- Residential
- Utility ROW
- Woodland

Base Map Source:
USGS Topographic
Delta and Swanton Quads

Roads:
ODOT Road Inventory 2022

Data sources included in Appendix A.
GIS Data Sources

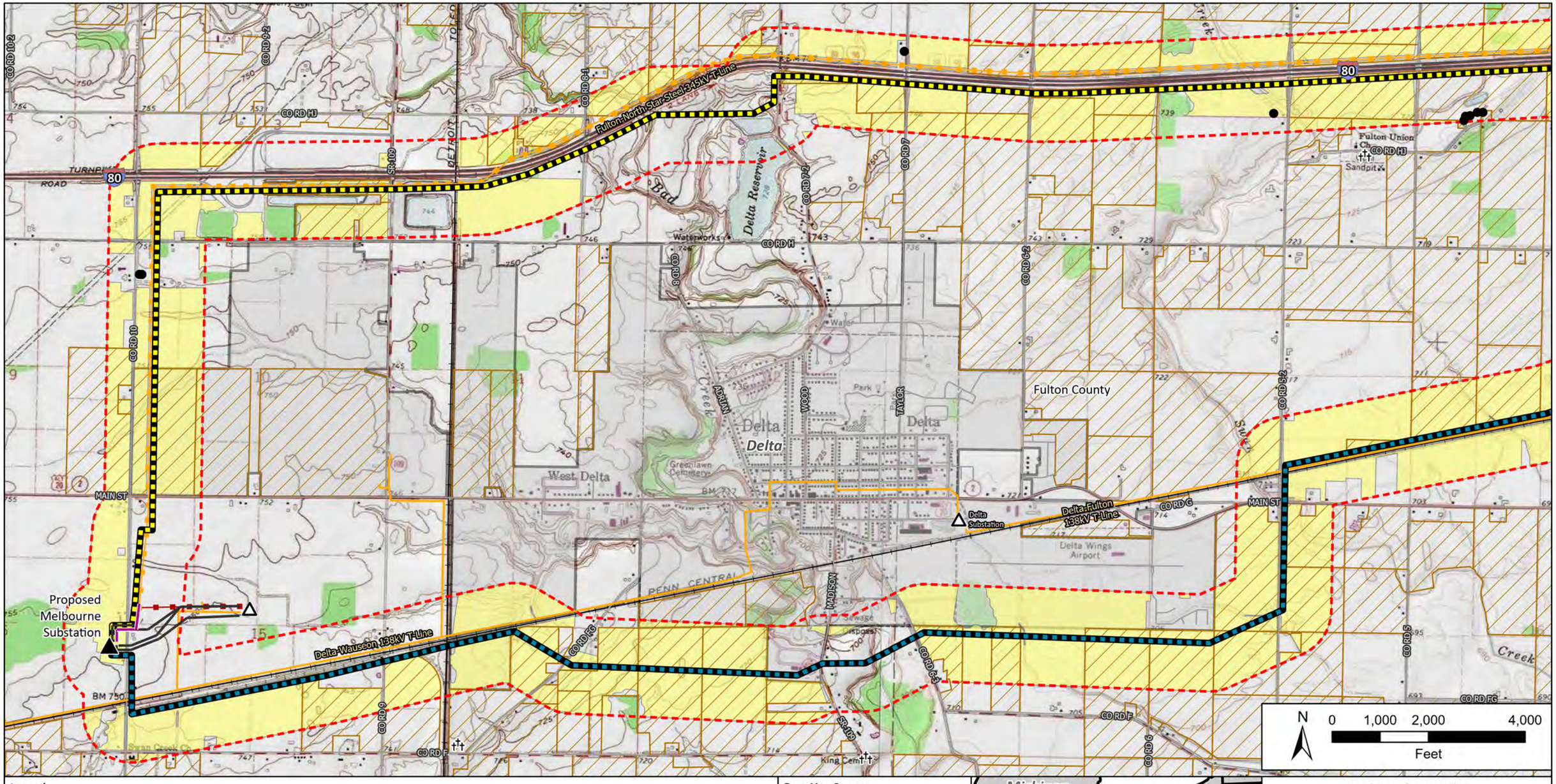
Coordinate System:
StatePlane Ohio North
NAD 1983
Scale 1:24,000

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

Figure 7-1 b
Land Use Map

3/3/2023

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



Legend

- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Fulton-North Star Steel 345 kV Transmission Line Extension to Melbourne Substation (Future Filing)
- Melbourne Station-Sydney Station 345 kV Tie Lines (Tie-Lines for Both Preferred/Alternate Shown)
- Existing Substation
- Agriculutral Building
- Agricultural Land Use
- Agricultural District
- OGS Cemeteries
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Existing 138 kV Transmission Line
- Roads
- Railroad
- Interstates
- 1,000 Foot Buffer
- County Boundary
- Corporation Limits

Base Map Source:
USGS Topographic
Delta and Swanton Quads

Roads:
ODOT Road Inventory 2022

Data sources included in Appendix A.
GIS Data Sources

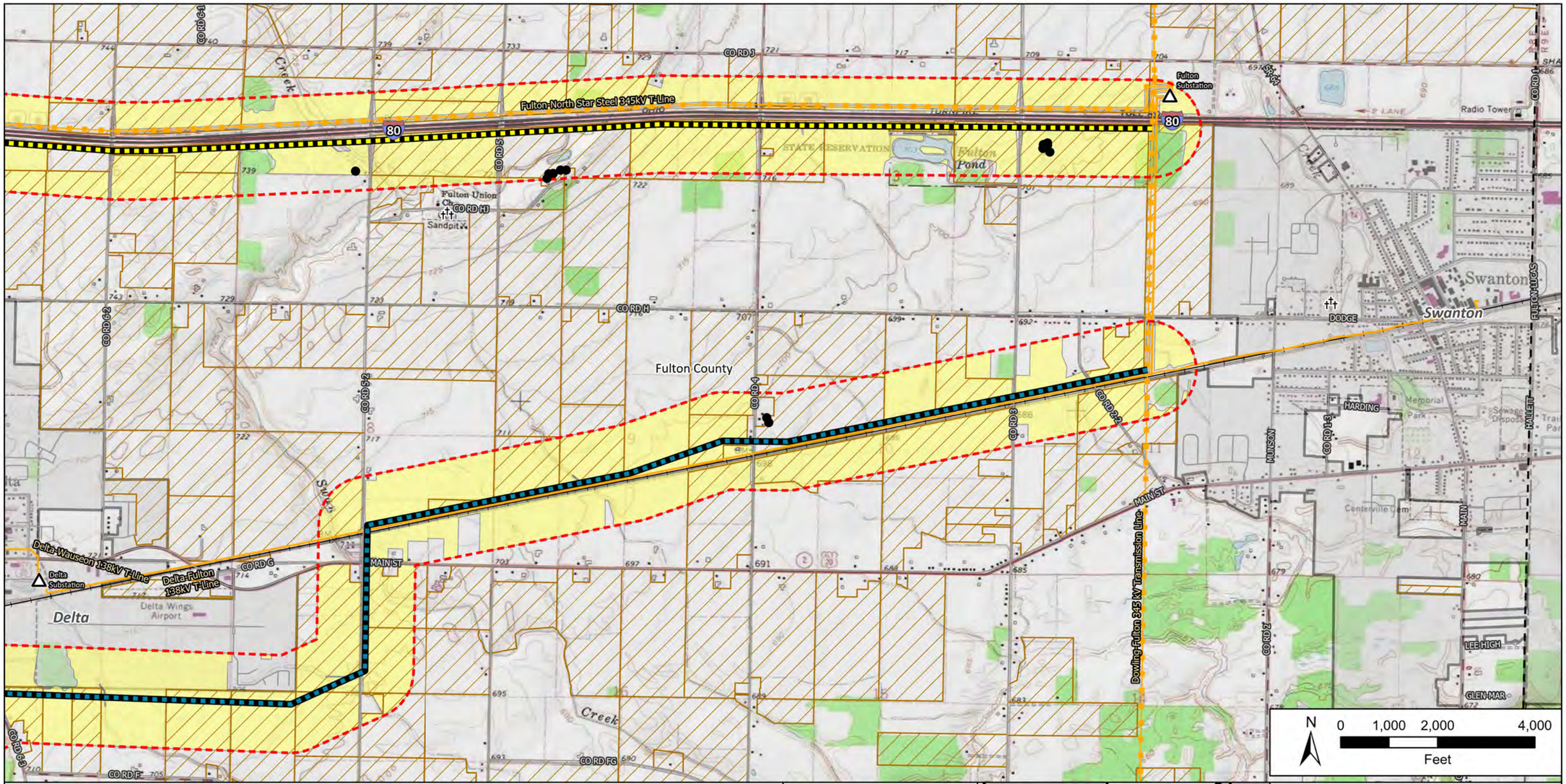
Coordinate System:
StatePlane Ohio North
NAD 1983
Scale 1:24,000

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

Figure 7-2 a
Agricultural Land Use Map

3/3/2023

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



Legend

- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Fulton-North Star Steel 345 kV Transmission Line Extension to Melbourne Substation (Future Filing)
- Melbourne Station-Sydney Station 345 kV Tie Lines (Tie-Lines for Both Preferred/Alternate Shown)
- Existing Substation
- Agricultural Building
- Agricultural Land Use
- Agricultural District
- OGS Cemeteries
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Existing 138 kV Transmission Line
- Roads
- Railroad
- Interstates
- 1,000 Foot Buffer
- County Boundary
- Corporation Limits

Base Map Source:
USGS Topographic
Delta and Swanton Quads

Roads:
ODOT Road Inventory 2022

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GIS Data Sources

Coordinate System:
StatePlane Ohio North
NAD 1983
Scale 1:24,000

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

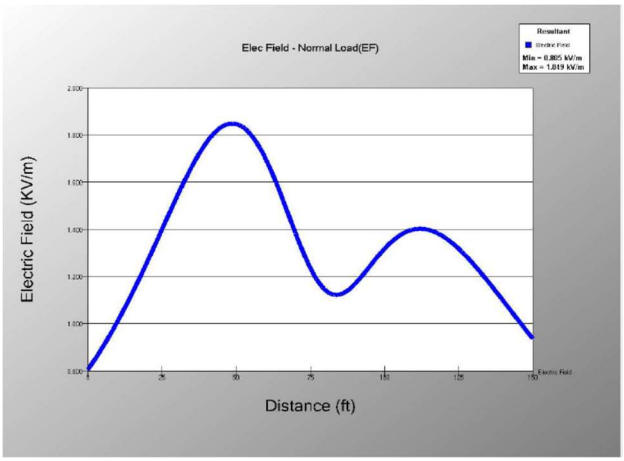
Figure 7-2 b
Agricultural Land Use Map

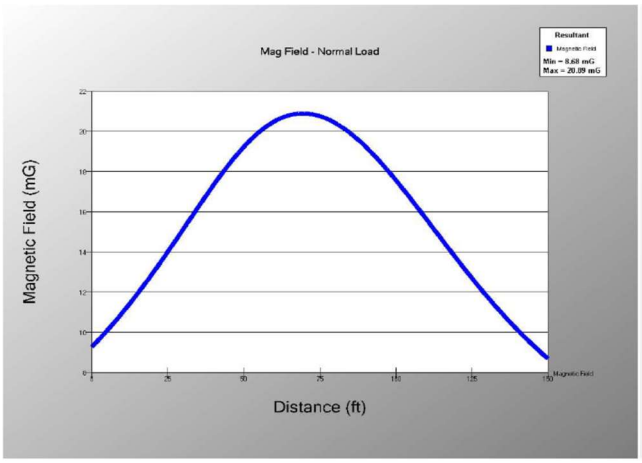
3/3/2023

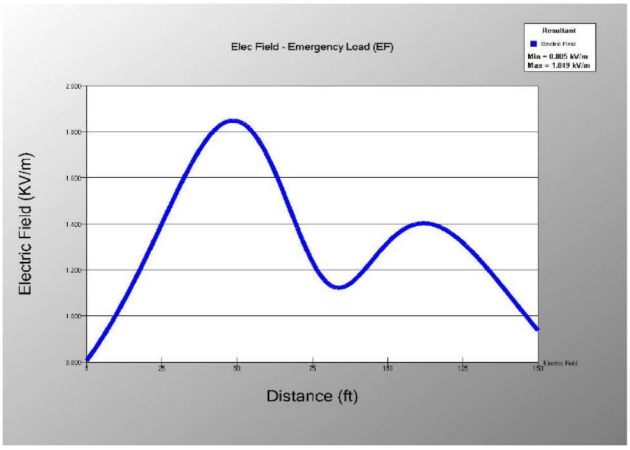
ATSI®
American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

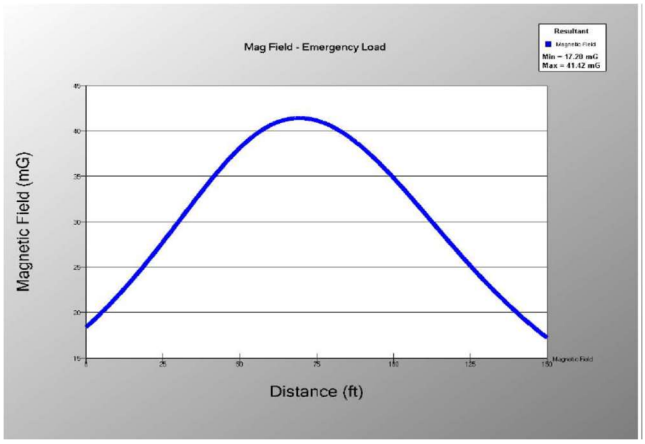
Appendix 7-1
Typical Cross Section Profiles of the Normal Calculated Electric Fields and Magnetic Fields for all Scenarios Considered (Exhibits 7-1 through 7-6)

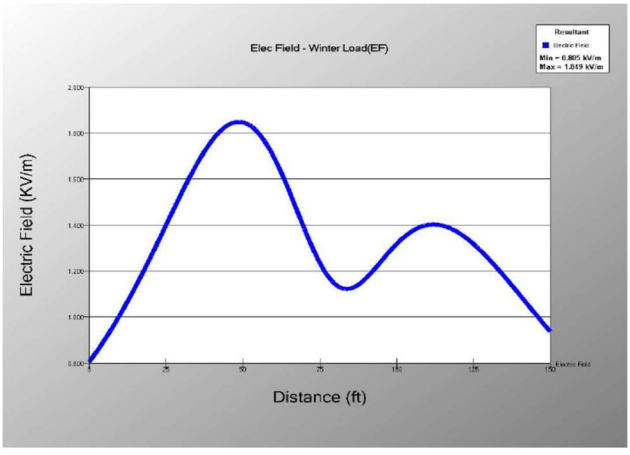
Exhibit 7-1
For Table 7-2

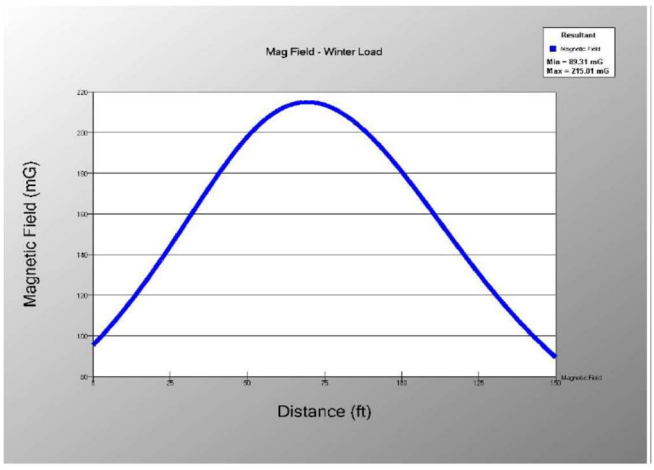












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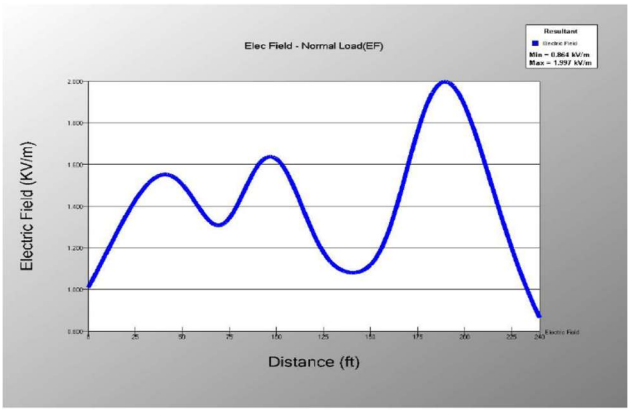

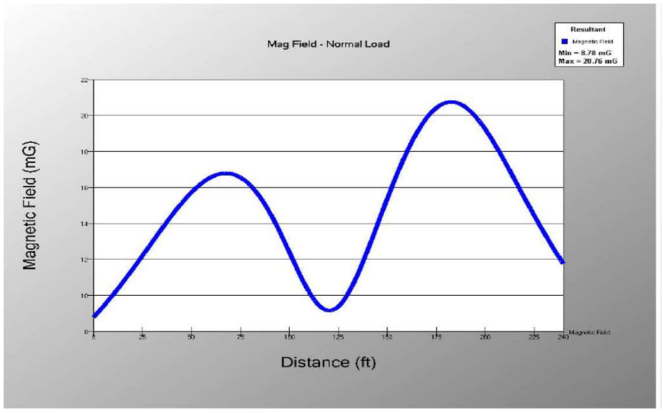

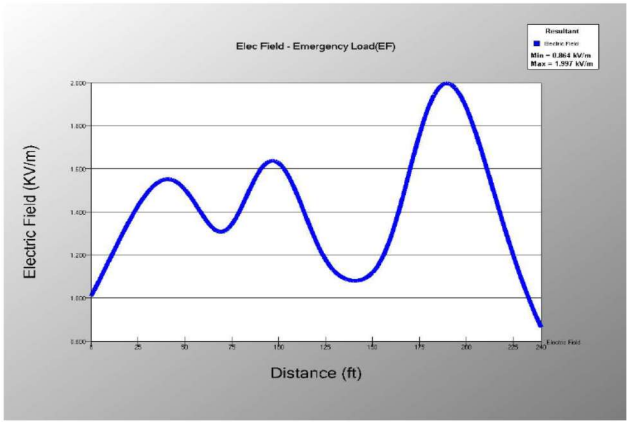

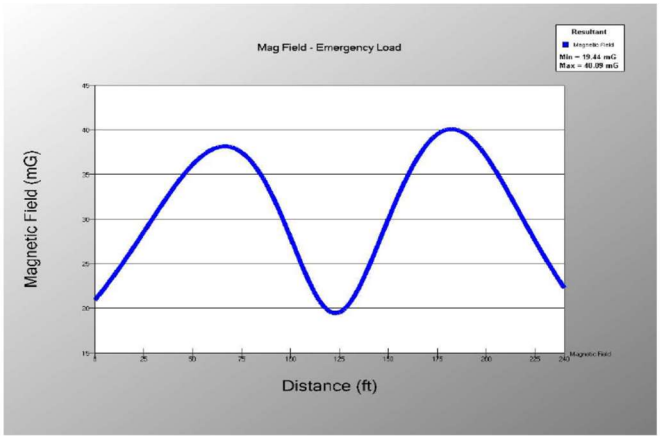

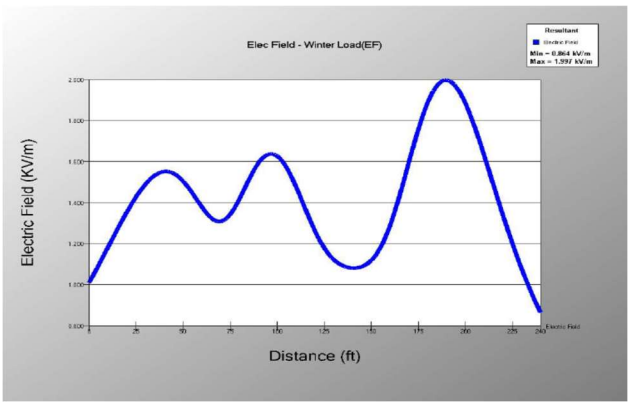

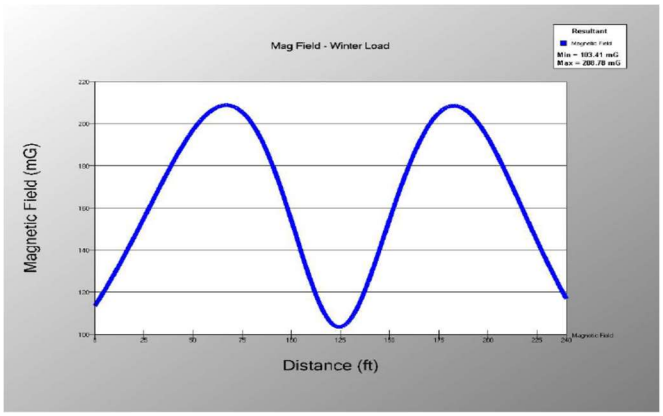

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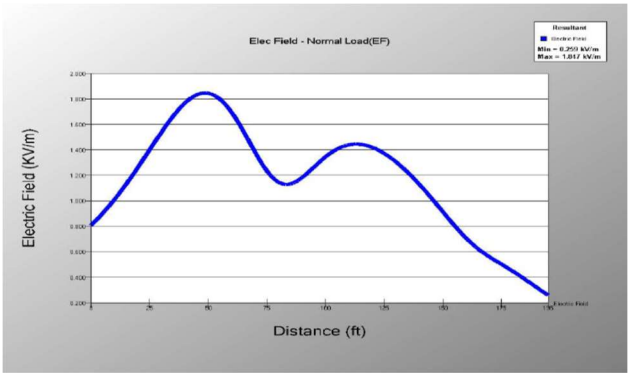

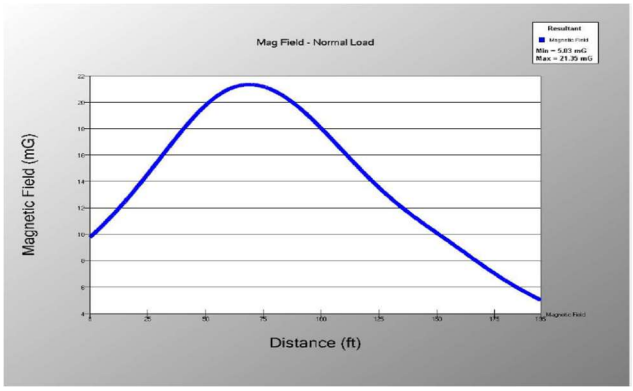

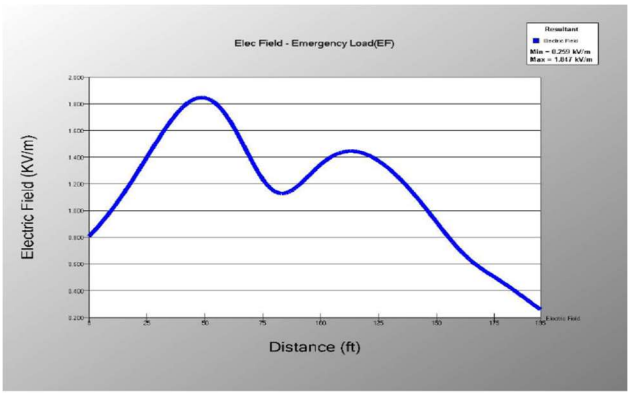

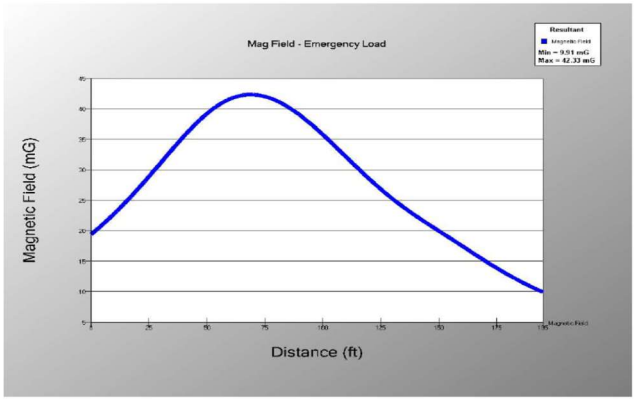

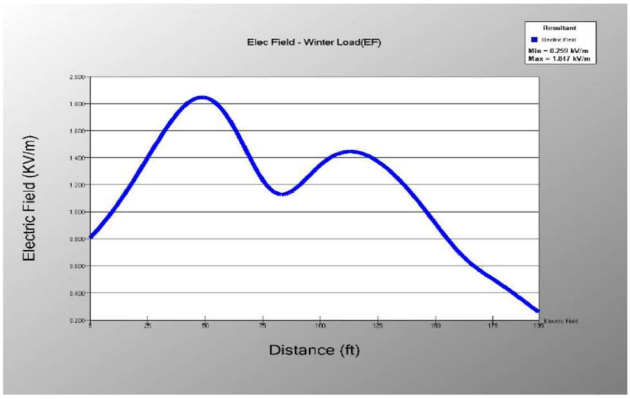

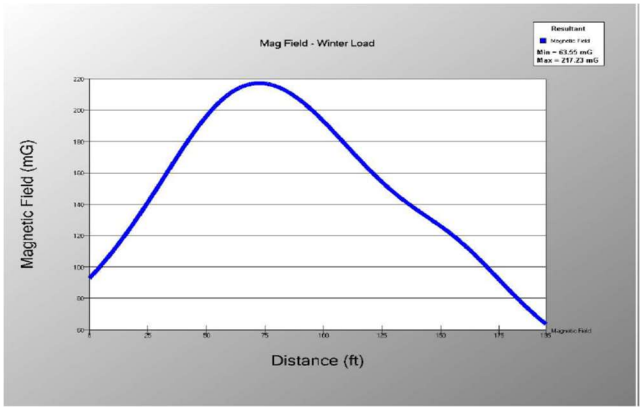

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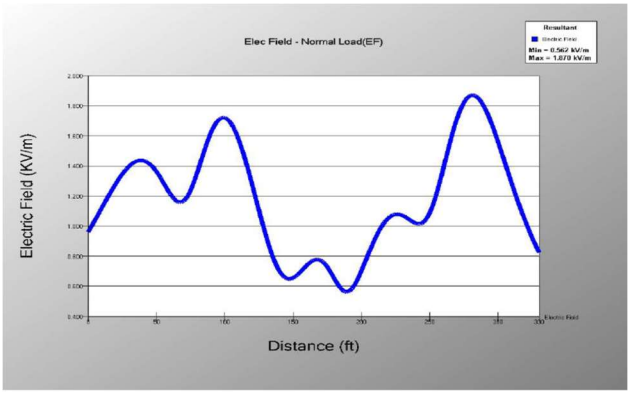
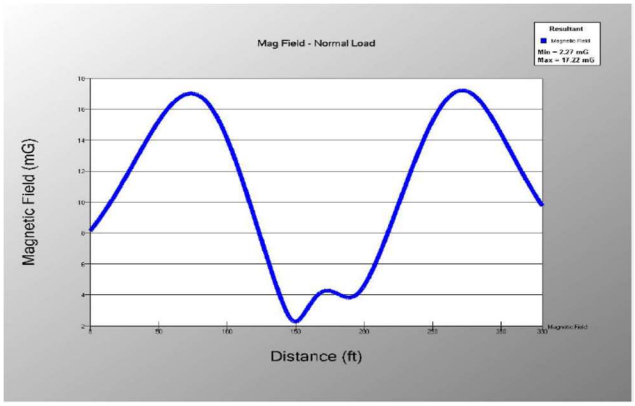
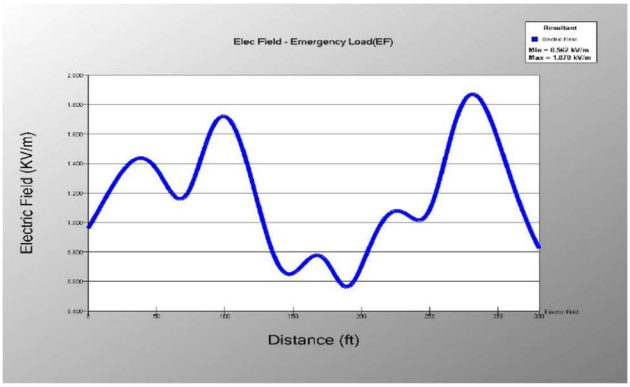
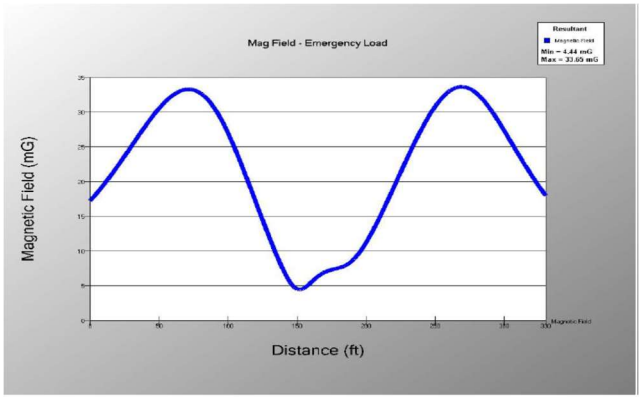
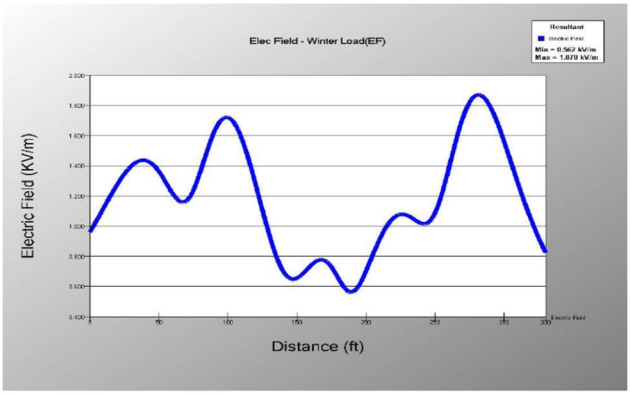
For Table 7-5

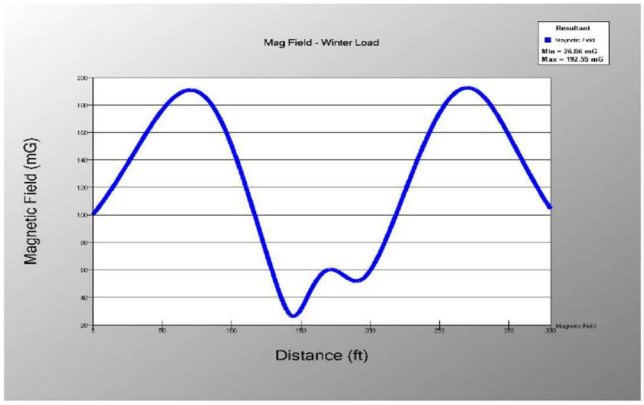












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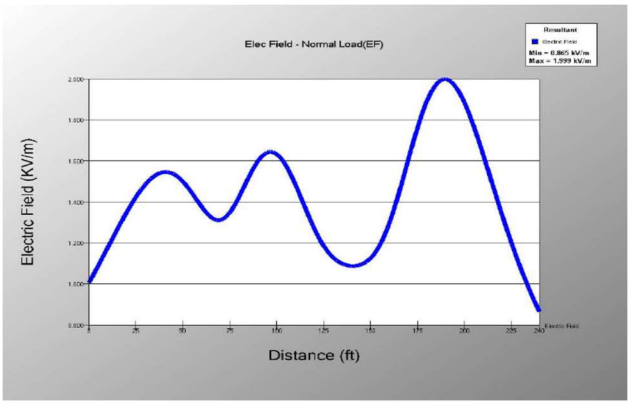
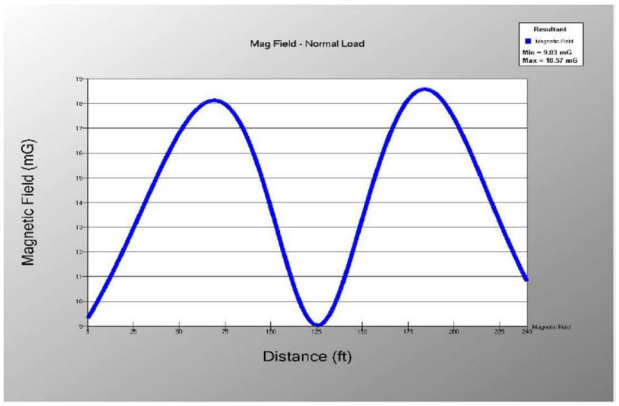
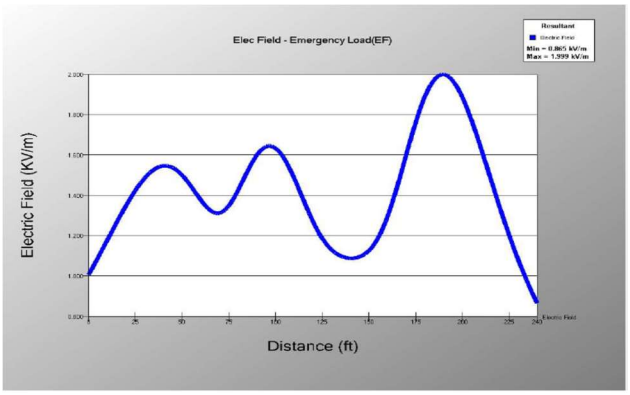
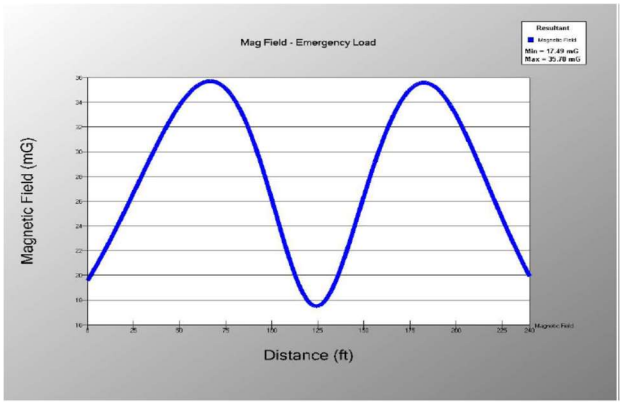
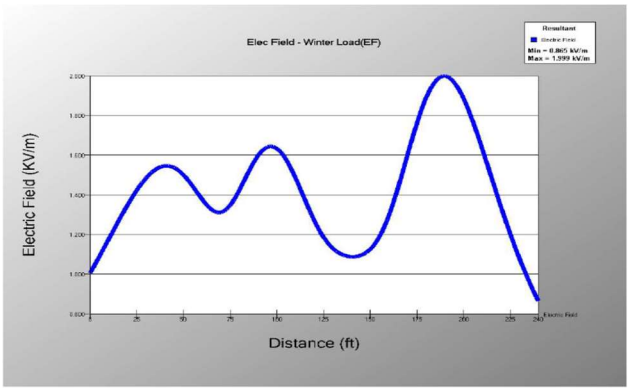
For Table 7-6

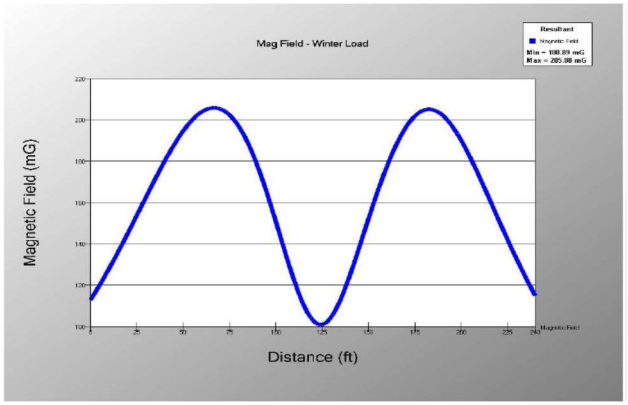












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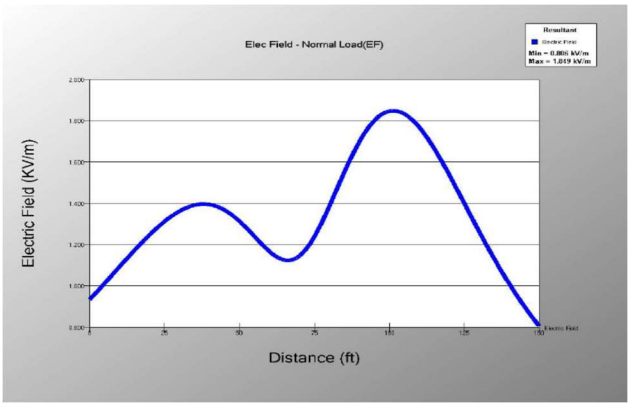
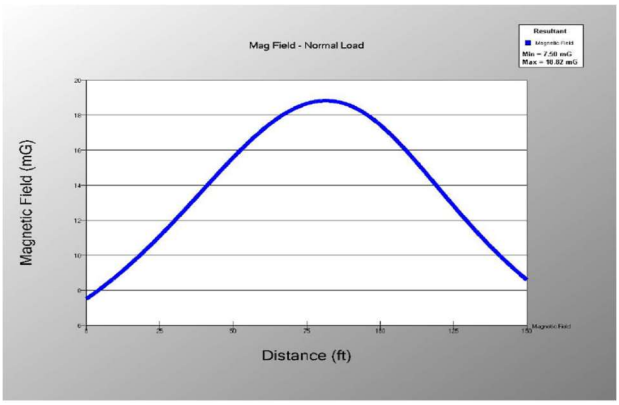
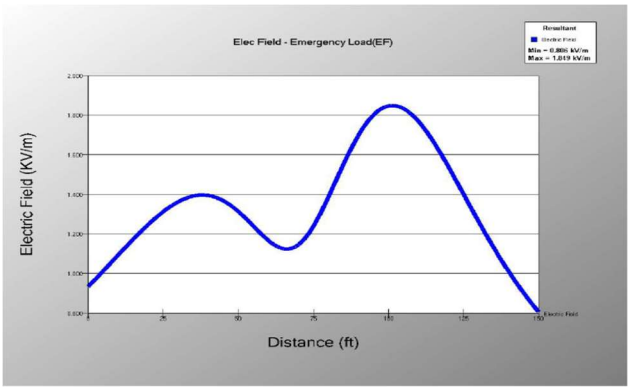
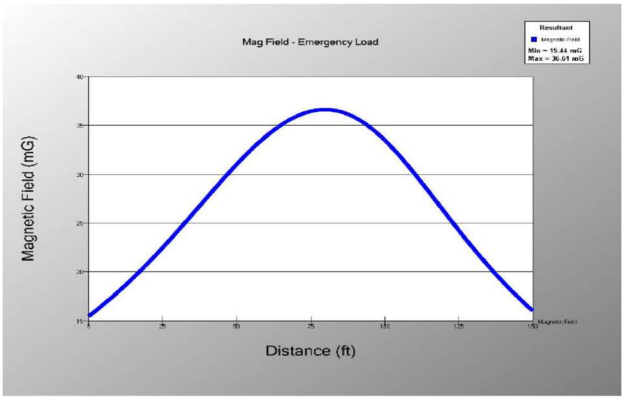
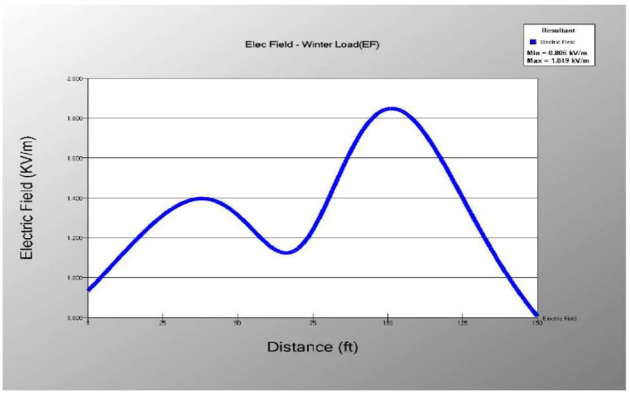
For Table 7-7

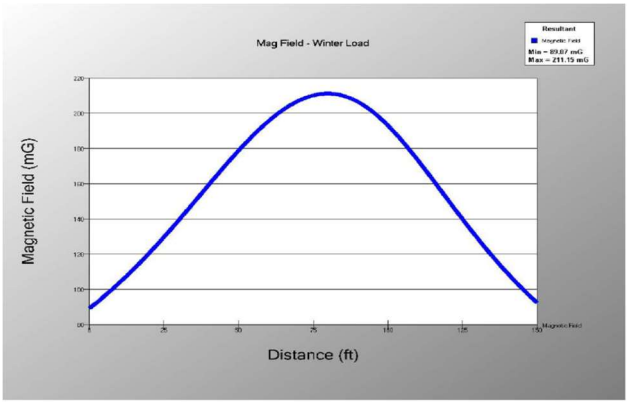












4906-5-08 ECOLOGICAL INFORMATION AND COMPLIANCE WITH PERMITTING REQUIREMENTS

ATSI conducted a study to assess the potential effects of construction and operation of the proposed Project on the ecology of the Preferred and Alternate Route transmission line corridors, the transmission tie-line corridors (from the proposed Melbourne Substation to Sydney Substation), and the proposed Melbourne Substation area. A map and literature search were conducted for a 1,000-foot corridor on either side of the Preferred and Alternate Route centerlines, the transmission tie-lines, and the Melbourne Substation. A field survey of ecological habitat and features was performed at the Melbourne Substation and within 175 feet on either side of the centerline for the Preferred and Alternate Route and the transmission tie-lines (hereafter referred to as the Field Survey Area). Field surveys were conducted in September, October, and December 2022, and January 2023. Information in the following paragraphs addresses ATSI's ecological study conducted for the Project. Information in Appendix 8-1 addresses the wetland and waterbodies delineated, and other ecological information, within the Field Survey Area of the proposed Melbourne Substation and the proposed transmission tie lines (from the proposed Melbourne Substation to Sydney Substation).

(A) ECOLOGICAL MAP

Maps at a scale of 1:24,000 (1 inch = 2,000 feet) including the corridor 1,000 feet on either side of the centerline (referred to as the 2,000-foot corridor) of the Preferred and Alternate Route are presented as Figures 7-1 and 7-2. Additionally, the proposed transmission tie lines and the proposed Melbourne Substation is depicted on Figures 7-1 and 7-2. These maps depict the transmission line alignments, substation locations, and land use classifications, including vegetative cover. Features within 1,000 feet of the proposed routes were identified from published data and, where accessible, verified by the field ecological survey.

An ecological overview map including all Project components described above is provided in Figure 8-1. More detailed maps at 1:2,400 and 1:6,000 scale depicting field-delineated waterbody and wetland features, lakes, ponds, reservoirs, slopes of 12 percent or greater, wildlife areas, nature preserves, and conservation areas within the 2,000-foot corridor are provided as Figures 8-2A through 8-2K (Preferred Route) and Figures 8-3A through 8-3J (Alternate Route). Figure 8-4 illustrates the field-delineated waterbody and wetland features.

(B) FIELD SURVEY REPORT FOR VEGETATION AND SURFACE WATERS

The ecological survey consisting of the 350-foot-wide Field Survey Area of both the Preferred and Alternate Routes were conducted in September, October, and December 2022. The field survey was preceded by review of published mapping, aerial photography, protected federal and state-listed species, and ecological information for at least 1,000 feet on either side of the Preferred Route and Alternate Route centerlines. Map sources included USGS 7.5-minute quadrangle topographic maps, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, and U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil

survey maps. A copy of the wetland and waterbody delineation reports are provided as Appendix 8-2.

(1) Vegetative Communities, Wetlands, and Waterbodies in Study Area

(a) Vegetative Communities

Vegetative communities and land use types within the Field Survey Area include agricultural fields, old fields, early or second growth successional forests, commercial maintained lawns, park, palustrine emergent (PEM) wetlands, palustrine forested (PFO) wetlands, palustrine unconsolidated bottom (PUB) wetlands, identified waterbodies and residential lawns. Habitat descriptions are provided below. Details on the anticipated impacts from construction of the proposed Project are provided in Section 4906-05-08(B)(3)(a) below and in Tables 8-5.

(i) Agricultural Fields

Portions of the Preferred and Alternate Routes cross agricultural fields. Corn and soybeans were observed in most of the crop fields.

(ii) Old Field

Herbaceous cover exists in successional old field communities. Old-field plant communities are at the earliest stages of recolonization following disturbance. This community type is typically short-lived (less than 10 years), progressively giving way to shrub and forest communities unless periodically re-disturbed. Old-field areas are located within much of the Project Area, especially along railroads and in fallow fields.

Dominant plant species in the old-field communities included:

- Common ragweed (*Ambrosia artemisiifolia*)
- Queen Anne's lace (*Daucus carota*)
- Fuller's teasel (*Dipsacus fullonum*)
- Pokeweed (*Phytolacca americana*)
- Tall fescue (*Schedonorus arundinaceus*)
- Japanese bristlegrass (*Setaria faberi*)
- Canada goldenrod (*Solidago canadensis*)
- Grapevine (*Vitis* sp.)

(iii) Successional Forests

Upland, early successional or second growth forest are present across portions of the Field Survey Area within the Preferred and Alternate Routes.

Dominant canopy species within these forested areas include the following:

- Box elder (*Acer negundo*)
- Red Maple (*Acer rubrum*)

- Sugar Maple (*Acer saccharum*)
- Shagbark hickory (*Carya ovata*)
- Honey locust (*Gleditsia tricanthos*)
- Black walnut (*Juglans nigra*)
- Eastern cottonwood (*Populus deltoides*)
- Black cherry (*Prunus serotina*)
- Basswood (*Tilia americana*)
- American elm (*Ulmus americana*)

Dominant understory species include:

- Jumpseed (*Persicaria virginiana*)
- Amur honeysuckle (*Lonicera maackii*)

The understory of the various forest communities within the Project Area ranged from open to moderately dense.

(iv) Commercial Maintained Lawns

Commercial maintained lawns are present throughout the Field Survey Area including areas paralleling roads and railroads, around Delta Reservoir, the proposed Melbourne Substation area, and some non-residential parcels. These areas are dominated by grasses and forbs and are regularly mowed.

(v) Park

The Preferred Route crosses a parcel used as the Delta Raceway racetrack. Landscape in this area consists of dirt paths, gravel, constructed minor elevation changes, and regularly mowed grasses and forbs.

(vi) Wetlands

Wetlands were observed and delineated within the Field Survey Area of the proposed Preferred Route and Alternate Routes.

Dominant plant species observed within PEM wetlands include the following:

- Fox sedge (*Carex vulpinoidea*)
- Barnyard grass (*Echinochloa crus-galli*)
- Common reed (*Phragmites australis*)
- Hybrid cattail (*Typha x glauca*)

Dominant plant species observed within PFO wetlands include the following:

- Red maple (*Acer rubrum*)
- Fringed sedge (*Carex crinita*)

- Gray's sedge (*Carex grayi*)
- Red osier dogwood (*Cornus alba*)
- Silky dogwood (*Cornus amomum*)
- Green ash (*Fraxinus pennsylvanica*) saplings (high adult mortality due to Emerald Ash Borer)
- Eastern cottonwood (*Populus deltoides*)
- Black willow (*Salix nigra*)
- Dark green bulrush (*Scirpus atrovirens*)
- Eastern poison ivy (*Toxicodendron radicans*)
- American elm (*Ulmus americana*)

(vii) Residential

Residential areas exist within the Preferred and Alternate Route Field Survey Area. Vegetation identified on residential properties include a variety of herbaceous grasses and forbs typically found in new field communities, with occasional ornamental trees, shrubs, and hedges. Dominant grasses included tall fescue (*Schedonorus arundinaceus*) and bluegrasses (*Poa* spp.). The dominant forb species include common dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), and broadleaf plantain (*Plantago major*). The herbaceous vegetation on the residential properties is, for the most part, regularly maintained through mowing.

(b) Wetlands

According to the U.S. Army Corps of Engineers (USACE), a wetland is defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

ATSI's consultant used the onsite methodology described in the 1987 Technical Report Y-87-1, USACE Wetlands Delineation Manual (USACE, 1987) and subsequent guidance documents including the Regional Supplement to the USACE Wetland Delineation Manual: Northcentral and Northeast Region (USACE, 2012). Additionally, each identified wetland was evaluated in accordance with the Ohio Rapid Assessment Method (ORAM) developed by Ohio Environmental Protection Agency (Mack, 2001). Wetland categorizations were conducted in accordance with the latest quantitative score calibration procedure (Mack, 2001). To identify whether potential wetlands exist within the Field Survey Area, a desktop study of available resources was performed prior to the field wetland delineations. Additionally, USFWS NWI maps and the NRCS soil survey (USDA NRCS, 2022) and hydric soil list for Fulton County were reviewed for areas within 1,000 feet of the Preferred and Alternate Routes.

(i) Summary of National Wetland Inventory Data

USFWS NWI data, including freshwater wetlands and riverine areas, were mapped within 1,000 feet of the Preferred and Alternate Routes, and reviewed to guide the field ecological survey as one factor in identifying potential wetland locations (USFWS, 2022a). The NWI-mapped areas are shown on Figures 8-2A through 8-2K and Figures 8-3A through 8-3J for the Preferred and Alternate Routes, respectively. Tables 8-1 summarizes the NWI data by wetland classification and habitat type. The actual extent and type of field-delineated wetlands along the routes are discussed in the next section.

Table 8-1: NWI Wetlands within 1,000 Feet of the Preferred and Alternate Routes

Wetland Type	NWI Code	NWI Habitat Type*	Total Number of Each Habitat Type	
			Preferred	Alternate
Lake	L1UBH	Lacustrine limnetic, unconsolidated bottom, permanently flooded	1	0
Lake	L1UBHx	Lacustrine limnetic, unconsolidated bottom, permanently flooded, excavated	2	0
Freshwater Emergent Wetland	PEM1F	Palustrine emergent, persistent, semipermanently flooded	0	1
Freshwater Forested/Shrub Wetland	PFO1/SS1C	Palustrine forested, broad-leaved deciduous, and scrub-shrub, broad-leaved deciduous, seasonally flooded	4	0
Freshwater Emergent Wetland	PFO1C	Palustrine forested, broad-leaved deciduous, seasonally flooded	2	2
Freshwater Forested/Shrub Wetland	PSS1/EM1C	Palustrine scrub-shrub, broad-leaved deciduous, and emergent, persistent, seasonally flooded	1	0
Freshwater Forested/Shrub Wetland	PSS1/UBF	Palustrine scrub-shrub, broad-leaved deciduous, and unconsolidated bottom, semipermanently flooded	1	0
Freshwater Pond	PUBG	Palustrine unconsolidated bottom, intermittently exposed	2	1
Freshwater Pond	PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	18	14
Riverine	R2UBH	Riverine lower perennial, unconsolidated bottom, permanently flooded	1	1
Riverine	R4SB3C	Riverine intermittent, streambed, cobble-gravel, seasonally flooded	1	1
Riverine	R4SBC	Riverine intermittent, streambed, seasonally flooded	14	8

Table 8-1: NWI Wetlands within 1,000 Feet of the Preferred and Alternate Routes

Wetland Type	NWI Code	NWI Habitat Type*	Total Number of Each Habitat Type	
			Preferred	Alternate
Riverine	R5UBH	Riverine unknown perennial, unconsolidated bottom, permanently flooded	1	3
		Total NWI Wetlands:	48	31

Notes:

* USFWS, 2016

(ii) Field-Delineated Wetlands

Four wetlands, totaling 4.03 acres, were delineated within the Preferred Route Field Survey Area. The four wetlands, are within the 150-foot ROW of the Preferred Route, totaling 2.26 acres. Two wetlands were delineated within the Alternate Route Field Survey Area, totaling 3.49 acres. Both wetlands are within the 150-foot ROW of the Alternate Route, totaling 1.90 acres. Detailed information for each wetland is provided in Table 8-2. The wetlands where construction impacts are anticipated to be unavoidable are identified in Table 8-2 and further discussed in Section 4906-05-08(B)(3)(b). The field-delineated wetlands for both the Preferred and Alternate Routes are mapped on Figures 8-2A through 8-2K and Figures 8-3A through 8-3J, respectively.

Table 8-2: Delineated Wetlands within the Preferred and Alternate Route Field Survey Area and Potential Disturbance Area/ROW

Wetland Name	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Acreage within Potential Disturbance Area/ROW[c]	Length Crossed by Centerline (feet)
Preferred Route Wetlands							
Wetland DFN-01	8-2F, 8-2G	PFO	29	Category 1	3.31	2.01	677
Wetland DFN-02	8-2G	PEM	24	Category 1	0.05	0.05	66
Wetland DFN-03	8-2G	PFO	34.5	Category 2	0.07	0.01	0
Wetland DFN-04	8-2K	PEM	12.5	Category 1	0.60	0.19	0
				Total[d]	4.03	2.26	743
Alternate Route Wetlands							
Wetland DFS-01	8-3H, 8-3I	PFO	27.5	Category 1	2.67	1.47	443
Wetland DFS-02	8-3J	PEM	15.5	Category 1	0.82	0.43	0
				Total[d]	3.49	1.90	443

Notes:

[a] Wetland Type: PEM = palustrine emergent, PFO = palustrine forested, PUB = palustrine unconsolidated bottom.

[b] The width of the Field Survey Area was 350 feet on both the Preferred and Alternate Routes.

[c] The width of the potential disturbance area and the final maintained ROW is planned to be 150 feet.

[d] Total may vary slightly from the sum of their parts due to rounding.

(c) Waterbodies

(i) Field-Delineated Streams

Streams and drainage channels were delineated and assessed during the ecological survey of the Preferred and Alternate Routes. Streams with drainage areas greater than 1 square mile or maximum pool depths greater than 40 centimeters were assessed using the OEPA Qualitative Habitat Evaluation Index (QHEI). The QHEI is one measure that is used by OEPA, in association with biotic sampling, to determine a stream's aquatic life use designation in accordance with the Ohio water quality standards (OEPA, 2006). The QHEI method classifies streams based on their drainage area. Streams that drain greater than or equal to 20 square miles are classified as "larger streams," while those that drain less than 20 square miles are classified as "headwaters." Field personnel completed the QHEI near the proposed centerline of the transmission line crossing when possible.

No streams within the Field Survey Area are designated as outstanding state waters, outstanding national resource waters, or Superior High-Quality Waters (OEPA, 2021).

Although not a regulatory requirement, the OEPA's Headwater Habitat Evaluation Index (HHEI) can be used to evaluate streams with a drainage area less than or equal to 1 square mile, and maximum pools depths less than or equal to 40 centimeters (OEPA, 2020). The HHEI is generally used to assess Primary Headwater Habitat (PHWH) streams that typically fall under the classification of first or second-order streams. The HHEI rates a stream based on its physical habitat and uses that information to determine the biological potential of the stream. The physical habitats scored for the HHEI are substrate type, pool depth, and bank full width. Scores for Class I PHWH Streams range from 0 to 29.9; scores for Class II PHWH Streams range from 30 to 69.9; and scores for Class III PHWH Streams range from 70 to 100. A "Modified" qualifier may be added as a prefix to any of these classes if evidence of anthropogenic alterations, such as channelization and bank stabilization, are observed. A higher PHWH class corresponds with a more continuous flow regime. The flow regime determines the physical habitat of the stream and is therefore indicative of the biological communities it can support.

Within the Preferred Route Field Survey Area, 11 streams were identified; eight of those streams are crossed by the Preferred Route centerline. The total length of streams within the 350-foot-wide Preferred Route Field Survey Area is approximately 22,281 linear feet, while the total length of streams within the 150-foot-wide ROW is approximately 2,455 linear feet. Within the Preferred Route Field Survey Area, two of the streams were evaluated using the QHEI methodology, and the other nine streams were evaluated using the HHEI methodology. Streams were evaluated as close to the route centerline as possible.

Seven streams were identified within the Alternate Route Field Survey Area, six of which are crossed by the Alternate Route centerline. The total length of streams within the 350-foot wide Alternate Route Field Survey Area is approximately 7,317 linear feet, while the total length of

streams within the 150-foot-wide Alternate Route ROW is approximately 1,337 linear feet. Three of the streams within the Alternate Route Field Survey Area were evaluated using the QHEI methodology, and the other four streams were evaluated using the HHEI methodology. Streams were evaluated as close to the route centerline as possible.

Streams identified during the ecological survey on the Preferred and Alternate Routes are shown on Figures 8-2A through 8-2K and Figures 8-3A through 8-3J, respectively. Detailed information on each delineated stream is included in Table 8-3. Aquatic life use designations within the Maumee River drainage basin obtained from OAC 3745-1-11 are also provided (OEPA, 2021). Construction impacts on these features are included in Table 8-3 and further discussed in Section 4906-05-08(B)(3)(c).

Table 8-3: Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream Name Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline	Length (linear feet) within Field Survey Area[a]	Length (linear feet) within Potential Disturbance Area/ROW[b]
Preferred Route											
Stream DFN-01 UNT to Ai Creek	8-2A	Ephemeral	8	0	HHEI	10	N/A	Modified Class I	No	2,806	0
Stream DFN-02 UNT to Ai Creek	8-2A, 8-2B	Intermittent	10	1	HHEI	29	N/A	Modified Class I	Yes	628	301
Stream DFN-03 UNT to Ai Creek	8-2B	Intermittent	25	2	HHEI	33	N/A	Modified Class II	Yes	405	185
Stream DFN-04 UNT to Ai Creek	8-2A, 8-2B, 8-2C	Ephemeral	6	0	HHEI	10	N/A	Modified Class I	No	5,222	0
Stream DFN-05 UNT to Swan Creek	8-2C, 8-2D	Intermittent	25	4	HHEI	54	N/A	Modified Class II	Yes	1,149	857
Stream DFN-06 UNT to Swan Creek	8-2C, 8-2D	Ephemeral	6	0	HHEI	10	N/A	Modified Class I	Yes	2,799	152
Stream DFN-07 Swan Creek	8-2D, 8-2E	Perennial	25	6	QHEI	55.5	N/A	Good Warmwater	Yes	589	263
Stream DFN-08 UNT to Swan Creek	8-2D, 8-2E, 82F	Ephemeral	3	0	HHEI	12	N/A	Modified Class I	No	6,997	0
Stream DFN-09 UNT to Bad Creek	8-2F, 8-2G	Intermittent	10	12	HHEI	46	N/A	Class II	Yes	949	369
Stream DFN-10 Bad Creek	8-2G	Perennial	40	24	QHEI	47.5	N/A	Fair Warmwater	Yes	370	152

Table 8-3: Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream Name Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline	Length (linear feet) within Field Survey Area[a]	Length (linear feet) within Potential Disturbance Area/ROW[b]
Stream DFN-11 UNT to Bad Creek	8-2H, 8-2I	Ephemeral	14	0	HHEI	25	N/A	Modified Class I	Yes	367	175
									Total	22,281	2,455
Alternate Route											
Stream DFS-01 UNT to Ai Creek	8-3A, 8-3B	Intermittent	20	3	HHEI	45	N/A	Modified Class II	Yes	4,854	152
Stream DFS-02 UNT to Swan Creek	8-3B, 8-3C	Intermittent	20	1	HHEI	33	N/A	Modified Class II	Yes	600	368
Stream DFS-03 Swan Creek	8-3D	Perennial	25	6	QHEI	55.5	N/A	Good Warmwater	Yes	350	150
Stream DFS-04 UNT to Fewless Creek	8-3E	Intermittent	15	4	HHEI	55	N/A	Modified Class II	Yes	722	361
Stream DFS-05 Fewless Creek	8-3F	Perennial	20	4	QHEI	46.5	N/A	Fair Warmwater	Yes	367	151
Stream DFS-06 Bad Creek	8-3F, 8-3G	Perennial	40	24	QHEI	47.5	N/A	Fair Warmwater	Yes	377	155
Stream DFS-07 UNT to North Turkeyfoot Creek	8-3J	Ephemeral	30	4	HHEI	49	N/A	Modified Class II	No	47	0
									Total[c]	7,317	1,337

Table 8-3: Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream Name Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline	Length (linear feet) within Field Survey Area[a]	Length (linear feet) within Potential Disturbance Area/ROW[b]

Notes:

[a] The width of the Field Survey Area was 350 feet on both the Preferred and Alternate Routes.

[b] The width of the potential disturbance area and the final maintained ROW is planned to be 150 feet.

[c] Total may vary slightly from the sum of their parts due to rounding

UNT = unnamed tributary

(ii) Lakes, Ponds, and Reservoirs

One major waterbody, Delta Reservoir, was observed within the proposed Preferred Route Field Survey Area. Five ponds, including the Delta Reservoir, were identified totaling 7.27 acres within the Preferred Route Field Survey Area. Three ponds totaling 0.46 acre within the Field Survey Area were identified along the Alternate Route. Ponds within the Field Survey Area are shown on Figures 8-2A through 8-2K and Figures 8-3A through 8-3J and are summarized in Table 8-4.

Impacts to ponds from construction, operation, or maintenance of the proposed transmission line are not anticipated. Best management practices (BMPs) to control soil erosion and sedimentation (for example, using silt fencing and filter sock as appropriate during construction to minimize runoff siltation) will be implemented.

Table 8-4: Delineated Ponds within the Preferred Route and Alternate Route Environmental Field Survey Area

Pond Name	Figure	Acreage within Field Survey Area	Acreage within ROW [a]	Linear Feet Crossed by Centerline
Preferred Route Ponds				
Pond DFN-01	8-2F, 8-2G	1.38	0.00	0
Pond DFN-02 Delta Reservoir	8-2G	1.15	0.00	0
Pond DFN-03	8-2H, 8-2I	0.70	0.00	0
Pond DFN-04	8-2H, 8-2I	3.15	0.00	0
Pond DFN-05	8-2I	0.89	0.29	93
Total		7.27	0.29	93
Alternate Route Ponds				
Pond DFS-01	8-3B, 8-3C	0.10	0.00	0
Pond DFS-02	8-3I	0.19	0.05	0
Pond DFS-03	8-3I	0.17	0.14	0
Total[b]		0.46	0.20	0

Notes:

[a] "0" indicates the pond is not within the ROW.

[b] Total may vary slightly from the sum of their parts due to rounding

(2) Map of Facility, Right-of-Way, and Delineated Resources

Detailed maps at 1:6,000 scale depicting the delineated water features, Field Survey Area, and proposed ROW for the Preferred and Alternate Routes are provided as Figures 8-2A through 8-2K and Figures 8-3A through 8-3J, respectively.

(3) Construction Impacts on Vegetation and Surface Waters

(a) Construction Impacts on Vegetation

The construction impacts on vegetation along the Preferred and Alternate Routes will be limited to the initial clearing of vegetation within the 150-foot ROW for the proposed transmission line and access roads. Specific locations for access roads will be identified at the time of ATSI transmission line easement acquisition process. Trees within the proposed ROW, and adjacent to, that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative wastes (such as tree limbs and trunks) generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual property owner requests. The approximate vegetation impacts, based on GIS analysis, along the Preferred and Alternate Route ROWs are provided in Table 8-5.

Table 8-5: Approximate Vegetation Impacts along the Potential Disturbance Area/ROW

Land Use Type	Length of Route (in feet)	Length of Route (in miles)	Acreage within ROW
Preferred Route			
Agricultural	38,449	7.28	130.2
Herbaceous (Old Field)	1,498	0.28	5.4
Commercial Maintained Lawn	2,277	0.43	11.1
Park	1,999	0.38	5.4
Residential	25	0.00	0.1
Industrial	2632	0.50	8.8
Scrub/shrub	60	0.01	0.2
Woodlot	1,420	0.27	4.9
Delineated Stream	201	0.04	1.0
Delineated Pond	104	0.02	0.3
Delineated Wetland	725	0.14	2.2
Alternate Route			
Agricultural	38,892	7.37	130.1
Herbaceous (Old Field)	635	0.12	1.9
Commercial Maintained Lawn	1,640	0.31	6.1
Park	0	0.00	0.0
Residential	621	0.12	2.1
Industrial	1270	0.24	3.9

Table 8-5: Approximate Vegetation Impacts along the Potential Disturbance Area/ROW

Land Use Type	Length of Route (in feet)	Length of Route (in miles)	Acreage within ROW
Scrub/shrub	273	0.05	1.6
Woodlot	1,056	0.20	5.5
Delineated Stream	165	0.03	0.7
Delineated Pond	0	0	0.2
Delineated Wetland	436	0.08	1.9

(b) Construction Impacts on Wetlands

Preferred Route: During wetland and waterbody delineations, four wetlands were identified along the Preferred Route within the proposed ROW, totaling 2.26 acres within the ROW. The delineated wetlands are shown on Figures 8-2A through 8-2K. Detailed information about each feature can be found in Table 8-2 in Section 4906-05-08(B)(1)(b)(ii). Of these wetlands, two are crossed by the Preferred Route centerline, totaling 743 linear feet. Impacts to the wetlands would be avoided by placing transmission line structures outside of wetland boundaries, where practical. Where temporary construction access through a wetland cannot be avoided, the crossing would occur during dry conditions or protective construction matting would be used to minimize impacts from construction vehicles.

Wetland ORAM categories delineated in the Preferred Route ROW are detailed below:

- Category 1 wetlands: Three Category 1 wetlands with ORAM scores ranging from 12.5 to 29 were identified within the ROW, totaling 2.25 acres. Approximately 2.02 acres of PFO wetlands would be impacted during construction.
- Category 2 wetlands: One Category 2 wetland with an ORAM scores of 34.5 was identified within the ROW, totaling 0.01 acre. Approximately 0.01 acre of PFO wetland would be impacted during construction.
- Category 3 wetlands: No Category 3 wetlands would be crossed; therefore, no construction impacts are anticipated.

Alternate Route: During wetland and waterbody delineations, two wetlands were identified along the Alternate Route ROW, totaling 1.90 acres. The delineated wetlands are shown on Figures 8-3A through 8-3J. Detailed information about each feature can be found in Table 8-2 in Section 4906-05-08(B)(b)(ii). One of the wetlands is crossed by the centerline of the Alternate Route, totaling 443 linear feet. If this route were selected for construction, impacts to wetlands would be avoided by placing transmission line structures outside wetland boundaries where practical. Where temporary construction access through a wetland cannot be avoided, the crossing would occur during dry conditions or matting would be used to minimize impacts.

Wetland ORAM categories delineated in the Alternate Route ROW are detailed below:

- Category 1 wetlands: Two Category 1 wetlands with ORAM scores ranging from 15.5 to 27.5 were identified within the proposed ROW, totaling 1.90 acres. Approximately 1.47 acres of PFO wetland would be impacted during construction.
- Category 2 wetlands: No Category 2 wetlands would be crossed; therefore, no construction impacts are anticipated.
- Category 3 wetlands: No Category 3 wetlands would be crossed; therefore, no construction impacts are anticipated.

Through appropriate planning and permitting, care will be taken near wetlands to avoid or minimize filling and sedimentation during construction. ATSI will avoid the placement of poles within wetlands to the extent practical. Selective clearing will be required to remove specific types of woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line. Where wooded or forested wetlands occur within the ROW, the trees will be removed.

To minimize soil erosion and sedimentation during construction, BMPs such as silt fences and construction matting will be implemented as required. Sedimentation potential at wetlands will be minimal as structure replacement outside of wetlands is preferred. Construction equipment will only cross wetlands if necessary and will do so using construction matting if wet conditions require.

Disturbance of soils in wetland areas during construction will be minimized. Placement of permanent fill material in wetland areas will be avoided to the extent practical. Where it is necessary to place a pole or guy wires within a wetland, they will be accessed using construction matting if wet conditions exist at the time of construction. No excavation other than the boring or excavation of a hole for pole installation will be performed within wetland areas. Where pole placement is required within a wetland, no additional fill will be placed in the wetlands beyond the placement of the pole and borehole backfill (concrete and soil).

Wetland areas will be clearly staked before the commencement of any clearing to minimize incidental vehicle impacts. Other than the possibility of pole locations within wetlands discussed above, operation of heavy mechanized equipment is not planned within any identified wetland areas, although some construction equipment may need to cross wetland areas on construction matting if wet conditions exist at the time. Woody vegetation in wetlands will be hand-cut by chain saws or other non-mechanized techniques to avoid soils being compacted. When necessary, rubber-wheeled vehicles, or vehicles equipped with tracks, will be used to remove vegetation debris. ATSI will perform all construction work in accordance with the conditions and requirements of regulatory permits obtained for the Project.

(c) Construction Impacts on Waterbodies

The Preferred Route centerline crosses eight streams, and the Alternate Route centerline crosses six streams. Detailed information about each feature can be found in Table 8-3 in Section 4906-05-08(B)(c)(i).

Approximately 2,455 linear feet of stream are within the Preferred Route ROW, while approximately 1,337 linear feet are within the Alternate Route ROW.

No streams will be filled or permanently impacted. Some streams may have to be crossed by construction vehicles. Exact pole locations have not been determined, although preliminary locations have been identified. Access paths to proposed pole locations will be evaluated when more detailed engineering is performed and property owner negotiations progress. If a new stream crossing were necessary, it would comply with one of the following three proposed methods to cross streams:

- Temporary stream ford
- Temporary culvert stream crossings
- Temporary access bridge

Temporary stream fords are proposed for crossing low quality ephemeral and intermittent streams with a drainage basin less than 1 square mile. This will involve minimum clearing necessary to gain access to the stream and for passage of construction vehicles.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting rather than grubbing to promote revegetation after construction.
- Sediment-laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management devices. Silt fences will be used as needed according to local topographic conditions.
- Following completion of the work, the areas cleared for the temporary access crossing will be stabilized through plantings of woody species where appropriate. Areas of exposed soil will be stabilized in accordance with the stormwater pollution prevention plan (SWPPP) for the Project.

Culvert stream crossings may be required for crossing marginal quality perennial, ephemeral, and intermittent streams with a drainage basin of less than 1 square mile. These crossings may be removed or remain in place to provide maintenance access to the line (critical if service is to be reliable). Based on preliminary access road design, culvert stream crossings appear to be unlikely; however, if needed Section 404/401 permitting approval would be obtained from the appropriate

agencies prior to installation. The Preferred route is located within an OEPA Nationwide Permit Eligible area for stream impacts.

- Stream disturbance will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand-cutting techniques rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff will be controlled to minimize its flow from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management devices. Silt fence will be used as needed according to local topographic conditions.
- Culvert pipes will be placed on the existing streambed to avoid a drop or waterfall at the downstream end of the pipe, which would be a barrier to fish migration. Crossings will be placed in shallow areas rather than pools.
- Culverts will be sized to be at least three times the depth of the normal stream flow at the crossing location.
- There will be a sufficient number of culvert pipes to cross the stream completely with no more than a 12-inch space between each one.
- Stone, rock, or aggregate of ODOT number 1 as a minimum size will be placed in the channel, and between culverts. To prevent washouts, larger stone may be used with gabion mattresses. No soil will be placed in the stream channel.
- After construction is complete, some rock aggregate and structures such as culvert pipes used for the crossing will be left in place if approved by the property owner. Care will be taken so that aggregate does not create an impoundment or impede fish passage. Structures such as gabion mattresses will be removed.
- Stream banks will be stabilized, and woody species planted as appropriate.

Temporary access bridges or culvert stream crossings will be used for high quality perennial, ephemeral, and intermittent streams, and streams with a drainage basin greater than one-square mile.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff will be controlled to minimize flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence will be used as needed according to local topographic conditions.

- Bridges will be constructed to span the entire channel. If the channel width exceeds 8 feet, then a floating pier or bridge support may be placed in the channel. No more than one pier, footing, or support will be allowed for every 8 feet of span width. No footings, piers, or supports will be allowed for spans of less than 8 feet.
- No fill other than clean stone, free from soil, will be placed in the stream channel.

These crossings will be addressed in the Project SWPPP. Some of the access routes may be left in place for maintenance activity. Details on the proposed access road stream crossing methods will included in the SWPPP and provided to the OPSB prior to the start of construction.

Impacts to ponds are not anticipated by the construction, operation, or maintenance of the proposed transmission line. BMPs, including silt fence or filter sock, will be used as appropriate during construction to minimize runoff siltation.

(4) Operation and Maintenance Impacts on Vegetation and Surface Water

During operation of the transmission line along either of the proposed routes, the impacts on vegetation are anticipated to be minor. Periodic selective removal of vegetation that interferes with the operation of the transmission line will be required as maintenance. No impacts to streams or wetlands are anticipated as part of operations and maintenance activities.

(5) Mitigation Procedures

The following mitigation procedures will be used during construction, operation, and maintenance of the proposed Project to minimize the impact on vegetation and surface waters. A SWPPP will also be prepared and implemented and will be made available onsite during Project construction.

(a) Site Restoration and Soil Stabilization

A SWPPP will be developed specifically for the Project and specified BMPs will be implemented during construction to control erosion and sedimentation. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation. Seeding in non-wetland and non-agricultural areas is advantageous to control erosion on areas disturbed by construction activities.

(b) Contingency Plan Stream and Wetland Crossings

The Project does not include a stream or wetland crossing by horizontal direction drill. Therefore, a detailed frac-out contingency plan will not be required for the Project.

(c) Demarcation and Protection Methods

Wetlands, streams, and any other environmentally sensitive areas will be clearly staked, flagged, or fenced in accordance with the SWPPP prior to any clearing to minimize incidental impacts. BMPs such as utilization of silt fences and construction matting will be implemented as required during construction.

(d) Procedures for Inspection and Repair of Erosion Control Measures

Procedures for inspection and repair of erosion control measures, especially after rainfall events will be outlined in the SWPPP.

(e) Stormwater Runoff Measures

BMPs, including silt fence or filter socks, will be used as appropriate during construction to minimize runoff and sedimentation. Measures to divert stormwater runoff away from fill slopes and other exposed surfaces will be outlined in the SWPPP.

(f) Vegetation Protection Methods

Vegetation that occurs within wetland areas may require periodic cutting. Maintenance cutting of woody vegetation in wetland areas would occur by hand with chain saws or other non-mechanized techniques. Cutting of woody vegetation in wetlands and near stream banks will be limited to removal of only the cut back required to safely perform construction and continue operation of the transmission line. ATSI will adhere to regulatory permit requirements and conditions that will be obtained or authorized for the Project, including specifying that no mechanized clearing of vegetation be performed within the prescribed distance of a wetland or waterbody as discussed below.

(g) Clearing Methods

ATSI will not conduct mechanized clearing within 25 feet of any stream and will only clear (using hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe and reliable construction and operation of the transmission line. Selective clearing will be required to remove woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line. Where wooded wetlands occur within the ROW, the trees will be removed. Trees adjacent to the proposed transmission line ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe and reliable operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on property owner requests.

(h) Expected Use of Herbicides

Vegetation management activities may include the use of EPA-registered herbicides, in accordance with industry best management practices and property-specific easement rights. All herbicide application will be performed under the supervision of state-certified applicators according to the Manufacturer's Pesticide Label. Following tree removal, cut surfaces of stumps will have herbicide applied directly to the surface of the stump.

(C) LITERATURE SURVEY OF PLANT AND ANIMAL LIFE POTENTIALLY AFFECTED

Both the Preferred and Alternate Routes have potential habitat for wildlife species. Agency coordination has been completed for the Project. A summary of federal and state-listed species

potentially found in the Project Area can be found in Table 8-6. Details regarding protected species can be found in the next section. Details on the expected impacts of construction, operation, maintenance, and mitigation procedures can be found following the species descriptions. Lists of commercial and recreational species were created utilizing professional experience, wildlife sightings, and several field guides produced by the Ohio Department of Natural Resources - Division of Wildlife (ODNR-DOW).

(1) Project Vicinity Species Descriptions

(a) Protected Species

Separate consultation requests were submitted to the USFWS for the Preferred and Alternate Routes, and responses for both were received on September 28, 2022 (Appendix 8-2). ATSI has proposed seasonal tree clearing to be conducted between October 1 and March 31 to avoid impact to listed bat species. Based on the submitted project details and the proposed seasonal tree clearing restrictions, USFWS concluded that they do not anticipate any impact to federally endangered, threatened, proposed, or candidate species.

Separate consultation requests were submitted to ODNR for the Preferred and Alternate Routes, and responses for both were received on October 28, 2022 (Appendix 8-2). ODNR-DOW states the Project is within range of four state-listed bat species and requests conservation of trees where possible and adherence to seasonal clearing restrictions in the event trees must be cut. ATSI plans to adhere to seasonal clearing restrictions as stated above.

Based on ODNR-DOW recommendation, a desktop habitat assessment was conducted to determine if there are potential hibernaculum(a) present within 0.25-mile the Project area. Current USFWS "Range-wide Indiana Bat Survey Guidelines" were followed, and data were obtained from the ODNR Mines of Ohio Viewer, ODNR geologic maps, topographic maps, and aerial photographs. During the desktop analysis, no potential karst features were identified. The bedrock geologies in the area consist mainly of Silurian- and Devonian-age carbonate rocks and shales (ODNR DGS, 1997). Overlaying soils are generally loam or clay loam, with lesser extents of fine sand and sandy loams with some silty loams (USDA NRCS 2023). Based on the desktop habitat review, it does not appear likely that potential hibernacula exist within 0.25-mile of the Project area.

Additionally, ODNR-DOW states the Project is within range of the rayed bean and greater redhorse; ATSI will refrain from in-water work within any streams and therefore is not likely to impact these species.

The Preferred Route vicinity has record of Kirtland's snake. The DOW recommends that a habitat suitability survey be conducted by an approved herpetologist. The habitat survey will be performed in coordination with the DOW completed prior to construction and documentation will be submitted to the OPSB. Within the Alternate Route vicinity, due to the lack of observation

records for the Kirtland's snake, and the type of habitat present, this project is not likely to impact Kirtland's snake.

Both routes are within the range of the blue-spotted salamander and Blanding's turtle. ODNR states that 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 these species.

Both routes are within the range of the lark sparrow, which nests in grassland habitats with scattered shrub layers, disturbed open areas, and patches of bare soil. ODNR recommends that construction should be avoided in these habitat types during the nesting period, May 1 to July 31.

Both routes are within range of the northern harrier. ODNR states that if large marshes or grasslands will be impacted, construction should not occur in these areas from May 15 to August 1 to avoid disturbing nesting birds. Once the final route is approved, ATSI's consultant will conduct an additional review of the habitat along the route based on observations recorded during the completed ecological survey and coordinate with USFWS and ODNR-DOW for additional survey plans, if necessary.

ATSI will utilize an approximately 150-foot-wide permanent ROW for the Project, as well as approximately 25 feet temporary ROW for access roads, to allow for safe and reliable construction and operation of the transmission line and prevent encroachment. ATSI will not conduct mechanized clearing within 25 feet of any stream or wetland and will only clear (using hand cutting techniques) those trees in ecologically sensitive areas that are tall enough to have the potential to interfere with safe construction and reliable operation of the transmission line.

Table 8-6: Listed Species in the Project County (Fulton)

Common Name (Species Name) [a, b]	Federal Status [a, b]	State Status [b]	General Habitat Notes [b]	Recorded Location within Project Vicinity	Potential Habitat in Project Area
Indiana bat (*Myotis sodalis*)	Endangered	Endangered	Roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves	No records returned	Yes
Northern long-eared bat (*Myotis septentrionalis*)	Threatened	Endangered	Roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves	No records returned	Yes
Little brown bat (*Myotis lucifugus*)	NA	Endangered	Roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves	No records returned	Yes
Tricolored bat (*Perimyotis subflavus*)	NA	Endangered	Roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves	No records returned	Yes
Rayed bean (*Villosa fabalis*)	Endangered	Endangered	Perennial streams	No records returned	No unless working in streams
Greater redhorse (*Moxostoma valenciennesi*)	NA	Threatened	Perennial streams	No records returned	No unless working in streams
Kirtland's snake (*Clonophis kirtlandii*)	NA	Threatened	Wet meadows and other wetlands	Record exists within footprint of Preferred Route Field Survey Area	Yes
Lark sparrow (*Chondestes grammacus*)	NA	Endangered	Nests in grassland habitats with scattered shrub layers, disturbed open areas, and patches of bare soil. These summer residents normally migrate out of Ohio shortly after their young fledge or leave the nest.	No records returned	Potentially
Blanding's turtle (*Emydoidea blandingii*)	NA	Threatened	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.	No records returned	Potentially
Blue-spotted salamander (*Ambystoma laterale*)	NA	Endangered	Sandy soils, open breeding sites such as wet prairies, damp forested areas outside of the breeding season	No records returned	Potentially
Northern harrier (*Circus hudsonis*)	NA	Endangered	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.	No records returned	Potentially

a USFWS, 2022 b ODNR-DOW, 2022

(b) Commercial Species

The commercially important species along the proposed routes consist of those hunted or trapped for fur or other byproducts, including the following species. This information was obtained from ODNR-DOW Mammals of Ohio Field Guide (ODNR-DOW, 2016). No species-specific surveys were conducted during the field ecological surveys.

Beaver (*Castor canadensis*): Beavers are found in forested ponds, lakes, and rivers. In rivers, beavers make burrows with an underwater entrance in the riverbank. However, in streams, lakes, and ponds, beavers usually build dams that incorporate a lodge. Based on the habitat present along the routes, beavers could potentially inhabit only a few locations.

Coyote (*Canis latrans*): Historically, coyotes prefer open territory but in Ohio, they have adapted to most any habitat including forests, clearcuts, and woodlots in rural and urban areas. This species is likely found near or within the Project Area yet was not observed during field investigations.

Gray Fox (*Urocyon cinereoargentus*): The gray fox prefers wooded areas and partially open brush land with little human presence. Based on habitat present along the routes, this species could potentially be found near or within the Project yet was not observed during field investigations.

Long-tailed weasel (*Mustela frenata*): The long-tailed weasel is found in most land habitats near water but avoid dense forests. Based on habitat present along the routes, this species is potentially found near or within the Project Area yet was not observed during field investigations.

Mink (*Neovison vison*): Mink are usually found near streams, river, marshes, and lakes, especially in wooded or brushy areas. This species was not observed during the field investigations, yet potentially are found near or within the Project Area.

Muskrat (*Ondatra zibethicus*): The muskrat is an aquatic rodent, inhabiting marshes, ponds, lakes, and rivers. This species was not observed during the field investigations, but it could inhabit select locations within the Field Survey Area.

Raccoon (*Procyon lotor*): The raccoon is widespread in Ohio, including in suburban and urban areas. Raccoons prefer wooded areas with water nearby. This nocturnal species was not observed during the field investigations, but it is likely present throughout the area.

Red fox (*Vulpes vulpes*): The red fox inhabits a wide range of habitats, including mixed, cultivated, wooded areas, and brush lands. This species was not observed during field surveys, yet potentially is present near or within the Project Area.

River otter (*Lontra canadensis*): River otters live in aquatic habitats, such as rivers, lakes, and marshes. They prefer tributaries of large, clean drainages where there is minimal human

disturbance. This species was not observed during field surveys, but potentially desirable habitat is within the Project Area, and therefore, the river otter may be found in the Project Area.

Striped skunk (*Mephitis mephitis*): The skunk is an adaptable animal that occupies both rural and suburban areas. They are found in somewhat open areas including woods, grasslands, and agricultural clearings. Their dens may be located under buildings, in open fields, on hillsides, or under logs in the woods, which may have been self-created or formerly used by other animals. This primarily nocturnal species was not observed during the field investigations, but it likely inhabits areas within the Field Survey Area.

Virginia opossum (*Didelphis virginiana*): This marsupial's preferred habitat is an area interspersed with woods, wetlands, and farmland; however, they are an adaptable animal that can also be found in urban and suburban areas. This nocturnal species was not observed during the field investigations, but it likely exists within the Field Survey Area.

(c) Recreational Species

Recreational terrestrial species consist of those hunted as game. Recreational species expected to inhabit the Project Area include those listed below. This information was obtained from several ODNR-DOW field guides: Common Birds of Ohio (ODNR-DOW, 2013), Waterbirds of Ohio (ODNR-DOW, 2008), Mammals of Ohio Field Guide (ODNR-DOW, 2016), and Sport Fish of Ohio (ODNR-DOW, 2012).

(i) Fowl

American crow (*Corvus brachyrhynchos*): The American crow is found in all Ohio counties. They are able to exploit a variety of habitats but prefer rural areas with a mosaic of agricultural fields, meadows, and woodlots. American crows were observed within the Field Survey Area.

American woodcock (*Scolopax minor*): Woodcock are often found in brushy pastures and woodland borders, usually in damp areas. They are sometimes found in older woods and drier fields. This species was not observed during field surveys but has the potential to occur.

Geese: Several geese species can be found in Ohio, although typically during migration: snow geese (*Chen caerulescens*), greater white-fronted geese (*Anser albifrons*), cackling geese (*Branta hutchinsii*), and brant (*Branta bernicla*). The Canada goose (*Branta canadensis*) is commonly found throughout Ohio, both as residents and migrants. Habitat for Canada geese was observed in the Field Survey Area and Canada geese were the only wild goose species observed during field surveys.

Mourning dove (*Zenaida macroura*): Mourning doves occur in open countryside interspersed with agricultural fields, pastures, and open woods. Habitat for this species is present throughout the routes. This species was observed frequently during field surveys.

Mergansers: Several merganser species can be found in Ohio, such as the common merganser (*Mergus merganser*), red-breasted merganser (*Mergus serrator*), and hooded merganser (*Lophodytes cucullatus*). Habitat for these species includes deep open waters, marshes, and ponds. Habitat for these species is present along the routes in select areas. This species was not observed during field surveys.

Northern bobwhite (*Colinus virginianus*): The northern bobwhite can be found in open country interspersed with brushy thickets, scattered trees, grasslands, reverting fields, and pastures. This species could exist in select locations in the Project Area; however, it was not observed during field surveys.

Ring-necked pheasant (*Phasianus colchicus*): This species prefers open country with a mosaic of grasslands, overgrown fence rows, and agricultural fields. This species likely inhabits select locations in the Project Area; however, no pheasants were observed during field surveys.

Ruffed Grouse (*Bonasa umbellus*): Grouse habitat includes forests, particularly in young, scruffy clearcuts and brushy thickets. There is habitat present within the Project Area, therefore it is possible that the ruffed grouse occurs.

Teal: Several teal species could be found in Ohio; the cinnamon teal (*Anas cyanoptera*), green-winged teal (*Anas crecca*), and blue-winged teal (*Anas discors*). They are usually birds of shallow marshes, flooded fields, and well-vegetated shorelines. Habitat for these species is not present within the Field Survey Area, and no species were observed during field surveys.

Various duck species: Various duck species can be found in Ohio, most of which are present only during migration. The American black duck (*Anas rubripes*), redhead (*Aythya americana*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), canvasback (*Aythya valisineria*), and northern pintail (*Anas acuta*) are usually only found in Ohio during migration and could be found near the proposed routes at that time. The mallard (*Anas platyrhynchos*) and wood duck (*Aix sponsa*) are two duck species that regularly reside and migrate through Ohio.

- Mallard: Most mallards occupy extensive wetlands; however, they are very adaptable. Mallards can be found inhabiting small farm ponds, ditches with flowing water, streams, lakes, and ponds in urban areas. Habitat for this species does exist throughout the Field Survey Area, but this species was not observed.
- Wood Duck: The wood duck prefers mature riparian corridors, quiet backwaters of lakes, ponds bordered by large trees, and secluded wooded swamps. Habitat for this species was not present in the Field Survey Area and this species was not observed.

Wild turkey (*Meleagris gallopavo*): Wild turkeys are adaptable animals, but they prefer deciduous forests and forage in fields near woodland borders. Habitat for this species was observed in the Project Area.

(ii) Mammals

Eastern cottontail rabbit (*Sylvilagus floridanus*): This species is found in both rural and urban areas. They prefer open areas bordered by thickets or brush areas. This species' preferred habitat was found throughout the Project Area but was not observed.

Gray, fox, and red squirrels (*Sciurus carolinensis, Sciurus niger*, and *Tamiasciurus hudsonicus,* respectively): The eastern gray squirrel inhabits large expanses of deciduous forests. The fox squirrel inhabits deciduous and mixed forests but prefers more open habitats than gray squirrels. The red squirrel prefers coniferous and mixed forests and is most commonly found around mature conifers. Squirrels were observed during the field surveys.

White-tailed deer (*Odocoileus virginianus*): White-tailed deer are found in a variety of habitats, including woods, farmland, brushy areas, dense thickets, and edges. Deer were observed during the field surveys.

Woodchuck (*Marmota monax*): Woodchucks live in open grasslands, pastures, and woodlands. This species was not observed during field surveys but is likely present throughout the Project Area.

(iii) Game Fish

Based upon the hydrologic connectivity and the nature of the surface water habitats known to occur within the Project Area, diverse game fish species could potentially inhabit the larger streams and ponds within the Project Area. A list of game fish known to occur in Ohio was obtained from ODNR-DOW's Sport Fish of Ohio Identification Guide (ODNR-DOW, 2012). The list was narrowed to fish most likely to be found within the Project Area based on professional judgment and experience, and as such, the list of species presented in this section is not an exhaustive list of all species potentially present in the Project Area. The listed species are known to be regionally common and likely to occur on a case-by-case basis, within the surface water features proposed to be crossed or encroached. Neither aquatic species nor habitat surveys were completed as part of the field surveys.

Black crappie (*Pomoxis nigromaculatus*): Black crappie are widely distributed throughout Ohio and generally prefer clear water habitats with abundant aquatic vegetation, such as streams and ponds.

Bluegill (*Lepomis macrochirus*): Bluegill are found throughout Ohio but prefer clear ponds and lakes with rooted vegetation.

Bullhead Catfish (*Ameiurus* spp.): Bullhead catfish are common throughout Ohio. Brown bullheads prefer clean, clear water with little vegetation, while black bullheads can tolerate more turbid water. Yellow bullheads prefer areas with heavy vegetation.

Common Carp (*Cyprinus carpio*): Carp can be found in throughout Ohio, preferring turbid waters rich in organic matter.

Green Sunfish (*Lepomis cyanellus*): Green sunfish are present in most lakes and streams throughout Ohio and tolerate turbid water. They are regularly associated with structure such as brush, vegetation, or rocks.

Largemouth Bass (*Micropterus salmoides*): Largemouth bass are found in ponds, lakes, and slow sluggish streams throughout Ohio.

Pumpkinseed (*Lepomis gibbosus*): Pumpkinseed sunfish are widespread in waterways that drain to Lake Erie and prefers still waters with dense submerged vegetation.

Rock bass (*Ambloplites rupestris*): Rock bass are widespread throughout Ohio and prefer clear streams with coarse gravel and boulders.

White Crappie (*Pomoxis annularis*): White crappie inhabit larger ponds, lakes, and rivers throughout Ohio and tolerate a variety of habitats and conditions including turbidity and silt. Construction Impacts on Identified Species

Based on the nature of the proposed Project activities and habitat characteristics of the surrounding vicinity, construction impacts to protected species are not anticipated. Winter tree clearing (October 1 through March 31) will avoid impacts to bat species, and no in-water work will occur in perennial streams from April 15 through June 30 to prevent impacts to indigenous aquatic species. Additionally, ATSI has proposed to minimize impacts to wetlands and other water resources to the fullest extent possible through avoidance where possible and the utilization of BMPs to minimize erosion and sedimentation. ATSI will communicate with USFWS and ODNR regarding specific construction requirements, including specific recommendations for avoiding species specific habitat impacts if specified during coordination with USFWS or ODNR. The impact on other specific identified species (recreational and commercial) is expected to be minor due to avoidance of impacts during Project planning, the utilization of BMPs during Project construction, and the mobility of the listed recreational or commercial species.

(2) Operation and Maintenance Impacts on Identified Species

Minimal impacts are anticipated to protected wildlife during operation and maintenance of the transmission line. Clearing of secondary growth vegetation will be required along some portions of the ROW for either of the proposed routes. Undeveloped land (woodlots) totals approximately 2.8 percent of the Preferred Route and approximately 3.6 percent of the Alternate Route. Operational activities and periodic maintenance of the ROW are not anticipated to impact wildlife significantly because of the minimal permanent ground disturbance and available adjacent habitat available.

(3) Mitigation Procedures

If areas are identified during the informal consultation process with USFWS and ODNR that are of special concern, ATSI will coordinate with these agencies to develop appropriate mitigation measures. The mitigation measure will be implemented if the area of special concern is located within the route approved by the OPSB.

(D) SITE GEOLOGY

(1) Site Geology

The Project is located within the Maumee Lake Plains and Maumee Sand Plains regions of the Huron-Erie Lake Plains section, within the Central Lowland province. The Maumee Lake Plains region is a flat-lying Ice Age lake basin with beach ridges, bars, dunes, deltas, and clay flats, elevations ranging from 800 to 1,400 feet, and very low relief. It contained the former Black Swamp and is now slightly dissected by modern streams. The Maumee Sand Plains region is a lacustrine plain mantled by sand with elevation ranging from 600 to 800 feet, has very low relief, and is well to poorly drained. It includes low dunes, inter-dunal plains, beach ridges, and sand sheets of glacial lakeshores (ODNR-DGS, 1998).

Soils are primarily loams and sandy loams, with minor amounts of fine sands, clay loams, silty clay loams, and silt loams (USDA NRCS, 2023). The parent materials of these soils are primarily:

- Outwash (Brady, Digby, Gilford, Millgrove, Perrin Groups, and outwash over till [Rawson])
- Till (Boyer [over outwash], Glynwood, Hoytville, Nappanee)
- Glaciolacustrine (Colwood, Ottokee, Tedrow, and Tuscola; as well as Rimer, Haskins, Wauseon, and Mermill [all over till])
- Beach Sand and/or Eolian Deposits (Colonie, Oakville, and Seward)
- Alluvium (Shoals and Sloan)
- And Glaciofluvial (Dixboro)

The most prevalent parent material in the study area is till (over 40 percent) followed by glaciolacustrine (nearly 38 percent) (USDA NRCS, 2022).

The Project is underlain by Pleistocene-age silt, clay, and wave-planed clayey till over Silurian and Devonian-age carbonate rocks and shales, and by Late Wisconsinan-age sand over clay till and lacustrine deposits with deeply buried Silurian- and Devonian-age carbonate rocks and shales (ODNR-DGS, 1998).

(2) Slopes and Foundation Soil Suitability

No slopes exceed 12 percent along the Preferred Route or the Alternate Route (USDA NRCS, 2023).

The bedrock geologies in the area consist mainly of Silurian- and Devonian-age carbonate rocks and shales (ODNR DGS, 1998). Overlaying soils are generally loam (approximately 50 percent of the Routes) or clay loam (nearly 30 percent of the Routes), with lesser extents of fine sand and sandy loams with some silty loams (USDA NRCS 2023). To obtain further site-specific details on the suitability of the soils for foundation construction, ASTI will conduct detailed engineering design and geotechnical soil borings. Engineering design and geotechnical test drilling will likely be completed soon after the Project is certificated by the OPSB, and engineering plans and boring logs will be provided to the staff shortly thereafter.

ATSI anticipates that foundations will only be required at some angle structures that will be ultimately determined during the engineering design. When required, foundations will be engineered based on the results of geotechnical soil boring and laboratory test results to ensure they are sited in locations considered suitable based on soil and rock properties and surface slope.

(E) ENVIRONMENTAL AND AVIATION REGULATION COMPLIANCE

(1) Licenses, Permits, and Authorizations Required for the Facility

ASTI anticipates submitting a Notice of Intent for coverage under the OEPA General National Pollutant Discharge Elimination System (NPDES) Permit. Coverage under USACE's Nationwide Permit 12 for wetland and waterbody impacts associated with Utility Line Activities may be required but will be determined once the construction plan is finalized and impacts to waters can be determined. It is also anticipated that multiple road crossing permits from Ohio Department of Transportation and the Ohio Turnpike Commission will be required.

(2) Construction Debris

The site will be kept clean of debris resulting from the work. Debris associated with construction of the proposed transmission line will likely include conductor scrap, construction material packaging including cartons, insulator crates, conductor reels and wrapping, and used stormwater erosion control materials. Clearance poles, conductor reels and other materials with salvage value will be removed from the construction area for reuse or salvage. Construction debris will be disposed of in accordance with state and federal requirements in an OEPA-approved landfill or other appropriately licensed and operated facility. Where vegetation must be cleared, the resulting brush will be removed or windrowed along the edge of the ROW or as requested by individual property owners. Marketable timber will generally be cut into appropriate lengths for sale or disposition by the property owner.

(3) Stormwater and Erosion Control

ATSI will prepare a SWPPP and implement BMPs to minimize soil erosion and sedimentation and other pollutant discharges; both will be available onsite during Project construction. The SWPPP will include the following General Conditions, at a minimum:

Erosion and Sediment Controls

Implementation of erosion and sediment control practices will be based on the methods and standards described in the ODNR *Rainwater and Land Development* manual (ODNR, 2018); and the OEPA NPDES Permit Program for the discharge of stormwater from construction sites.

Wetlands, streams, and other environmentally sensitive areas will be clearly marked before the start of clearing or construction. No construction or access will be permitted in these areas unless specified in the SWPPP.

No permanent impacts to streams or headwaters are anticipated. No transmission poles are anticipated to be located in streams and no permanent stream crossings are anticipated. Streams, including beds and banks, if disturbed during construction, will be re-stabilized immediately after in-channel work is completed.

Although grubbing activities are not anticipated, sediment basins, traps, and perimeter sediment controls will be implemented within 7 days of any potential grubbing activities. Sediment controls will continue to function until disturbed areas are permanently stabilized.

Silt Fence: Silt fencing or other appropriate BMPs for erosion control will be installed as needed before ground-disturbing work begins. Silt fence will be installed according to the methods recommended in the *Rainwater and Land Development* manual (ODNR, 2018) before upslope land disturbance begins. In general, silt fence will be used where there is the possibility that sheet flow will carry sediment-laden water into downstream creeks or wetlands. Other methods will be used where flow in ditches, channels, or gullies is anticipated. The following installation guidelines will be followed:

- Silt fence will be constructed before upslope land disturbance begins.
- All silt fences will be placed as close to the contour as possible so that water will not concentrate at low points in the fence and so that small swales or depressions that may carry small, concentrated flows to the silt fence are dissipated along its length.
- Ends of the silt fences will be brought upslope slightly so that water ponded by the silt fence will be prevented from flowing around the ends.
- Silt fences will be placed on the flattest area available.
- Where possible, vegetation will be preserved for 5 feet (or as much as possible) upslope from the silt fence. If vegetation is removed, it will be reestablished within 7 days from the installation of the silt fence.
- The height of the silt fence will be a minimum of 16 inches above the original ground surface.
- The silt fence will be placed in an excavated or sliced trench cut a minimum of 6 inches deep. The trench will be made with a trencher, cable laying machine, slicing machine, or other suitable device that will ensure an adequately uniform trench depth.

- The silt fence will be placed with the stakes on the downslope side of the geotextile. A minimum of 8 inches of geotextile will be below the ground surface. Excess material will lay on the bottom of the 6-inch deep trench. The trench will be backfilled and compacted on both sides of the fabric.
- Seams between sections of silt fence will be spliced together only at a support post with a minimum 6-inch overlap prior to driving into the ground.

Soil Stabilization: Disturbed areas that remain unworked for more than 21 days will be stabilized with seed and mulch no later than 14 days after the last construction in that area.

Maintenance and Inspection: Erosion and sediment control practices will be inspected at least once every 7 days and within 24 hours after any storm event greater than 0.5 inch of rain per 24-hour period.

ATSI will maintain erosion control measures in good working order. If a repair is necessary, it will be initiated within 24 hours of report. Silt fencing will be inspected for depth of sediment, for tears, for assurance fabric is securely attached to the fence posts, and to ensure that the fence posts are firmly in the ground. Seeded areas will be inspected for evidence of bare spots or washouts. Permanent records of the maintenance and inspection must be maintained throughout the construction period. Records will include, at a minimum, the name of the inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

A stormwater detention basin will be required for the proposed Melbourne Substation. This stormwater basin is currently being designed and will be included in the SWPPP.

(4) Disposition of Contaminated Soil and Hazardous Materials

All materials stored onsite will be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Products will be kept in their original containers with the original manufacturer's label. Manufacturer's recommendations for proper use and disposal will be followed. Material Safety Data Sheets (MSDS) or Safety Data Sheets (SDS) will be retained and available onsite at all times.

The following General Conditions will also be included in the SWPPP to address disposition of contaminated soil and hazardous materials generated or encountered during construction:

The following spill prevention methods and procedures are proposed:

- All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.
- Secondary containment will be provided for all onsite fuel storage tanks required during construction.

- All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.
- All spills will be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup will be followed. Materials and equipment necessary for spill cleanup will be kept in a designated storage area onsite.
- Spills will be reported to the appropriate government agency as required.
- Suspected hazardous materials encountered during construction will be reported to the regional environmental coordinator by the transmission construction representative. In addition, the Project Manager will be notified.

(5) Maximum Height of Above Ground Structures

The height of the tallest anticipated aboveground structure and construction equipment is designed to be approximately 225 feet. The nearest airport, the Fulton County Regional Airport, located northwest of Delta, Ohio, is approximately 5 miles from the western end of the Project area. The Toledo Express Airport is located approximately 3.8 miles east of the eastern end of the Project area.

The Federal Aviation Administration (FAA) Form 7460-1, "Notice of Proposed Construction or Alteration," is used for FAA notification. This can be filed electronically or by standard U.S. mail. A 7.5-minute quadrangle topographic map showing the proposed construction must be attached to the completed Form 7460-1. The Form 7460-1 must be submitted 45 days prior to the proposed start of construction.

Additionally, a permit from the Ohio Department of Transportation, Office of Aviation, must be obtained prior to the start of any construction on or near airports in Ohio that are open to the public. A duplicate of the federal filing fulfills the state permit application requirements as set forth in OAC 5501:1-10-06.

(a) Filing Criteria

The FAA Form 7460-1 must be filed for any construction or alteration of more than 200 feet in height. Additionally, any construction or alteration extending outward and upward more than specific slope angles in reference to aircraft take-off or landings on airport runways may require filing with the FAA. With the highest structure estimated at 225 feet, ATSI anticipates filing Form 7460-1 with the FAA. The FAA will subsequently determine any marking and lighting requirements.

(6) Dusty or Muddy Conditions Plan

(a) Dust Control

The site and surrounding areas will be kept as free from dust as reasonably possible for given meteorological and site conditions during construction and operation. During excessively dry

periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

(b) Excessive Muddy Soil Conditions

Construction entrances will be established and maintained to a condition that will prevent tracking or flowing of sediment onto public ROW. Accumulated sediment spilled, dropped, washed, or tracked onto public ROWs will be removed as soon as practical.

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Figures

Fulton-North Star Steel 345kV T-Line
Dowling-Fulton 345 kV Transmission Line
Fulton Substation
Delta Substation
Sydney Substation
Proposed Melbourne Substation
8-2A
8-2B
8-2C
8-2D
8-2E
8-2F
8-2G
8-2H
8-2I
8-2J
8-2K
8-3A
8-3B
8-3C
8-3D
8-3E
8-3F
8-3G
8-3H
8-3I
8-3J
8-4
Wiqameg
Branch
Swan Creek
PIKE
FULTON
Sandpit
Radio Tower
FRANKFORT
TURNPIKE
Delta
West Delta
Delta Wings Airport
South Delta
Dry Bad Creek
Grieser Airport
YORK
SWAN CREEK
FULTON CO
LUCAS CO
MSF
MAUMEE STATE FOREST

LOCATOR MAP

LEGEND:

- Existing Substation
- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Extension Line (Future Filing)
- Tie Line (Preferred and Alternate Routes)
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Existing 138 kV T-Line
- Figure Key

BASE MAP SOURCE:
Esri USA Topo Map
USGS 7.5 Minute
Topograch Quadrangles:
Delta and Swanton

Coordinate System: State Plane
Ohio North FIPS 3401 Feet
Datum: NAD 1983
Scale: 1:24,000

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FIGURE 8-1
WETLAND AND WATERBODY OVERVIEW MAP

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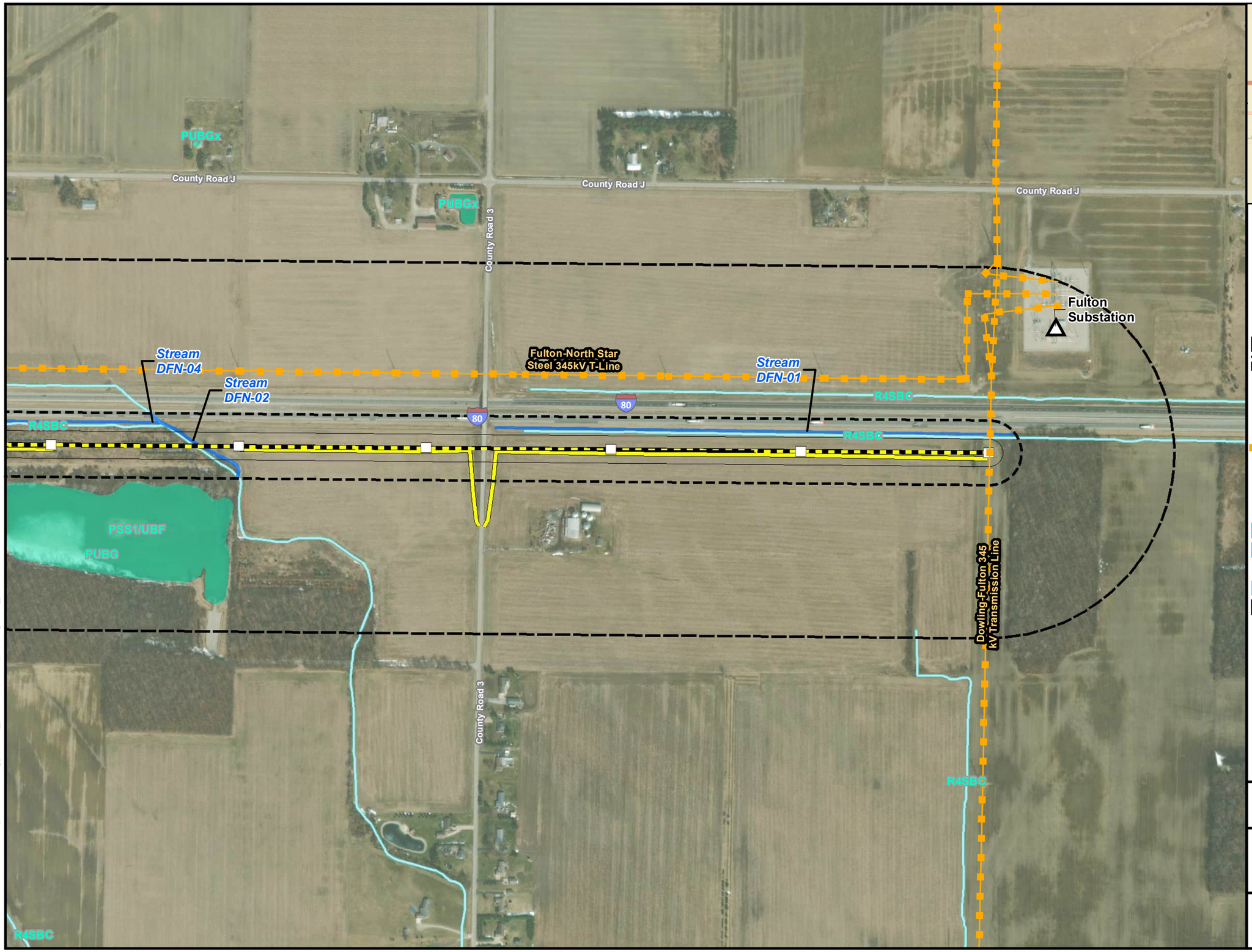

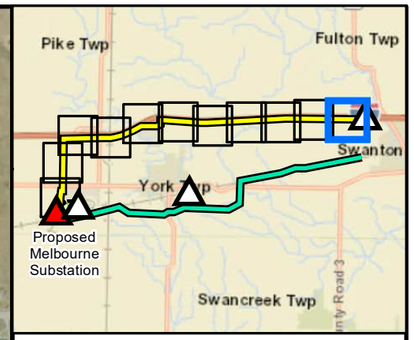

LEGEND:

- Existing Substation
- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2A
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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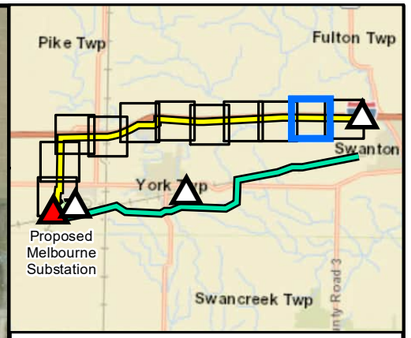

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2B
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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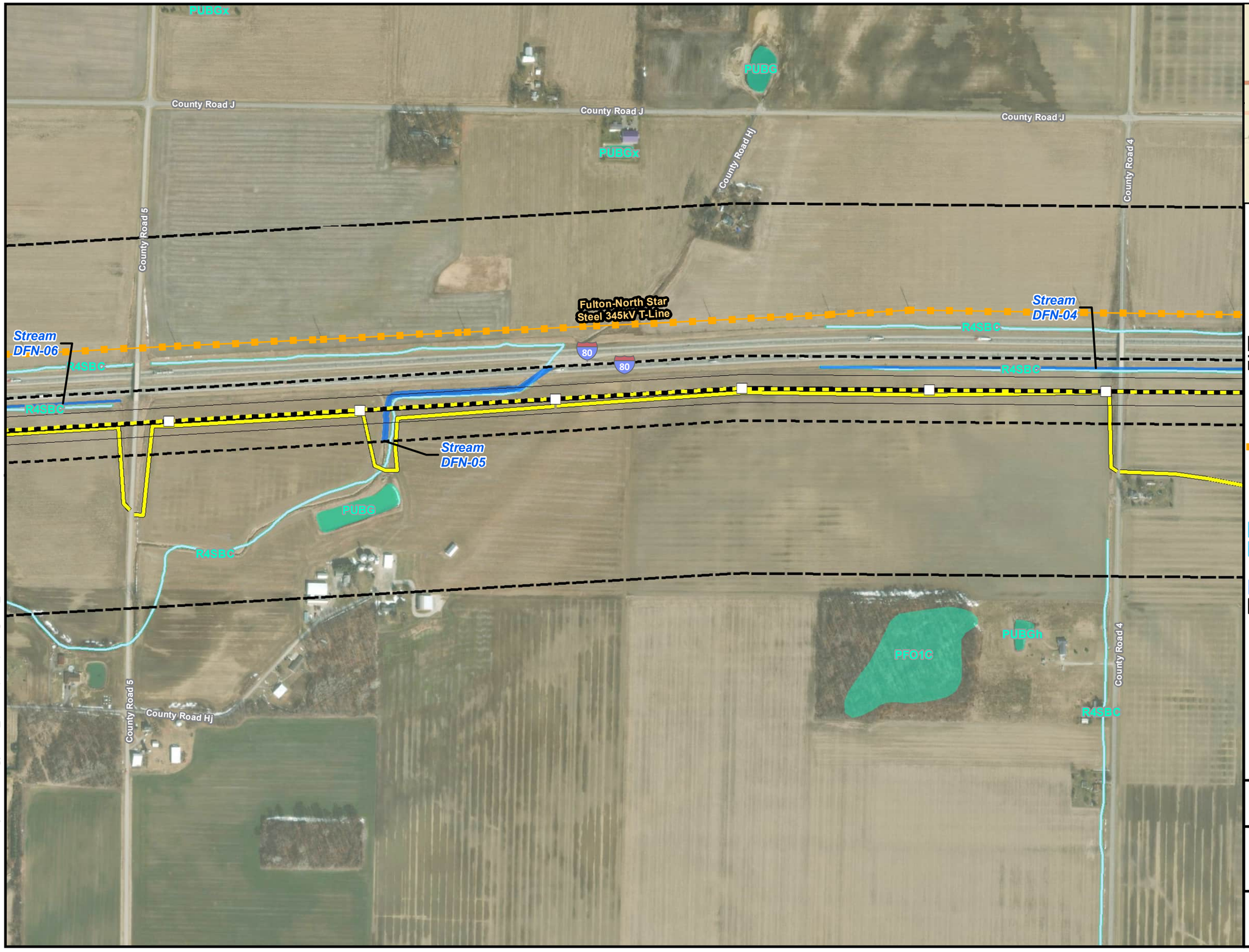

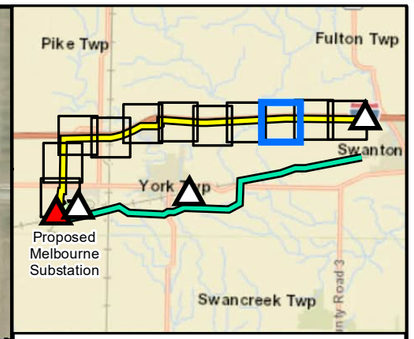

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2C
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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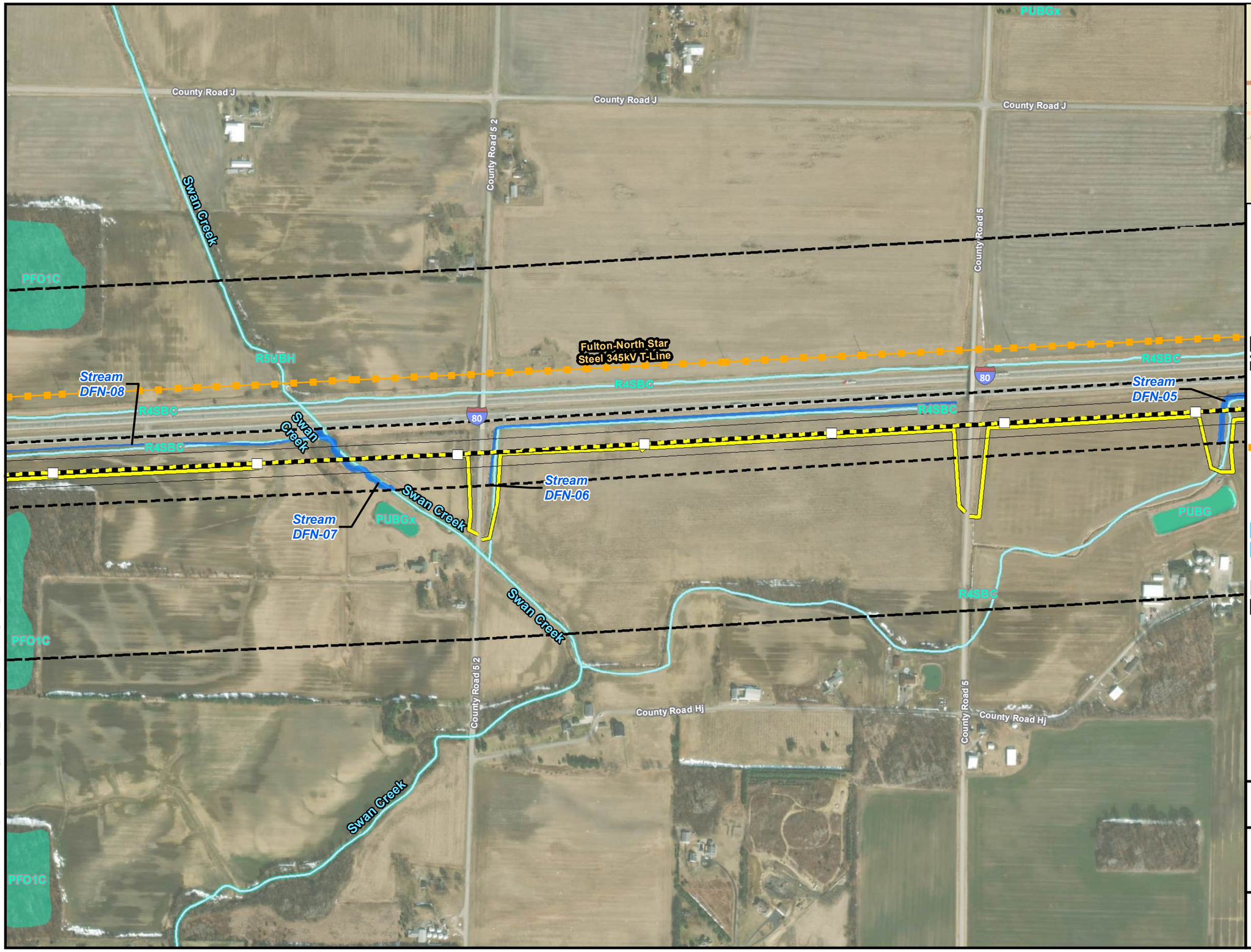

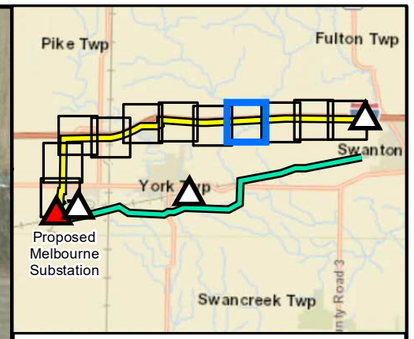

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2D
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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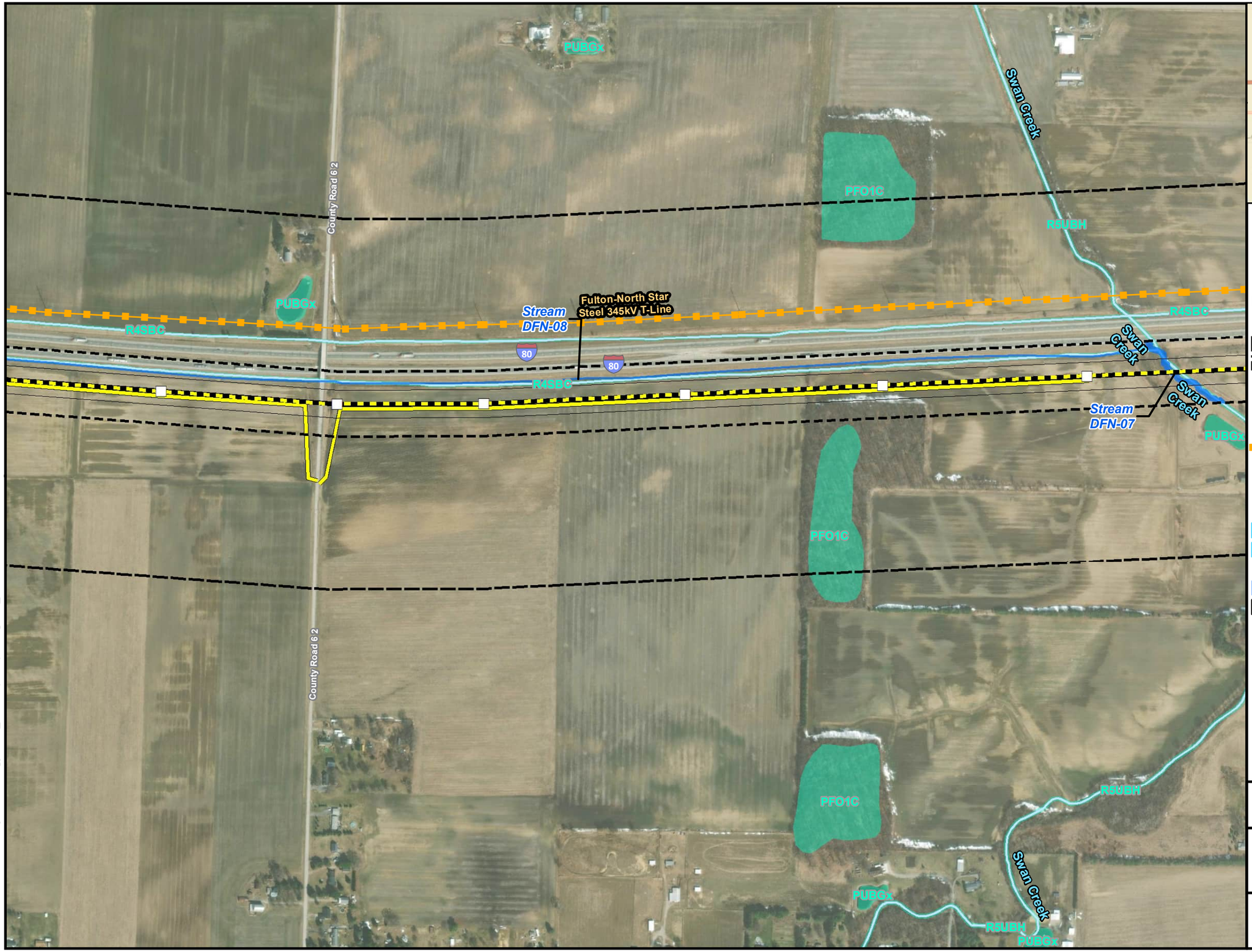

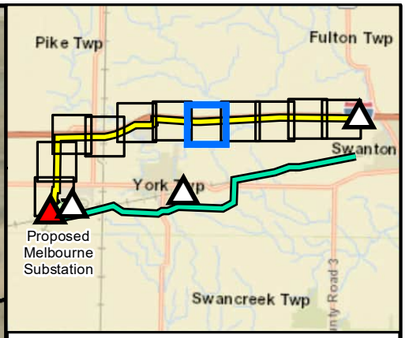

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2E
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

0 500 1,000
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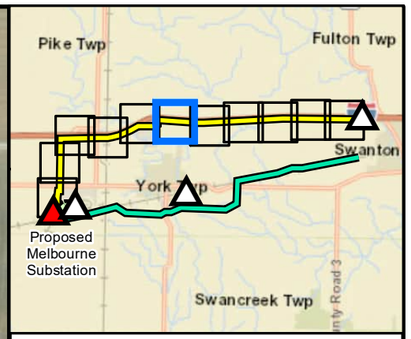

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
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Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2F
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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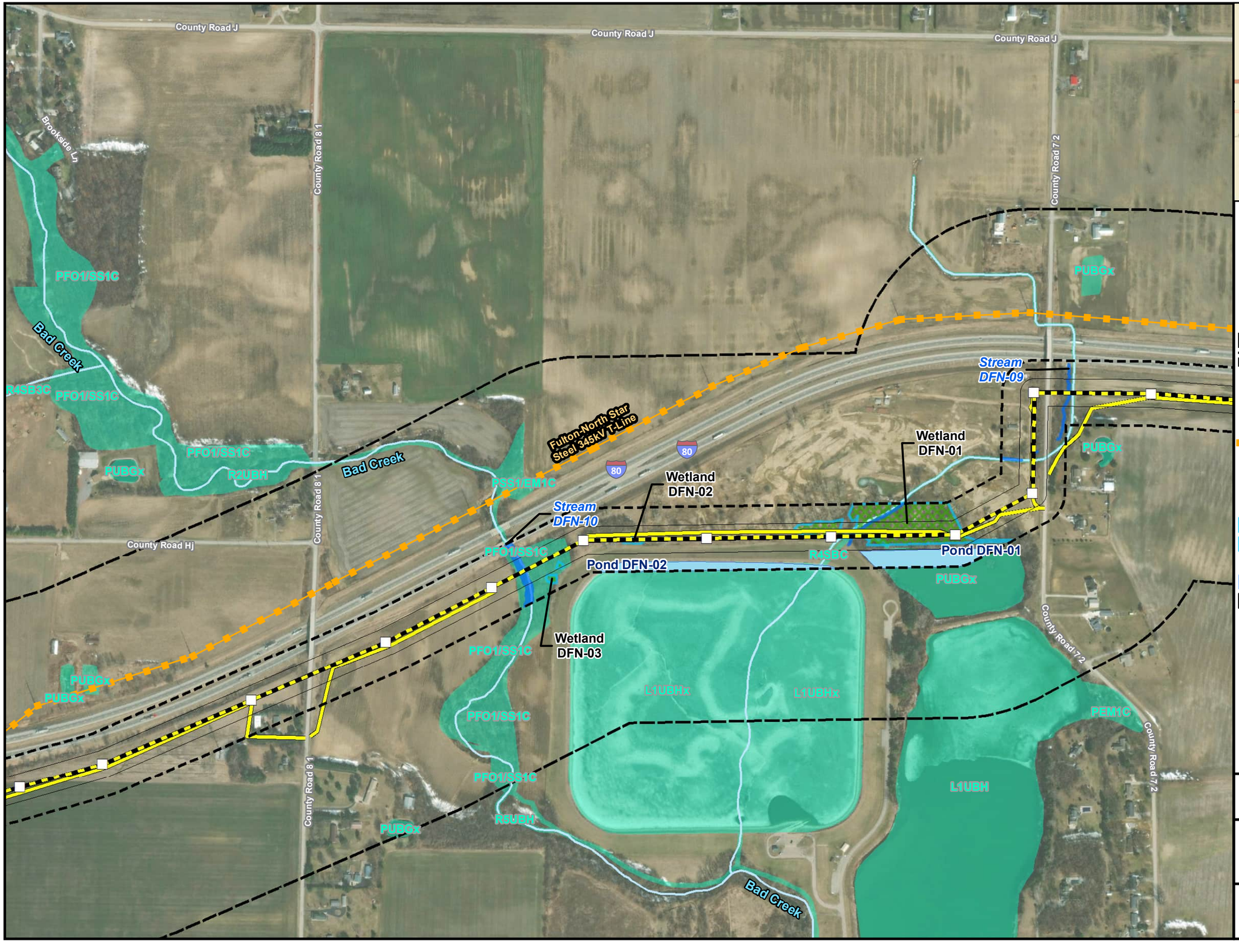

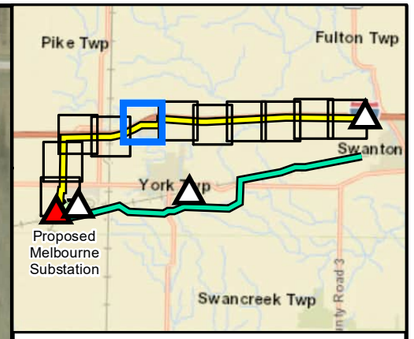

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2G
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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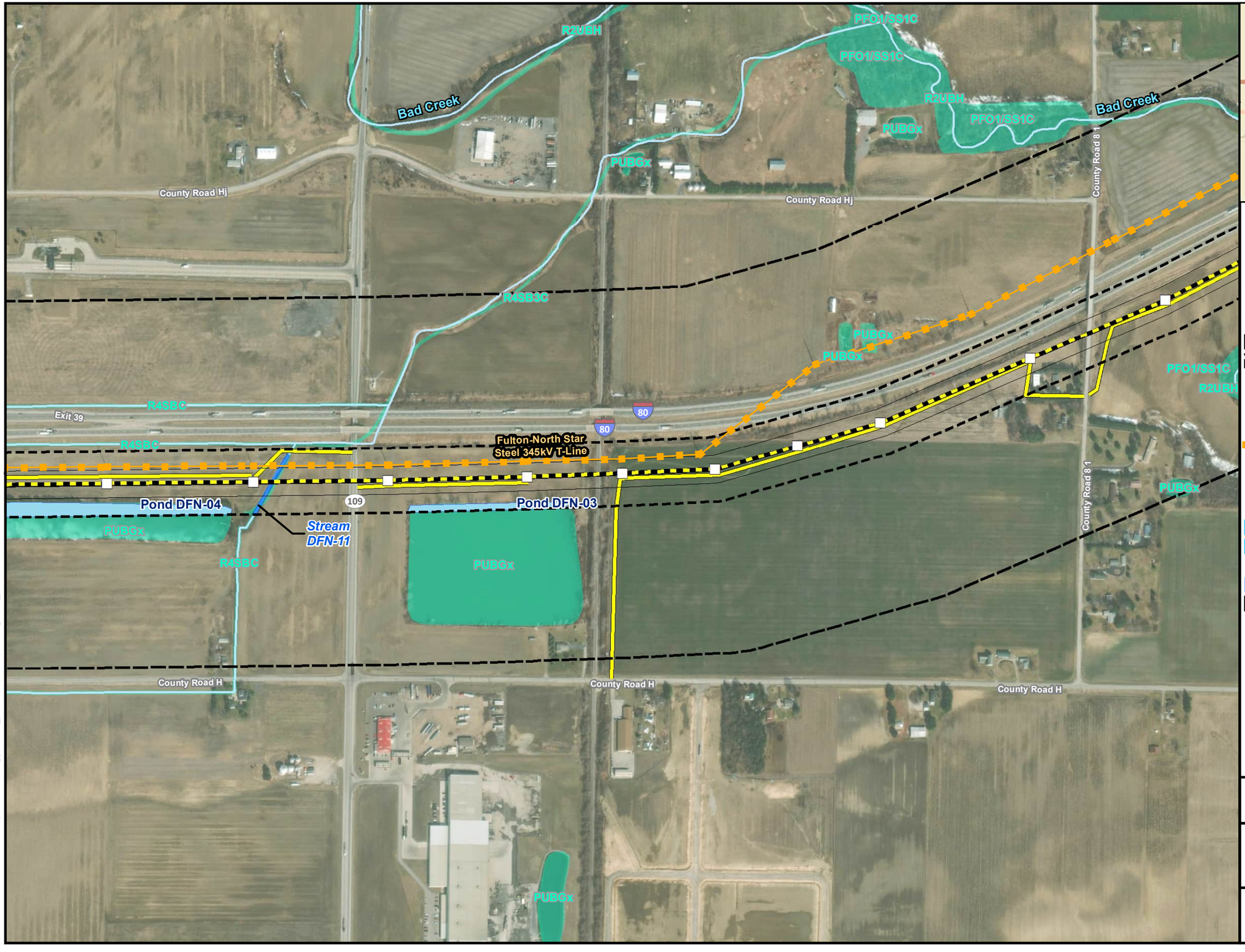

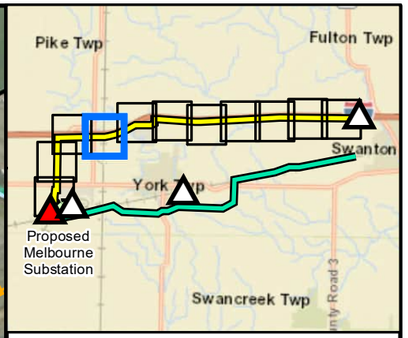

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2H
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

0 500 1,000
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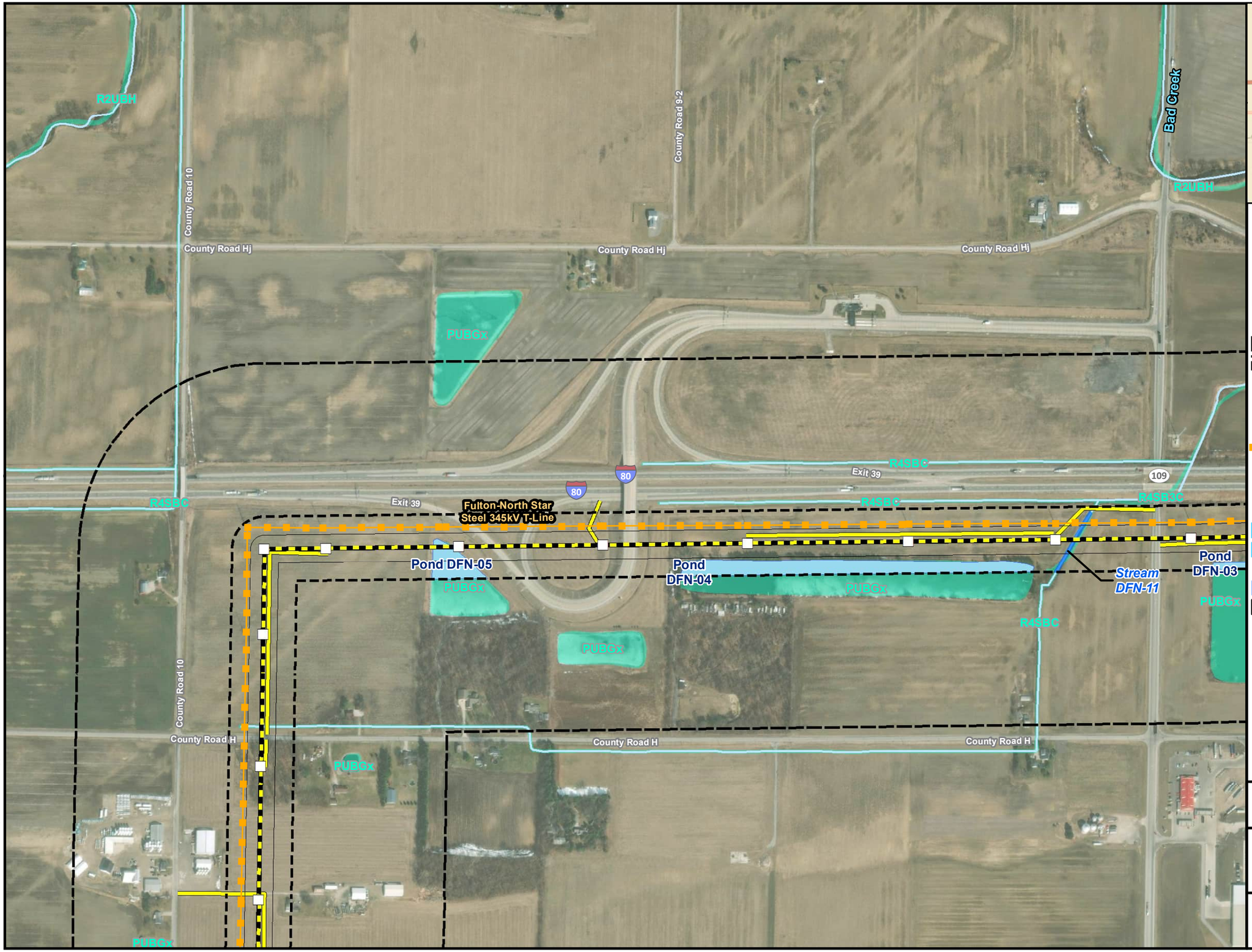

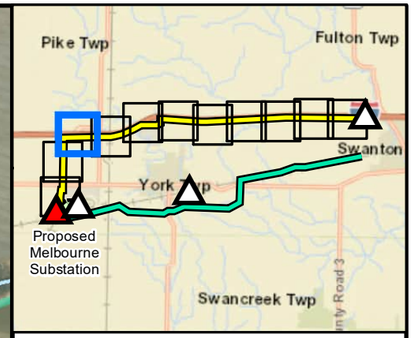

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2I
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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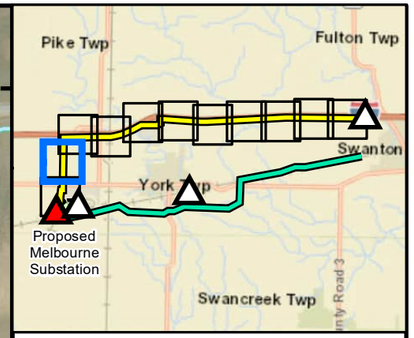

LEGEND:

- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Existing 345 kV Transmission Line
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2J
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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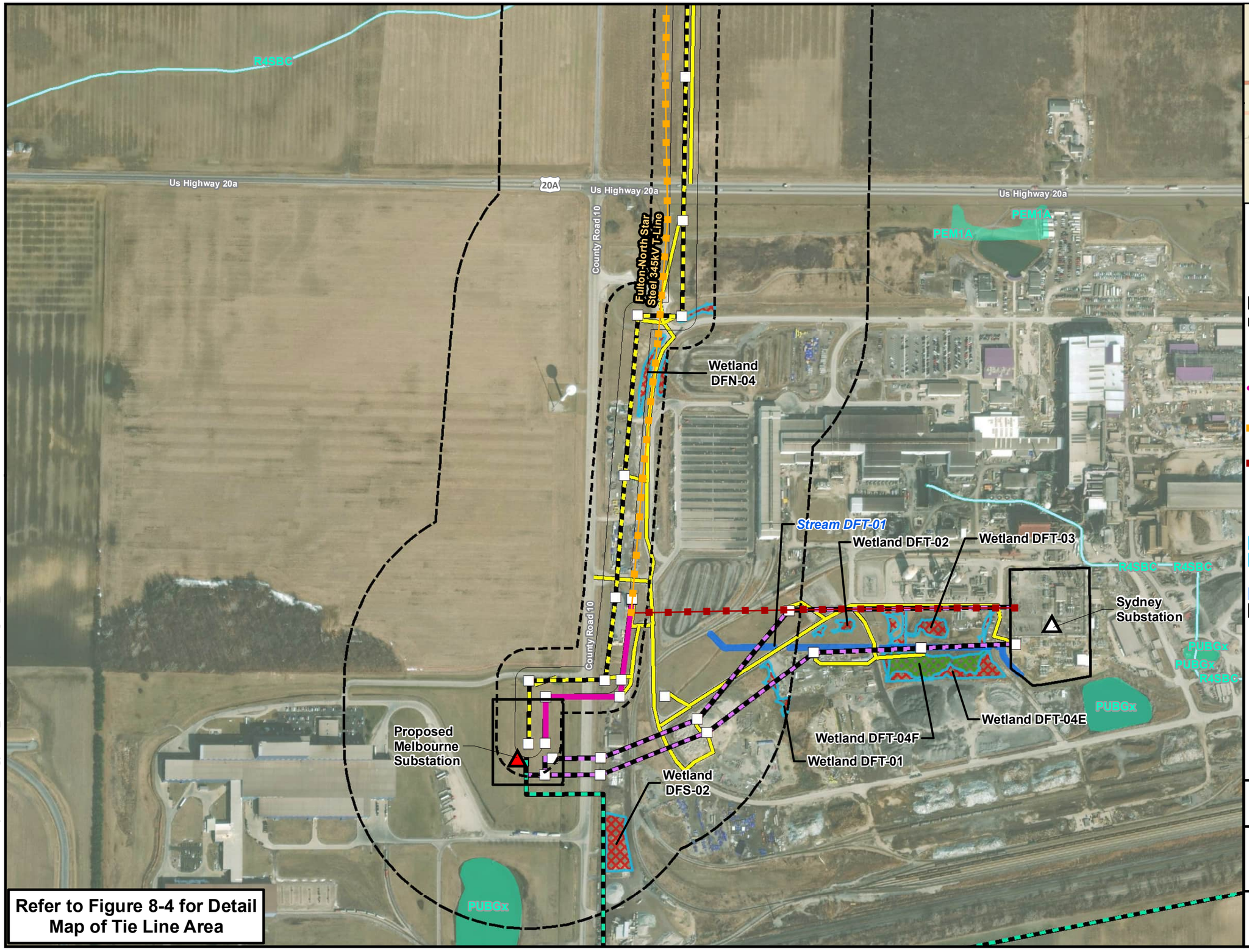

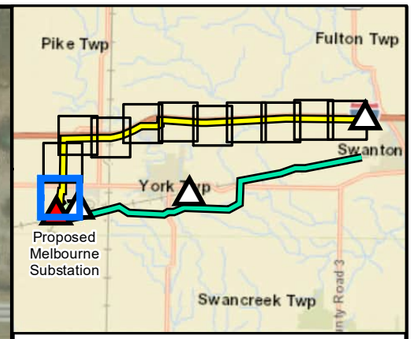

LEGEND:

- Existing Substation
- Proposed Melbourne Substation
- Preliminary Proposed Structure
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Extension Line (Future Filing)
- Tie Line (Preferred Route)
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Proposed Access Road
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-2K
PREFERRED ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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FEET

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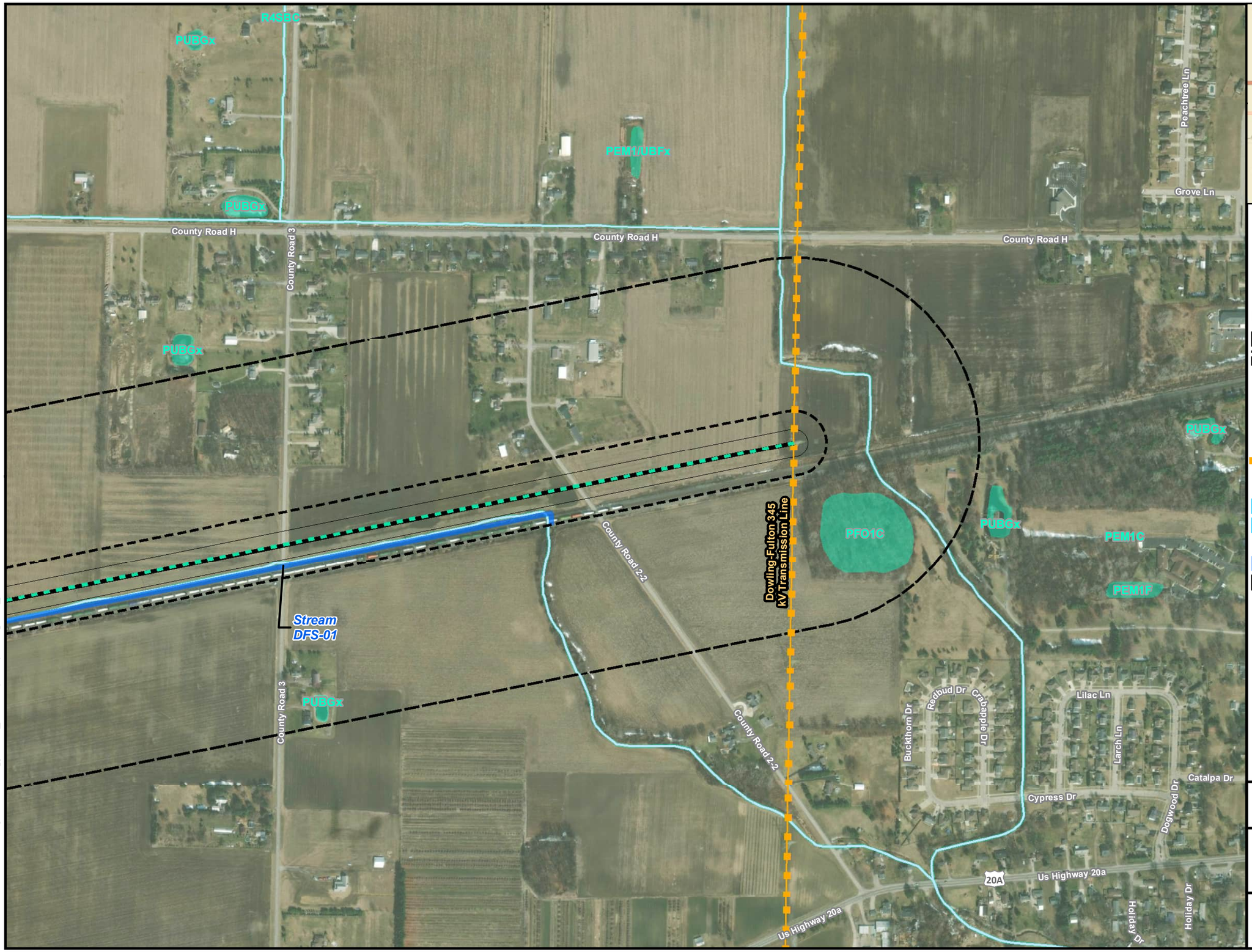

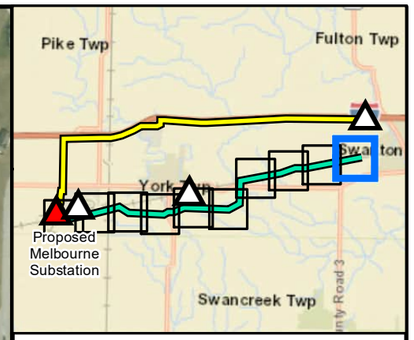

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Existing 345 kV Transmission Line
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-3A
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

0 500 1,000
FEET

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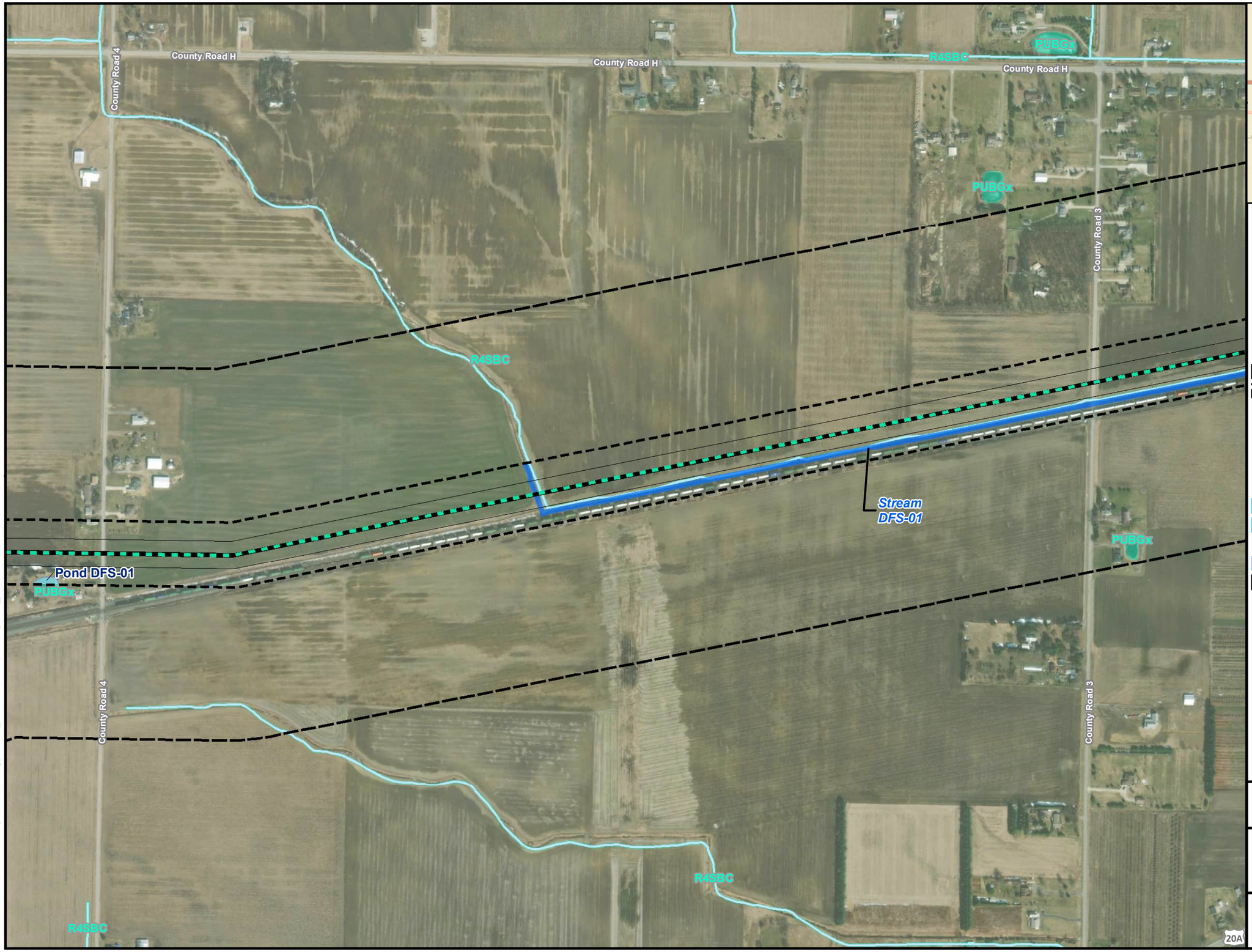

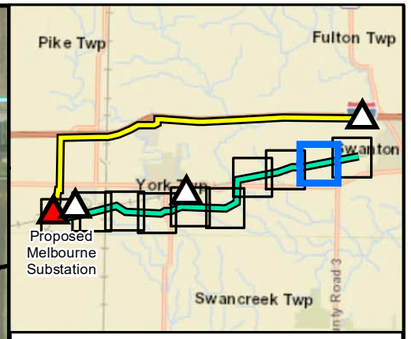

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-3B
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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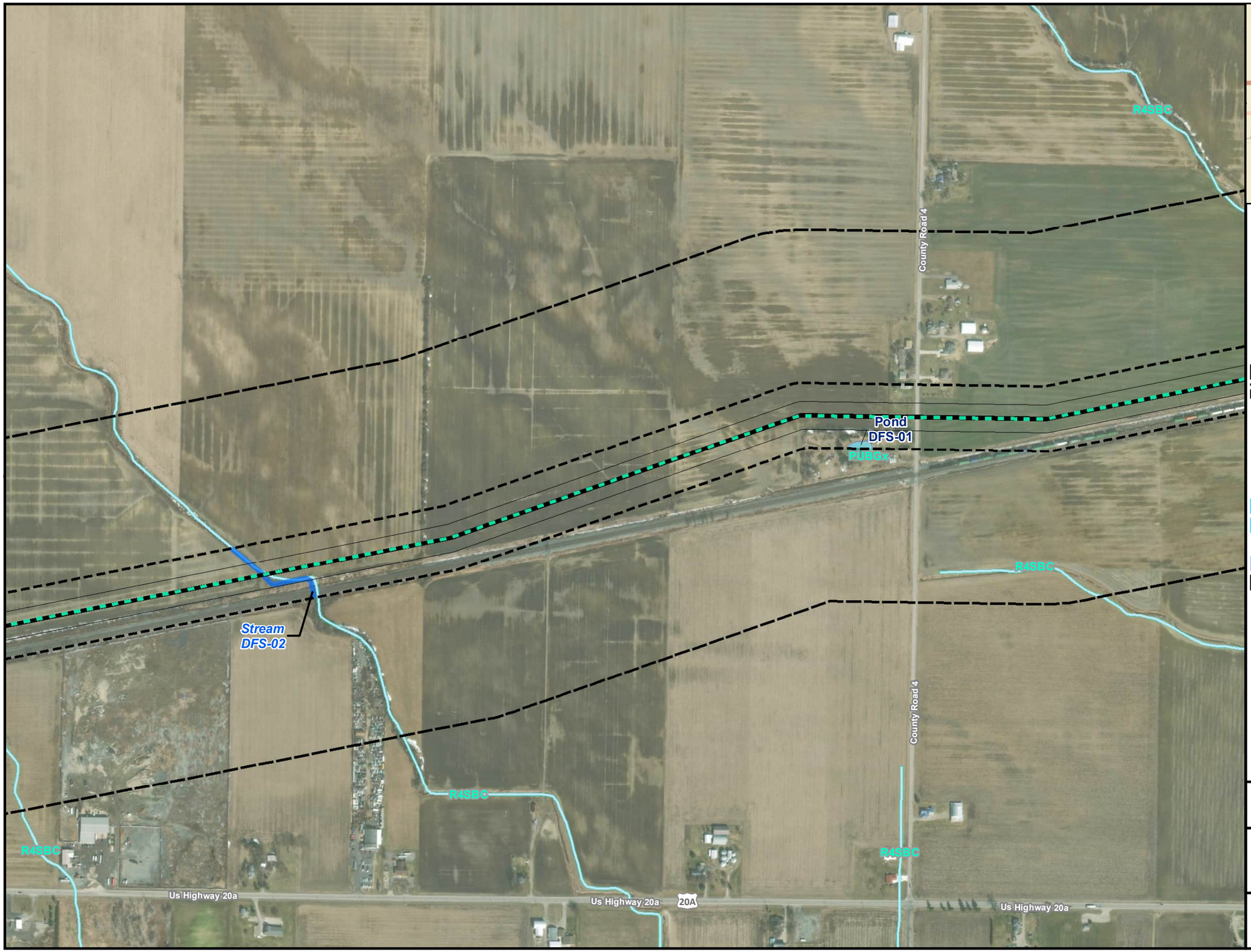

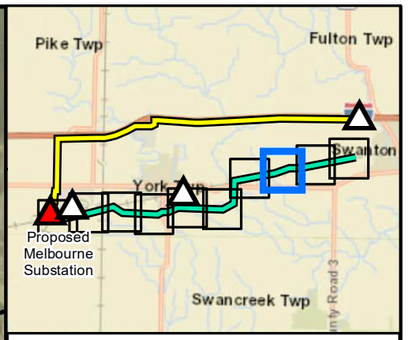

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-3C
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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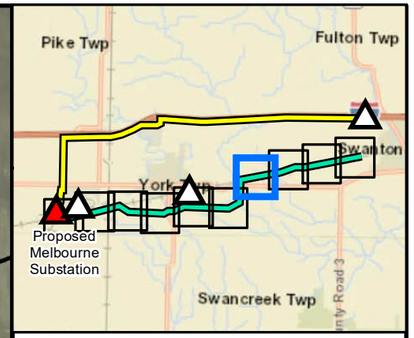

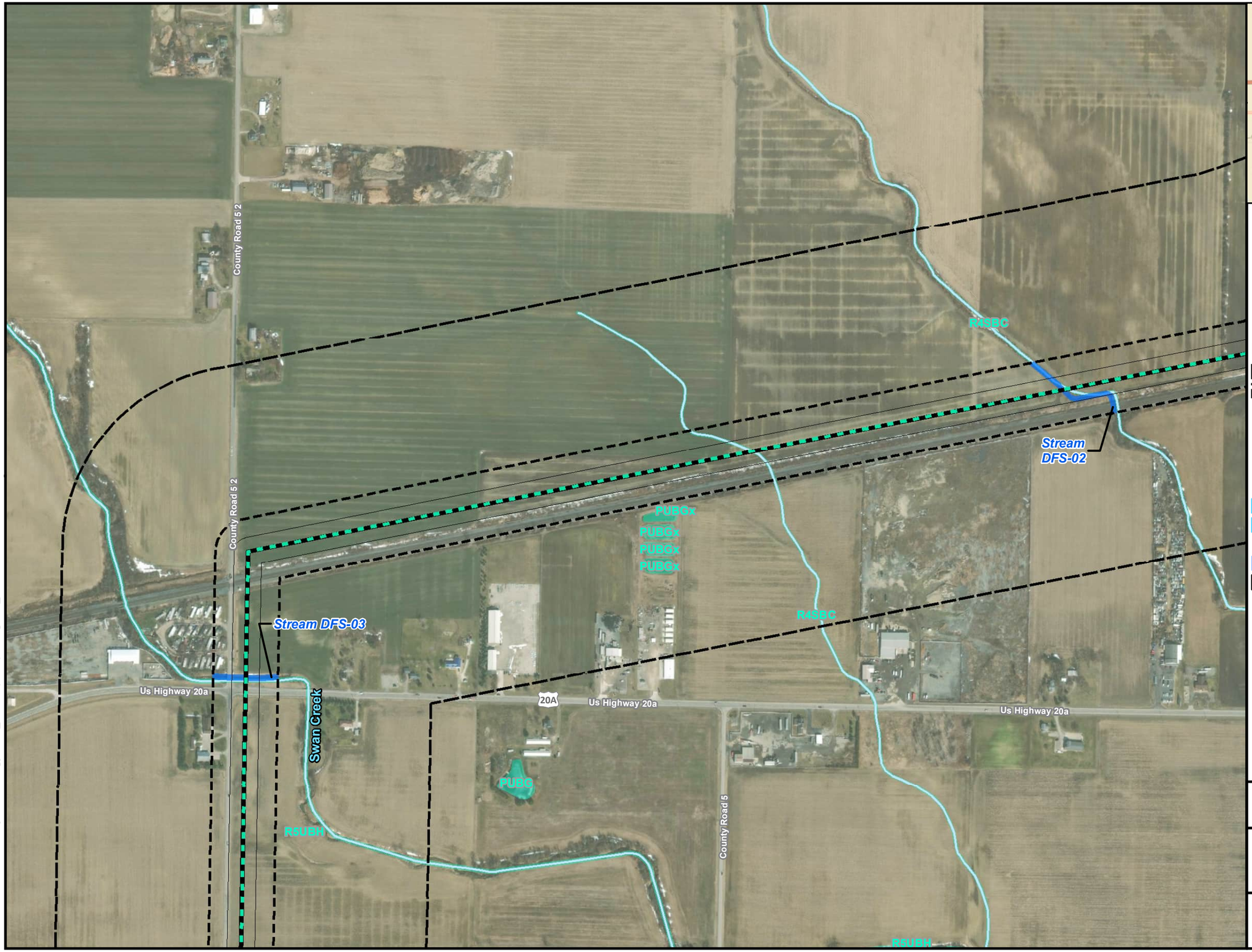

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

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Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-3D
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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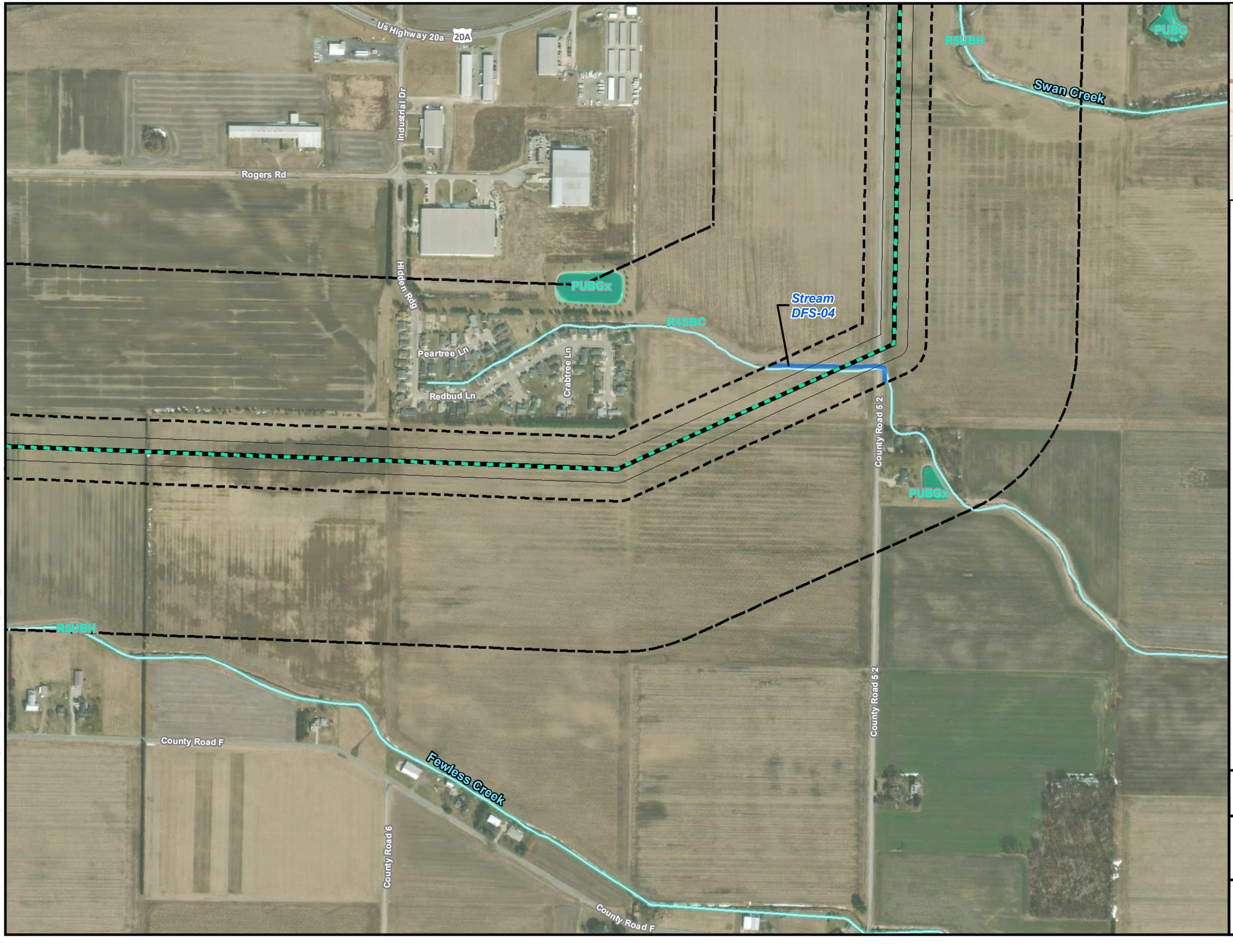

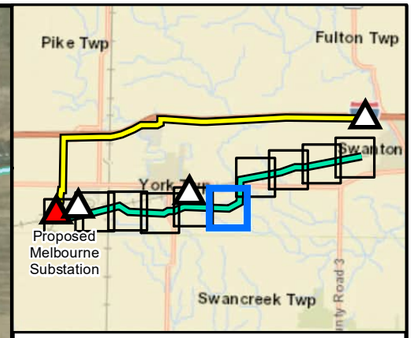

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
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Coordinate System:
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Datum: NAD 1983
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FIGURE 8-3E
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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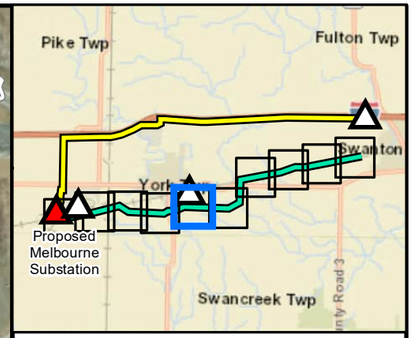
Delta Substation
PEM1A
Fewless Creek
PUBGx
Us Highway 20a
20A
Helvetia St
Mckinley St
Jefferson St
Harrison St
Washington St
Providence St
Depot St
109
Rogers Rd
Rogers Rd
Jefferson St
Locust St
Stream DFS-05
R2UBH
Stream DFS-06
Bad Creek
R5UBH
Fewless Creek
R5UBH
County Road F
County Road F
109
PUBGx
PUBGx
County Road 6-3
County Road F
County Road 6



LEGEND:

- Existing Substation
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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

FIGURE 8-3F
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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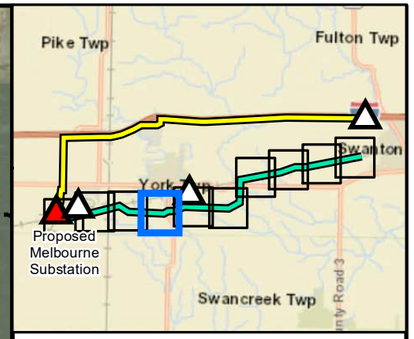

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-3G
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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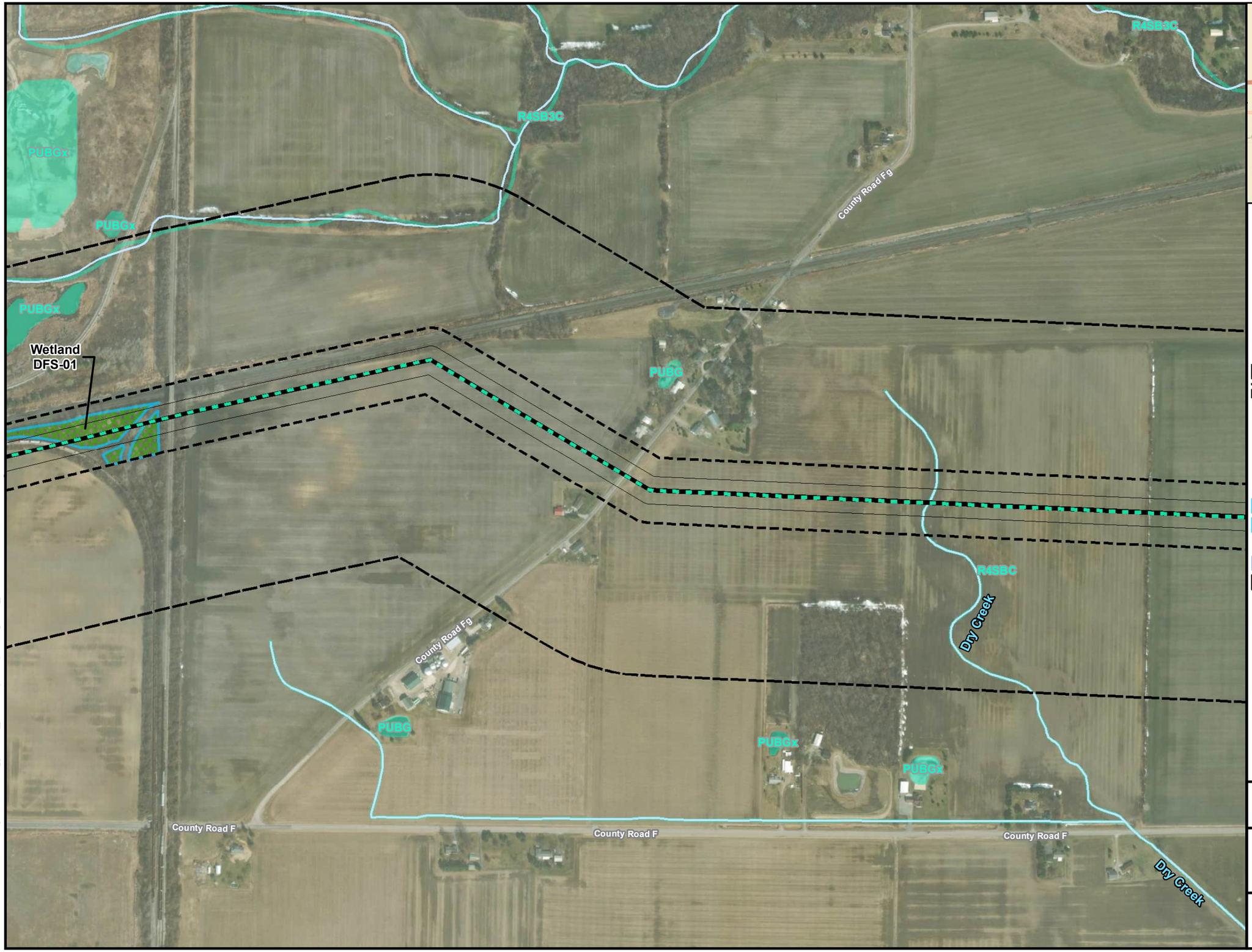

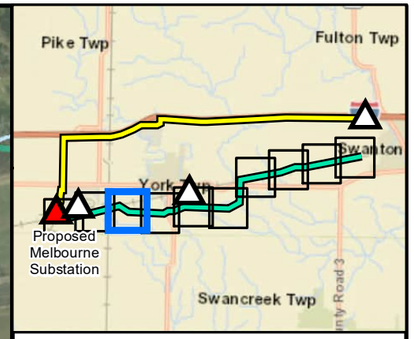

LEGEND:

- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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

FIGURE 8-3H
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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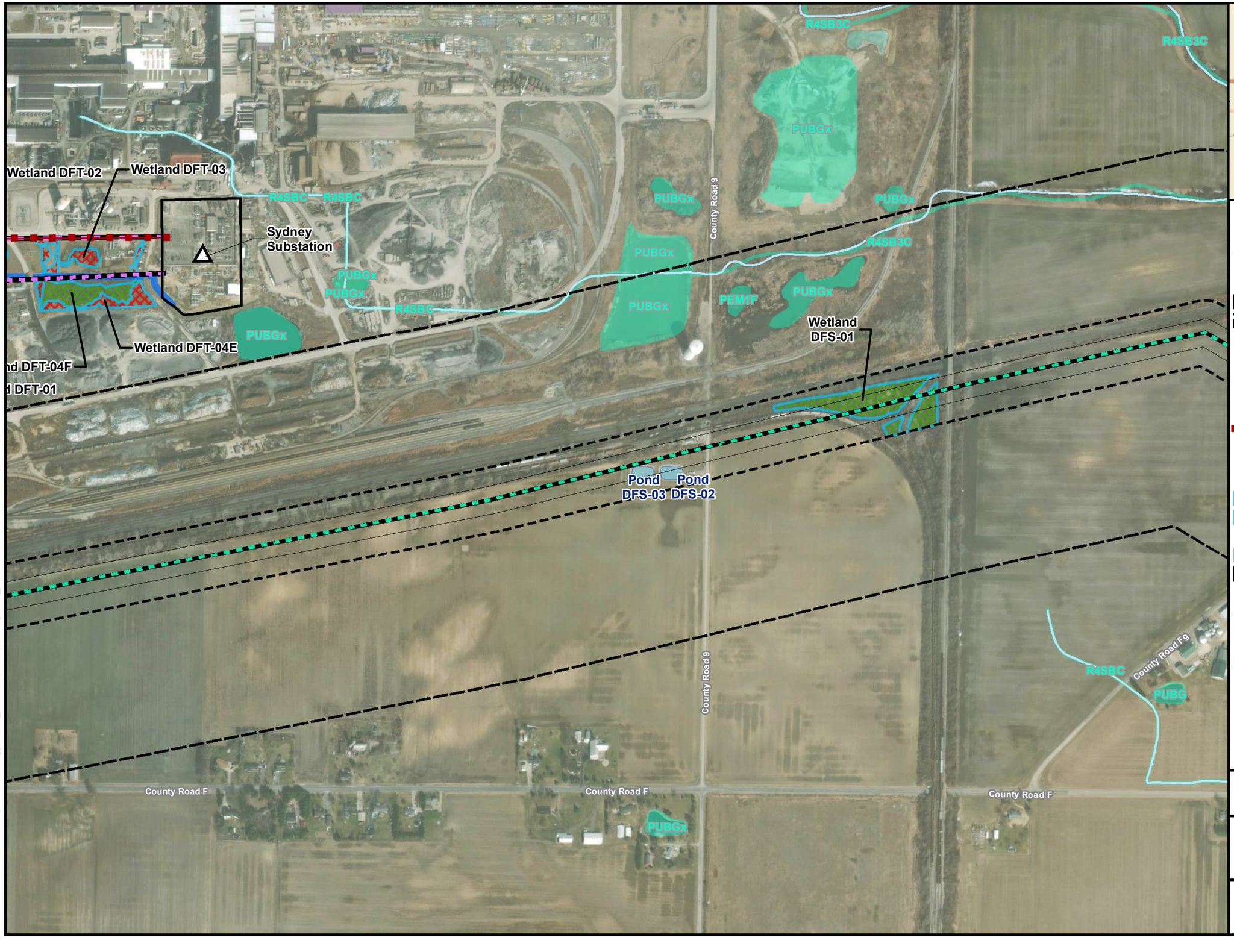

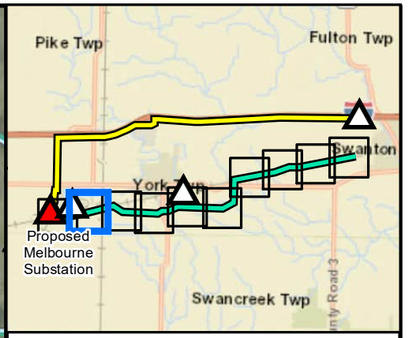

LEGEND:

- Existing Substation
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Tie Line (Alternate Route)
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
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Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-3I
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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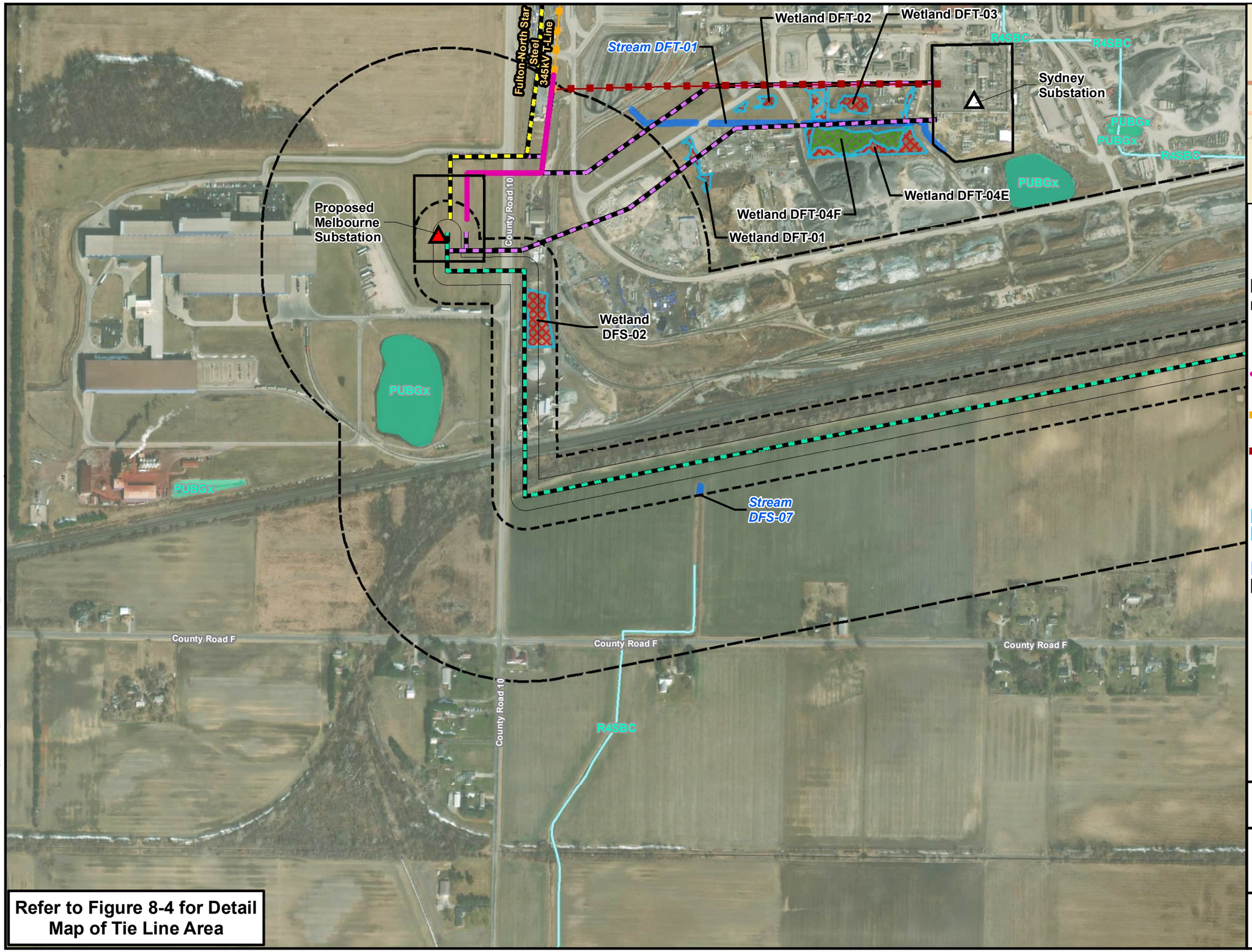

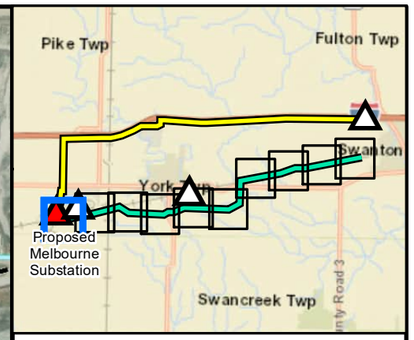

LEGEND:

- Existing Substation
- Proposed Melbourne Substation
- 1,000 ft. Buffer
- Environmental Survey Corridor
- 150 ft. Right-of-Way
- Preferred Route
- Alternate Route
- Extension Line (Future Filing)
- Tie Line (Alternate Route)
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Delineated Stream
- Substation Boundary

Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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

FIGURE 8-3J
ALTERNATE ROUTE DELINEATED WETLAND AND WATERBODIES MAP

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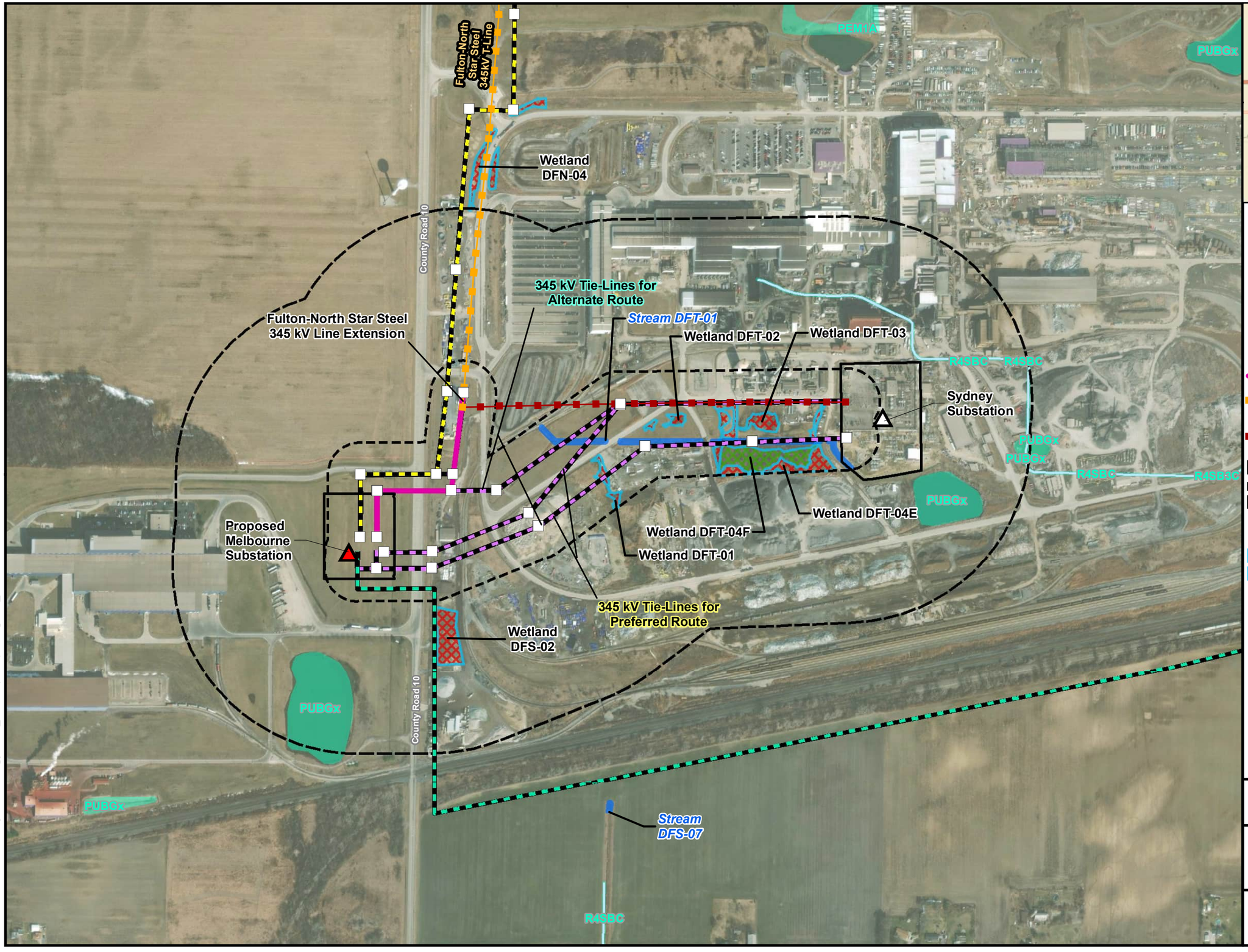

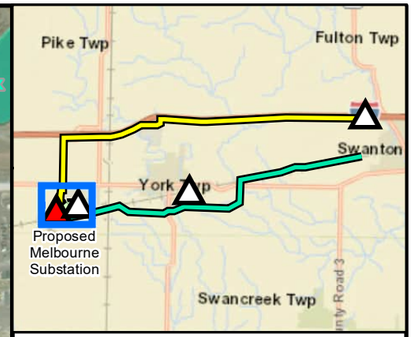

LEGEND:

- Preliminary Proposed Structure
- Existing Substation
- Proposed Melbourne Substation
- Preferred Route
- Alternate Route
- Tie Line (Preferred and Alternate Routes)
- Extension Line (Future Filing)
- Existing 345 kV Transmission Line
- Existing 345 kV Transmission Line to be Removed (Future Filing)
- Substation Boundary
- Environmental Survey Corridor
- 1,000 ft. Buffer
- Stream (NHD)
- Wetland (NWI)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Note: No Soils In Map Frame Exceeding 12% slope

N

BASE MAP SOURCE:
Esri World Imagery
Coordinate System:
State Plane Ohio North FIPS 3402 Feet
Datum: NAD 1983
Scale: 1:6,000

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FIGURE 8-4
AREA OF TIE LINES & EXTENSION LINE -- DELINEATED WETLAND AND WATERBODIES MAP

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FEET

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Appendix 8-1
Ecological Information for the Proposed Melbourne Substation and the Proposed 345 kV Tie Lines (Melbourne Substation to Sydney Substation)

Appendix 8-1

Ecological Information for the Proposed Melbourne Substation and the Proposed 345 kV Tie Lines (Melbourne Substation to Sydney Substation)

This appendix includes ecological information for only the Project area relevant to the proposed Melbourne Substation and 345 kV tie lines from the proposed Melbourne Substation to North Star Bluescope Steel's Sydney Substation.

Summary of National Wetland Inventory Data

USFWS NWI data, including freshwater ponds and riverine areas, were mapped within 1,000 feet of the tie-lines, and reviewed to guide the field ecological survey as one factor in identifying potential wetland locations (USFWS, 2022a). The NWI-mapped areas are shown on Figure 8-4. Table 8A-1 summarizes the NWI data by wetland classification and habitat type. The actual extent and type of field-delineated wetlands along the routes are discussed in the next section.

Table 8A-1: NWI Wetlands within 1,000 Feet of the Proposed 345 kV Transmission Tie Lines (Melbourne Substation to Sydney Substation)

Wetland Type	NWI Code	NWI Habitat Type*	Number of Habitat Type
Freshwater Pond	PUBGx	Palustrine unconsolidated bottom, intermittently exposed, excavated	3
Riverine	R4SBC	Riverine intermittent, streambed, seasonally flooded	1
		Total NWI Wetlands:	4

Notes:
* USFWS, 2016

(i) Field-Delineated Wetlands

Proposed Melbourne Substation

No wetlands were delineated within the Proposed Melbourne Substation Field Survey Area as illustrated in Figure 8-4.

Proposed 345 kV Transmission Tie Lines (Melbourne Substation to Sydney Substation)

Four wetlands, totaling 2.97 acres, were delineated within the tie lines (Melbourne Substation to Sydney Substation) Field Survey Area. Detailed information for each wetland is provided in Table 8A-2. The wetlands where temporary construction impacts are anticipated to be unavoidable are identified in Table 8A-2 and further discussed in Section 4906-05-08(B)(3)(b). The field-delineated wetlands for the tie-lines are mapped on Figure 8-4.

Table 8A-2: Delineated Wetlands within the Proposed 345 kV Tie-Lines (Melbourne Substation to Sydney Substation) Field Survey Area and Potential Disturbance Area/ROW

Wetland Name	Figure	Cowardin Wetland Type[a]	ORAM Score	ORAM Category	Acreage within Field Survey Area[b]	Acreage within Potential Disturbance Area/ROW[c]	Length Crossed by Centerline (feet)
Wetland DFT-01	8-4	PEM	16.5	Category 1	0.21	0.10	41
Wetland DFT-02	8-4	PEM	21.5	Category 1	0.16	0.03	0
Wetland DFT-03	8-4	PEM	17	Category 1	0.62	0.30	120
Wetland DFT-04	8-4	PEM	28	Category 1	0.84	0.16	3
		PFO			1.15	0.43	0
				Total[d]	**2.97**	**1.03**	**164**

Notes:

a Wetland Type: PEM = palustrine emergent, PFO = palustrine forested

b The width of the Field Survey Area was 570 feet.

c The width of the potential disturbance area and the final maintained ROW is planned to be 150 feet for each of the tie-lines.

d Total may vary slightly from the sum of their parts due to rounding

(b) Waterbodies

(i) Field-Delineated Streams

Proposed Melbourne Substation

No streams were identified within the Proposed Melbourne Substation Field Survey Area.

Proposed 345 kV Tie Lines (Melbourne Substation to Sydney Substation)

Within the tie-lines (Melbourne Substation to Sydney Substation) Field Survey Area, one stream was identified and was evaluated using HHEI methodology.

Streams identified during the ecological survey of the 345 kV tie lines (Melbourne Substation to Sydney Substation) Field Survey Area are shown on Figure 8-4. Detailed information on the delineated stream is included in Table 8A-3. Construction impacts are included in Table 8A-3 and further discussed in Section 4906-05-08(B)(3)(c).

Table 8A-3: Streams within the Tie-Lines (Melbourne Substation to Sydney Substation) Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream Name Waterbody Name	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline	Length (linear feet) within Field Survey Area[a]	Length (linear feet) within Potential Disturbance Area/ROW[b]
Stream DFT-01 UNT to Bad Creek	8-4	Intermittent	30	12	HHEI	54	N/A	Modified Class II	Yes	1,607	1,372
									Total	**1,607**	**1,372**

Notes:

a The width of the Field Survey Area was 570 feet.

b The width of the potential disturbance area and the final maintained ROW is planned to be 150 feet for each of the tie-lines.

UNT = unnamed tributary

(ii) Lakes, Ponds, and Reservoirs

No ponds were identified within the proposed Melbourne Substation or the 345 kV tie lines (Melbourne Substation to Sydney Substation) Field Survey Areas.

(2) Construction Impacts on Vegetation and Surface Waters

(a) Construction Impacts on Vegetation

Proposed Melbourne Substation

Construction impacts on vegetation for the proposed Melbourne Substation will consist of impacts to the commercial maintained lawn within the boundary of substation as reported in Table 8A-4.

Table 8A-4: Approximate Vegetation Impacts for the Proposed Melbourne Substation Potential Disturbance Area

Land Use Type	Acreage within Substation Boundary
Commercial Maintained Lawn	7.7

Proposed 345 kV Tie Lines (Melbourne Substation to Sydney Substation)

The construction impacts on vegetation along the tie-lines (Melbourne Substation to Sydney Substation) route will be limited to the initial clearing of vegetation within the 150-foot ROW for the proposed transmission lines and access roads. Specific locations for access roads will be identified at the time of ATSI transmission line easement acquisition process. Trees within proposed ROW and adjacent that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative wastes (such as tree limbs and trunks) generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual landowner requests. The approximate vegetation impacts, based on GIS analysis, along the tie-line ROWs are provided in Table 8A-5.

Table 8A-5: Approximate Vegetation Impacts along the Proposed 345 kV Tie Lines (Melbourne Substation to Sydney Substation) Potential Disturbance Area/ROW

Land Use Type	Length of Route (in feet)	Length of Route (in miles)	Acreage within ROW
Commercial Maintained Lawn	380	0.07	1.2
Woodlot	0	0.00	<0.1
Delineated Wetland	244	0.05	0.9

(b) Construction Impacts on Wetlands

During wetland and waterbody delineations, four wetlands were identified along the tie-lines (Melbourne Substation to Sydney Substation) within the proposed ROWs, totaling 1.03 acres. The delineated wetlands are shown on Figure 8-4. Detailed information about each feature can be found in Table 8A-2. Of these wetlands, three are crossed by the tie line centerlines, totaling 164 linear feet. Impacts to the wetlands would be avoided by placing transmission line structures outside of wetland boundaries, where practical. Where temporary construction access through a wetland cannot be avoided, the crossing would occur during dry conditions or protective construction matting would be used to minimize impacts from construction vehicles.

Wetland ORAM categories delineated in the tie-line ROWs are detailed below:

- Category 1 wetlands: Four Category 1 wetlands with ORAM scores ranging from 16.5 to 28 were identified within the ROW, totaling 1.03 acres. Approximately 0.43 acres of PFO wetlands would be impacted during construction.
- Category 2 wetlands: No Category 2 wetlands would be crossed; therefore, no construction impacts are anticipated.
- Category 3 wetlands: No Category 3 wetlands would be crossed; therefore, no construction impacts are anticipated.

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

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 ≥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.

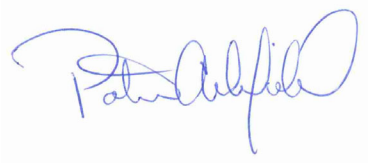
Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action 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). 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.

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

Sincerely,



Patrice Ashfield
Field Office Supervisor

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 ≥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). 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.

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).

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 if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator

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: 22-0959; 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 caroliniense*), 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).

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. 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.

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.

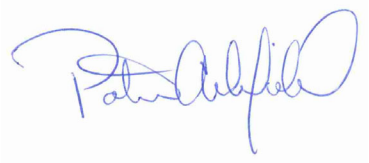
ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

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.

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

Sincerely,



Patrice Ashfield
Field Office Supervisor

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

Wetland and Waterbody Delineation Report

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

Prepared for

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

February 2023

Jacobs

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

Contents

1 Introduction 1-1

2 Background Information 2-1
2.1 Annual Precipitation 2-1
2.2 Drainage Basins 2-1
2.3 Traditional Navigable Waters 2-2

3 Wetland and Waterbody Delineation 3-1
3.1 Desktop Review 3-1
3.2 Field Survey Methodology 3-2
3.2.1 Wetland Delineation 3-3
3.2.2 Stream Assessment 3-4

4 Field Survey Results 4-1
4.1 Wetlands 4-1
4.1.1 Wetland ORAM Results 4-1
4.2 Streams 4-2
4.2.1 QHEI Results 4-2
4.2.2 HHEI Results 4-3
4.3 Ponds/Open Water 4-3

5 Conclusion 5-1

6 References 6-1

Tables

2-1 Recent Precipitation Data
2-2 12-Digit Hydrologic Unit Codes Crossed by the Project
3-1 Soil Map Units
3-2 Mapped National Wetland Inventory Features
4-1 Delineated Wetland Table
4-2 Delineated Stream Table
4-3 Delineated Pond Table
4-4 Wetland Summary Table
4-5 QHEI Stream Summary Table
4-6 HHEI Stream Summary Table

Appendices

A Figures
1 Overview Map
2-1 to 2-2 Soils, NDH, NWI, FEMA Map
3-1 to 3-22 Delineated Features Map
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

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

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 appoximatley 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

Precipiation 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[1,3]	3.22	5.82	1.51	1.10	2.21	1.95	15.81
Normal Precipitation[2,3]	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

[1]Monthly weather summary from weather station WAUSEON WATER PLANT, OH
[2]USDA WETS Station Climate Data 1971-2000 (USDA 2022)
[3]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

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 nonhydric, 13 are predominantly nonhydric, and six are predominantly hydric (Table 3-1). Hydric or predominantly hydric soils comprise 54 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-Preferred Route

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

Wetland ID	Location		Wetland Type[1]	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	

[1]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[1]	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	

[1]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[1]	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

[1]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

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^2) and nine streams were assessed using the HHEI methodology (drainage area less than 1 mi^2). Additionally, five ponds were identified totaling approximatley 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

Fulton Substation

Proposed Melbourne Substation

Sydney Substation

Delta Substation

Delta Wings Airport

Delta Reservoir

Fulton Pond

Radio Tower

Grieser Airport

MAUMEE STATE FOREST

MSF

PIKE

FULTON

YORK

SWAN CREEK

FULTON CO

LUCAS CO

Swan Creek

Branch

Fewless Ditch

Bad Creek

Brailey Creek

Turkeyfoot Creek

Winameg

Sandpit

Delta

West Delta

South Delta

Ridge

FRANKFORT

LINE

TURNPIKE

ROAD

TOLL

R4E

R5E

R8E

R9E

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
Topograch Quadrangles:
Delta and Swanton

Coordinate System: State Plane
Ohio North FIPS 3401 Feet
Datum: NAD 1983
Scale: 1:24,000

2/6/2023

N

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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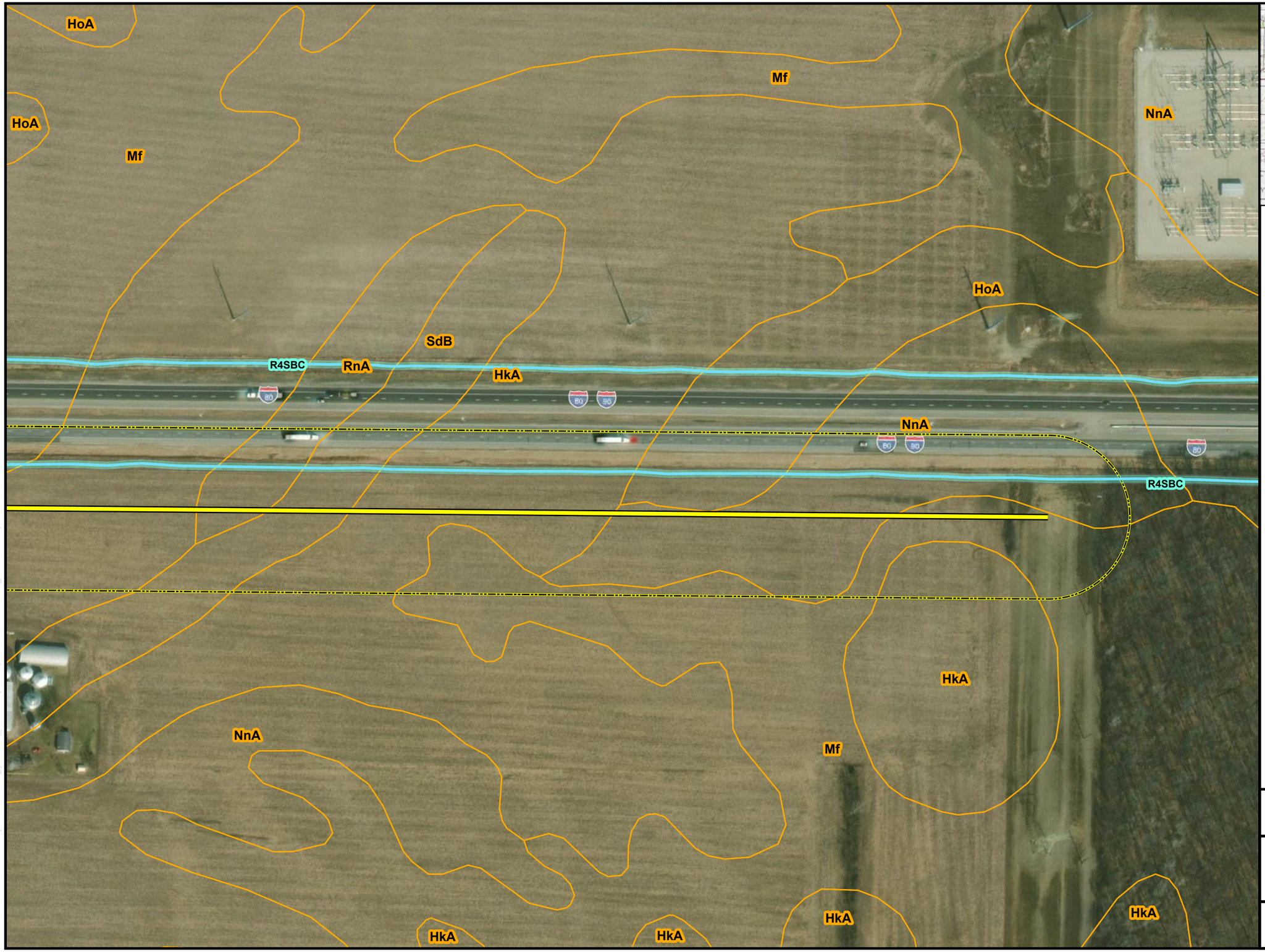

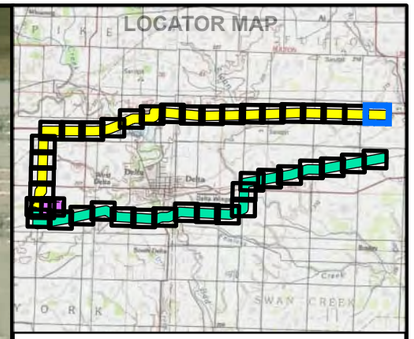

LEGEND:

- Preferred Route
- Alternate Route
- Environmental Survey Boundary
- NHD Stream
- NWI Wetlands
- 100 Yr Floodplain
- Floodway
- 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

Jacobs

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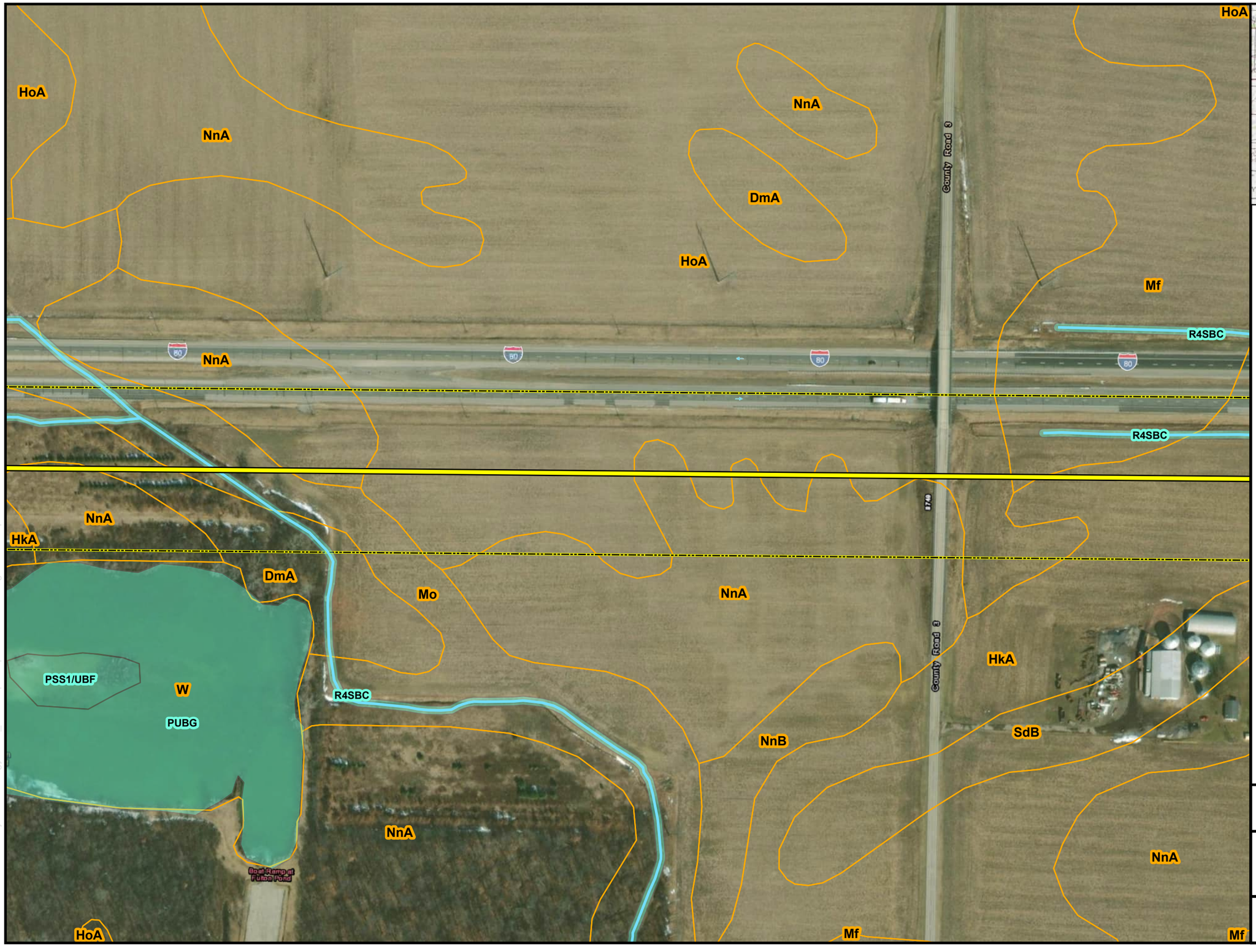

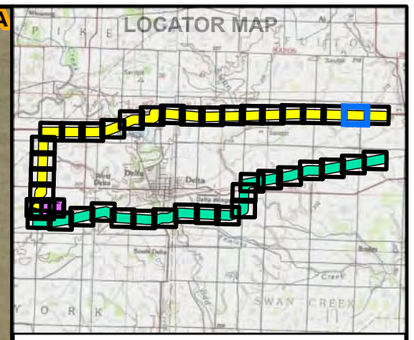

LEGEND:

- 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

ATSI American Transmission Systems, Inc.

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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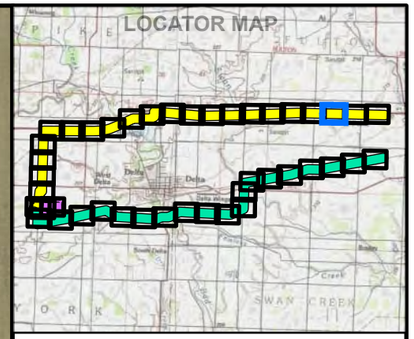

LEGEND:

- 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.

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

PREFERRED ROUTE
FIGURE 2-3
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

Jacobs

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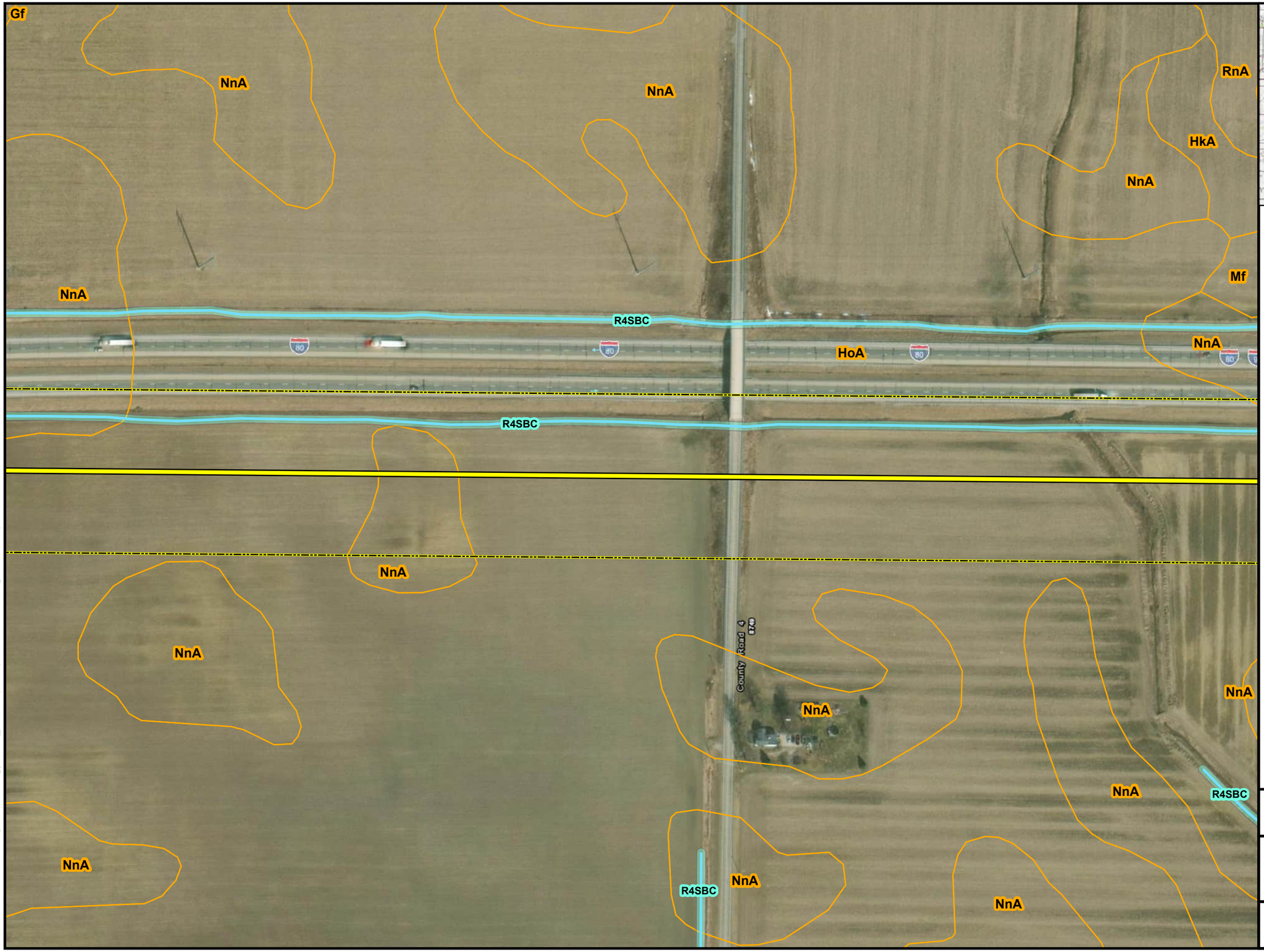

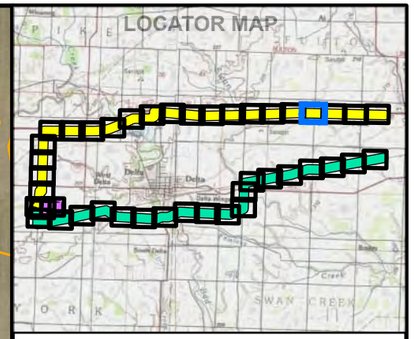

LEGEND:

- 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 2-4
SOILS, NHD, NWI, FEMA MAP

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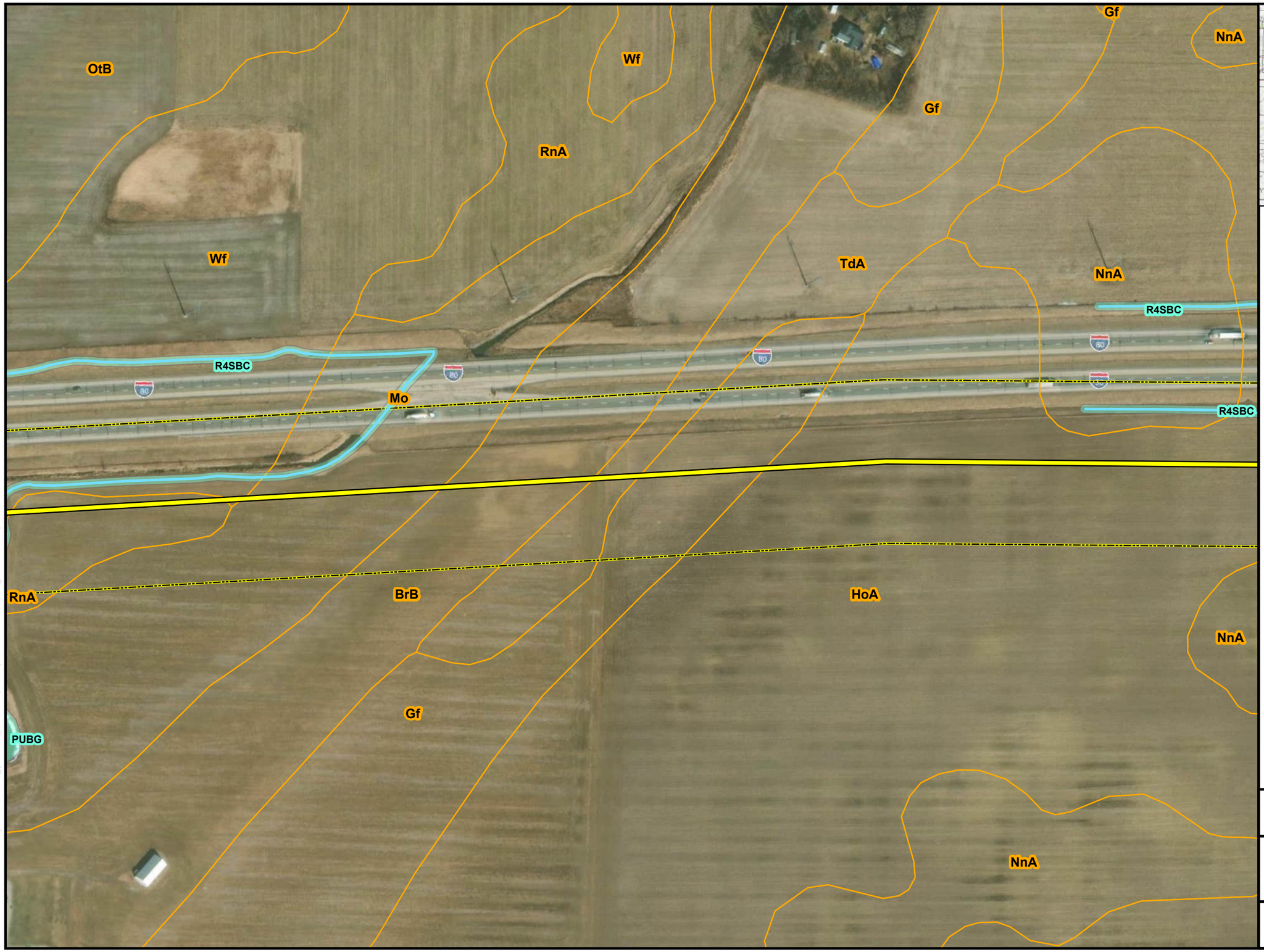

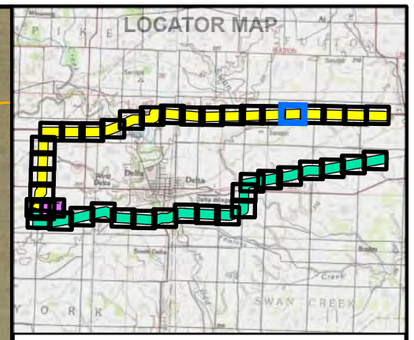

LEGEND:

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

N

BASE MAP SOURCE:
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ATSI American Transmission Systems, Inc.

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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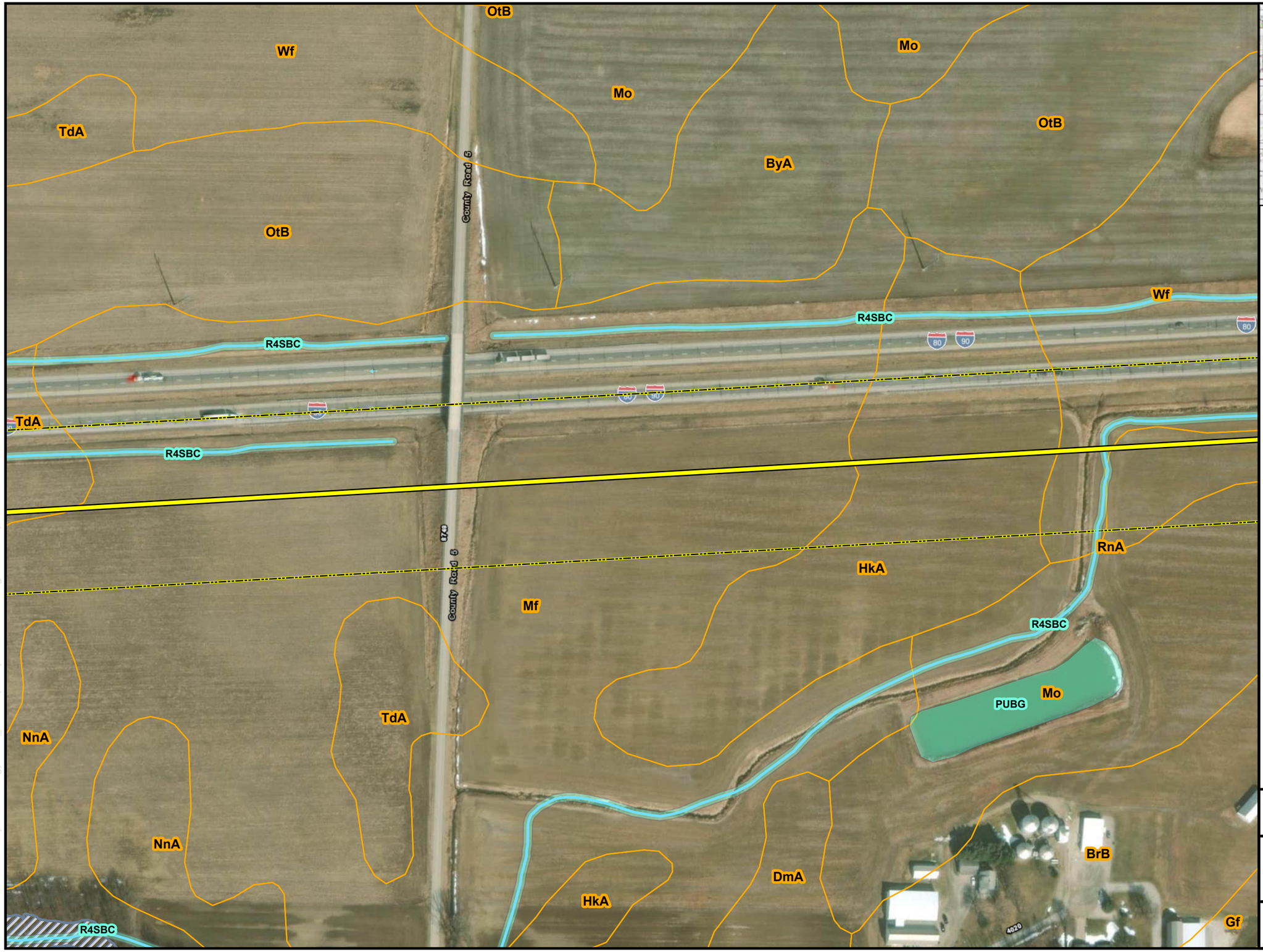

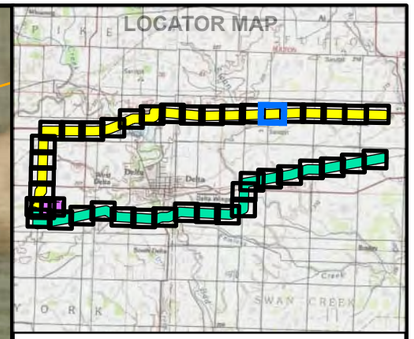

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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FEET

ATSI American Transmission Systems, Inc.

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

PREFERRED ROUTE
FIGURE 2-6
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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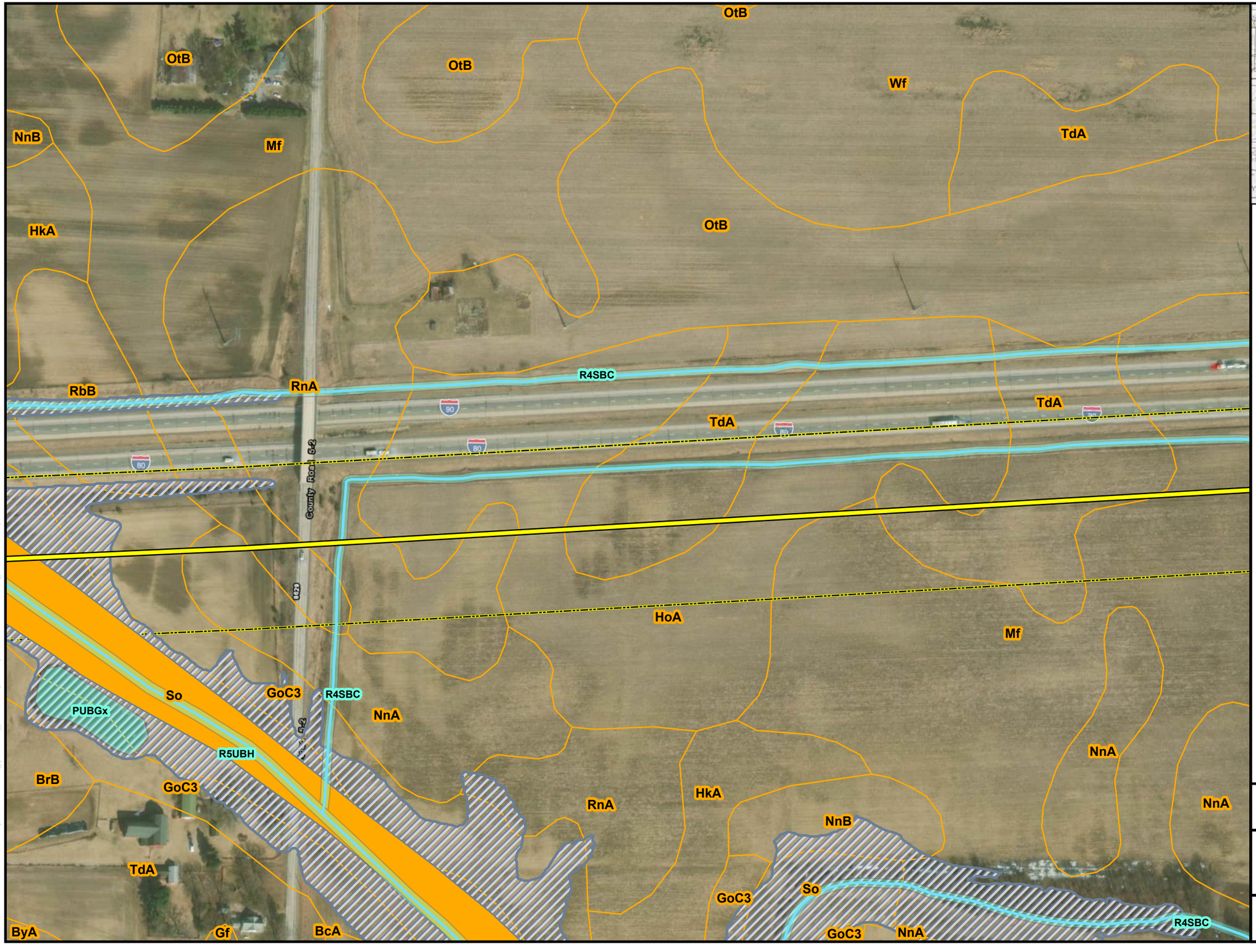

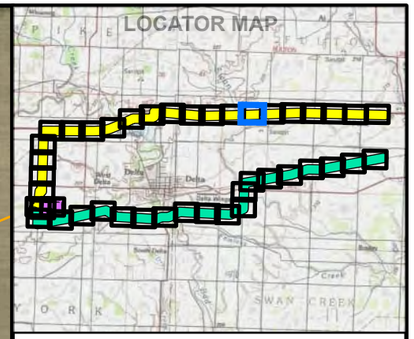

LEGEND:

- 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

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

PREFERRED ROUTE
FIGURE 2-7
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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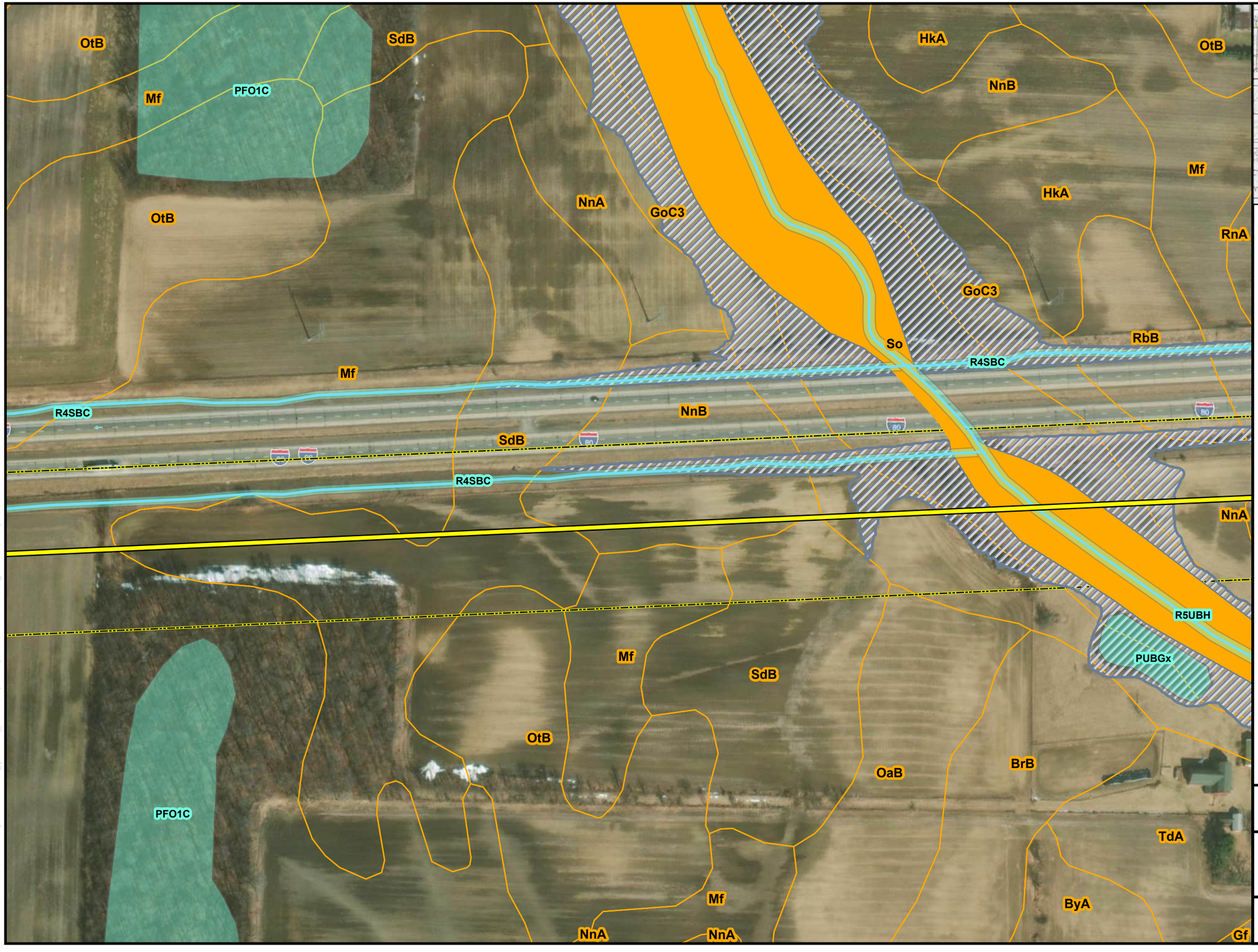

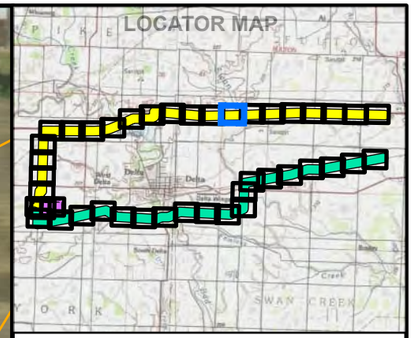

LEGEND:

- 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

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

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

DATE: 2/23/2023

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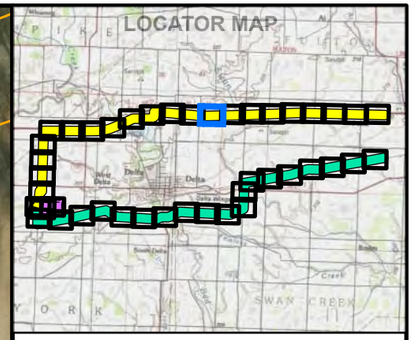

LEGEND:

- 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:
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ATSI American Transmission Systems, Inc.

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

PREFERRED ROUTE
FIGURE 2-9
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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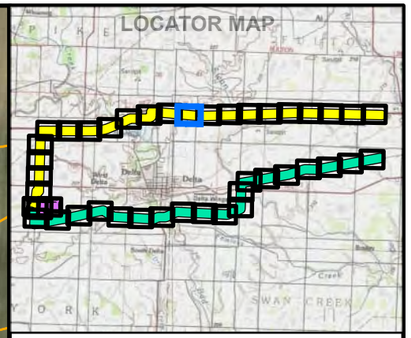

LEGEND:

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

PREFERRED ROUTE
FIGURE 2-10
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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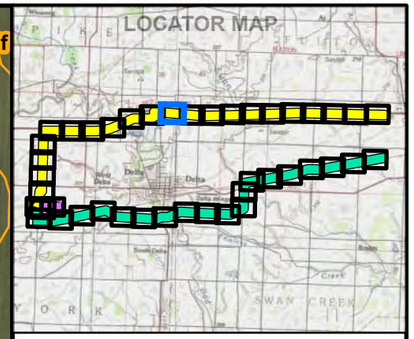

LEGEND:

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

N

BASE MAP SOURCE:
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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

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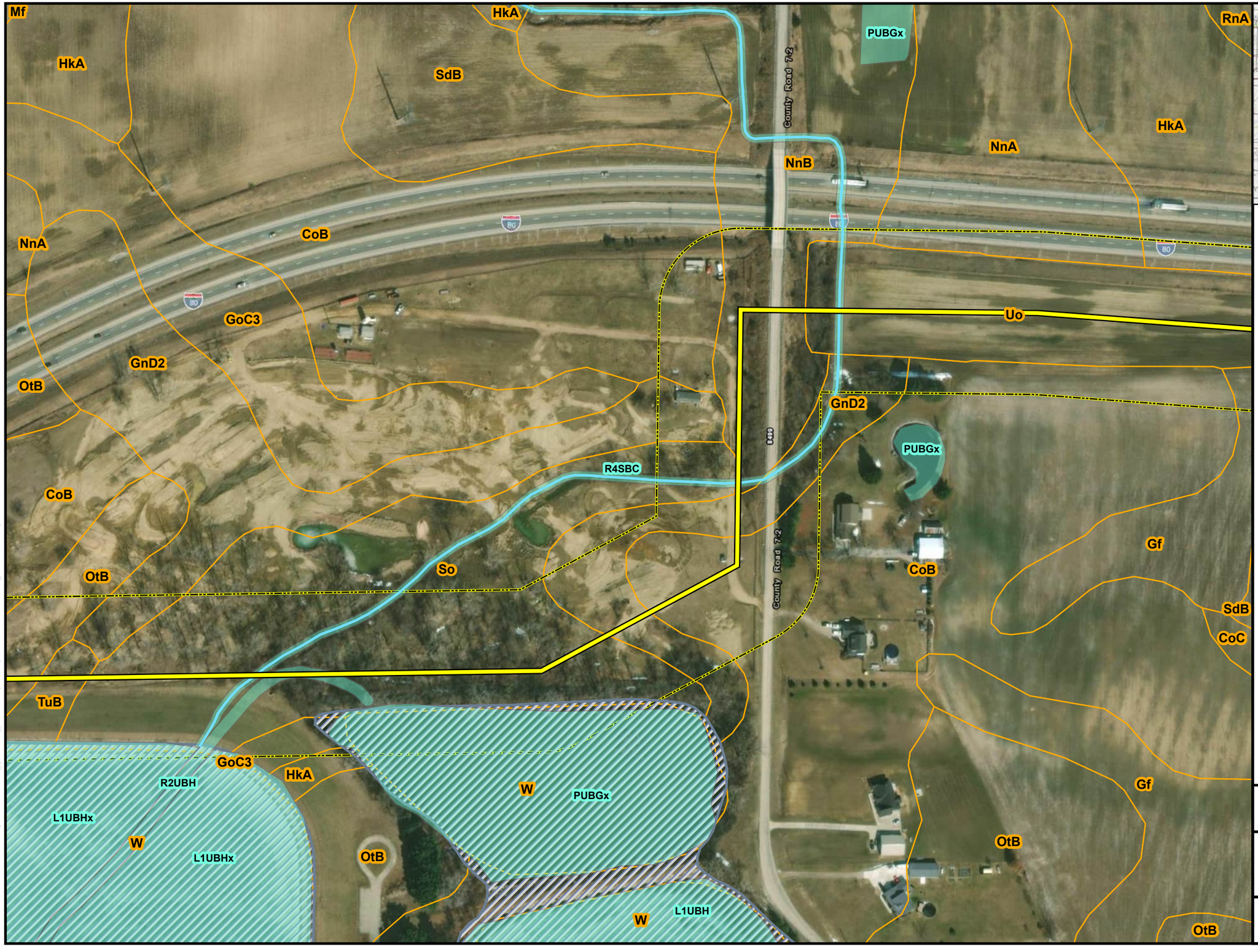

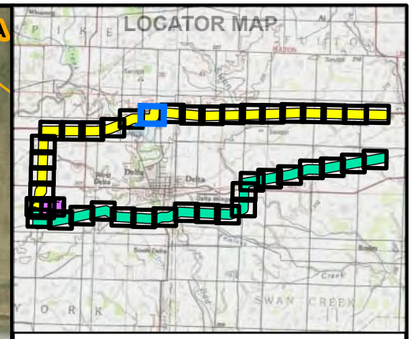

LEGEND:

- 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:
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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

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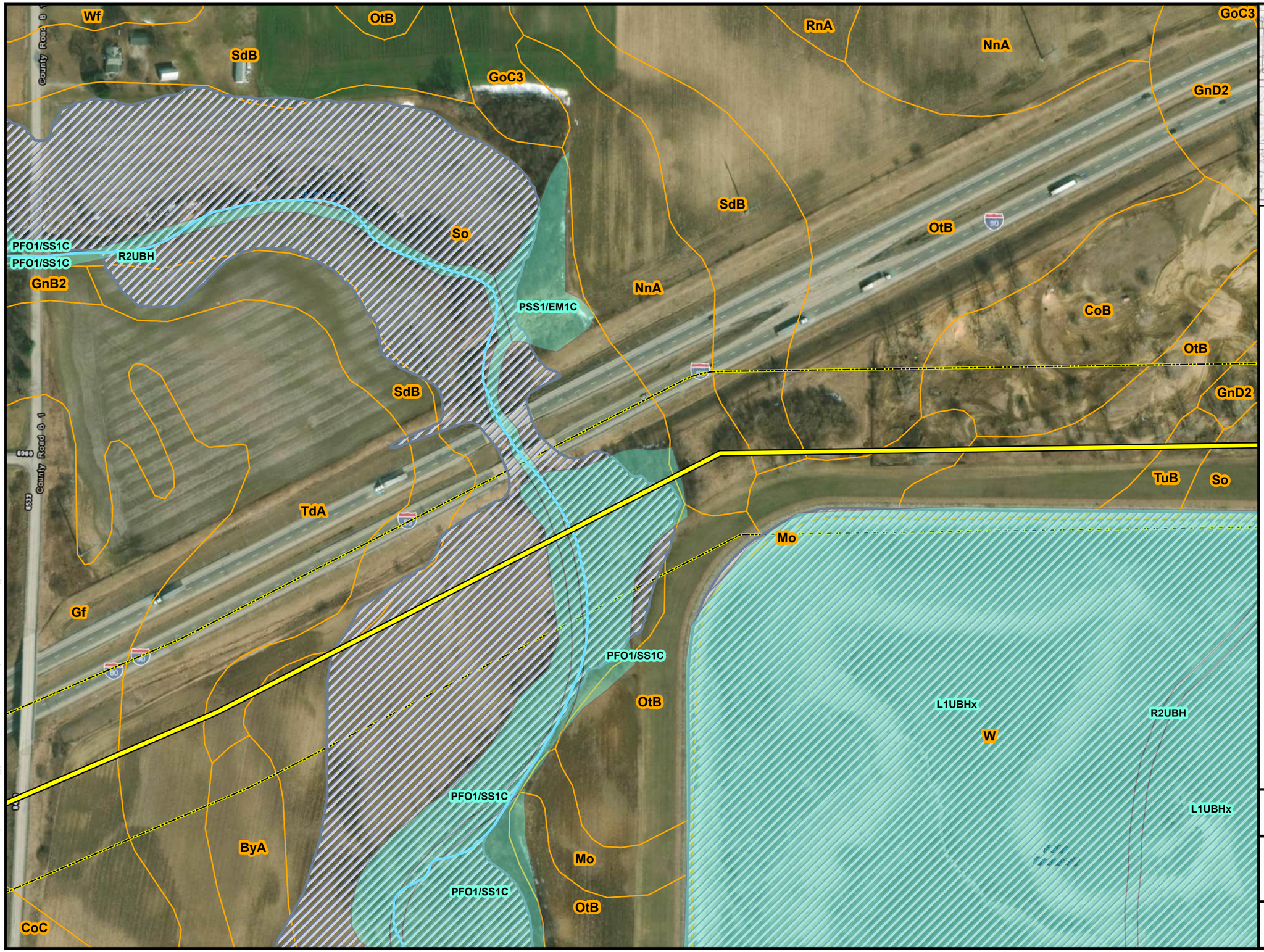

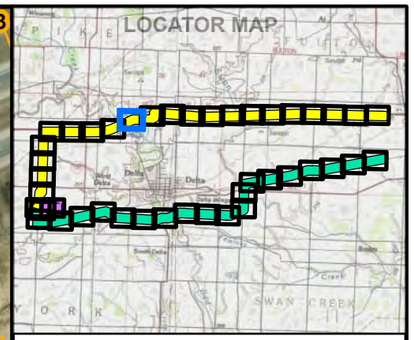

LEGEND:

- 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:
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PREFERRED ROUTE
FIGURE 2-13
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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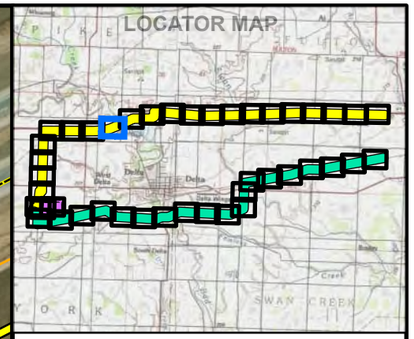

LEGEND:

- 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:
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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

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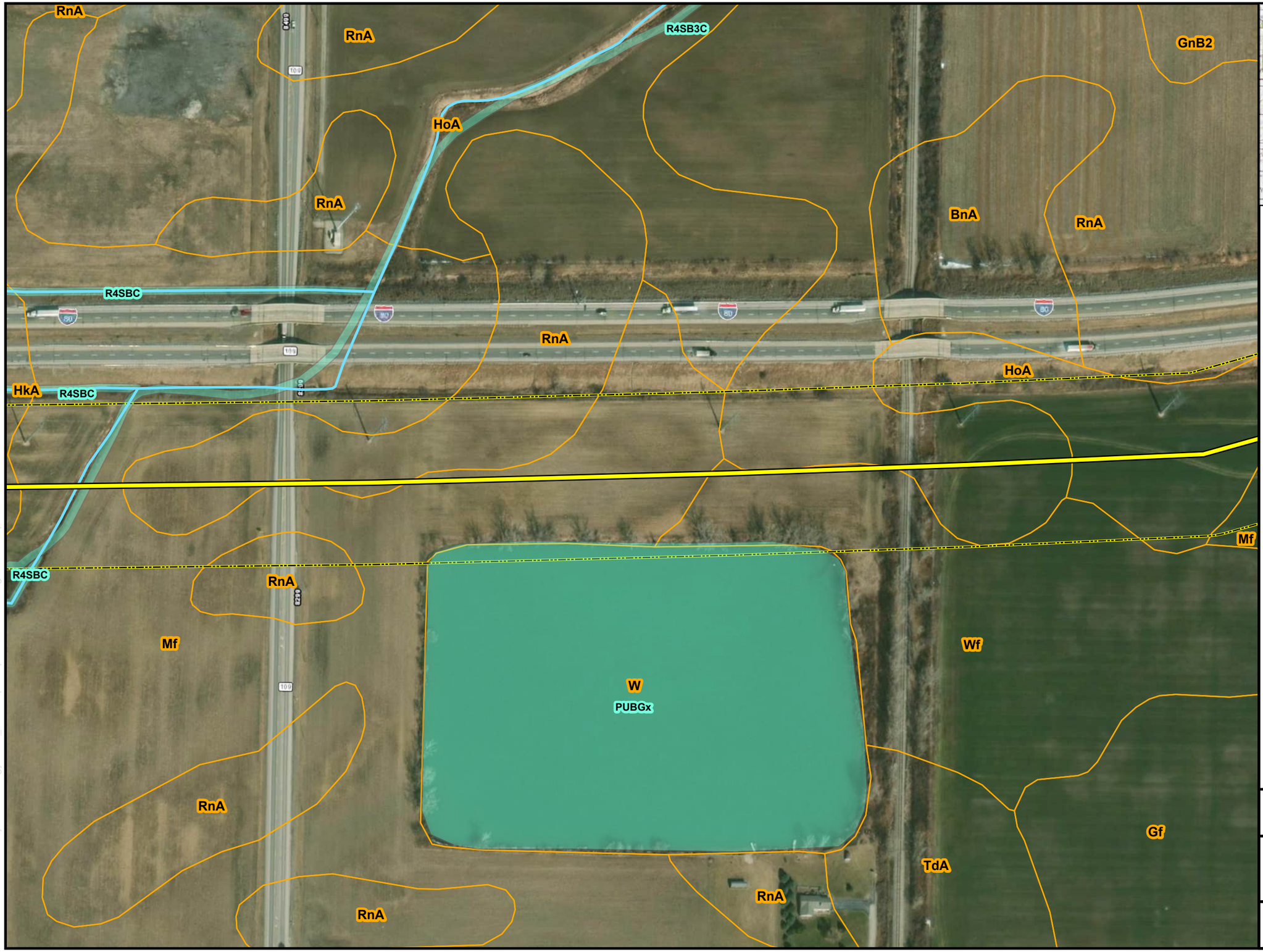

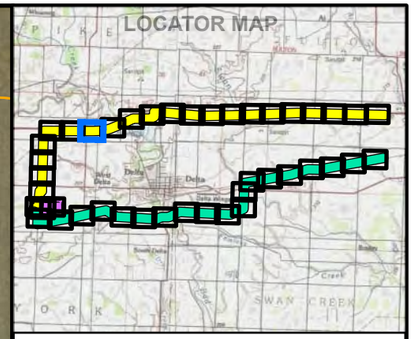

LEGEND:

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

PREFERRED ROUTE
FIGURE 2-15
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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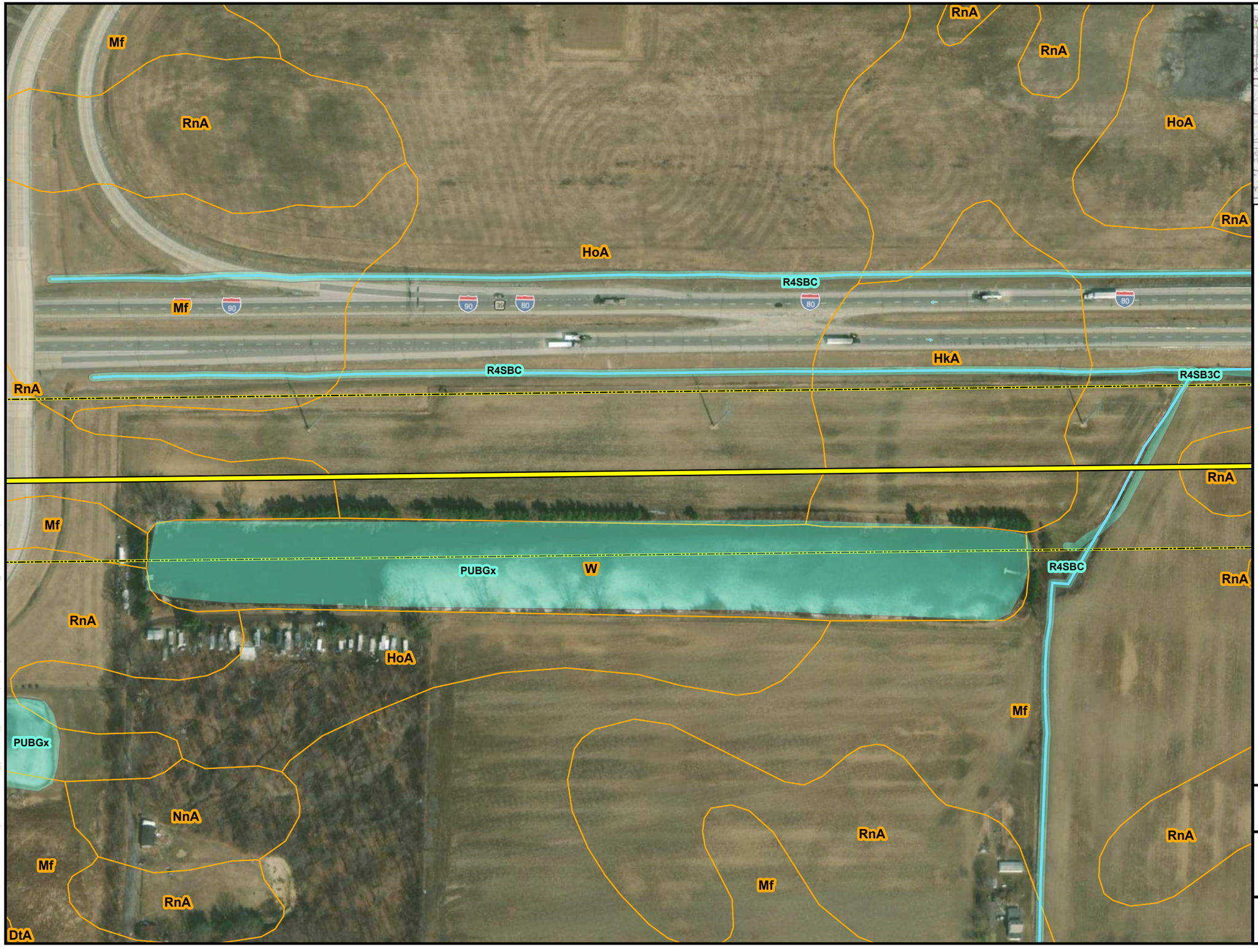

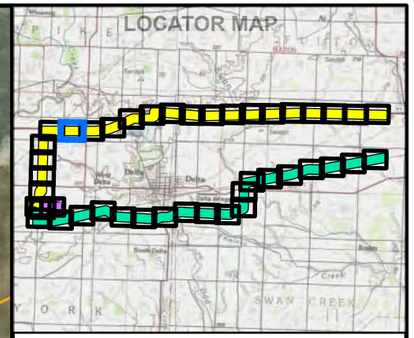

LEGEND:

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

PREFERRED ROUTE
FIGURE 2-16
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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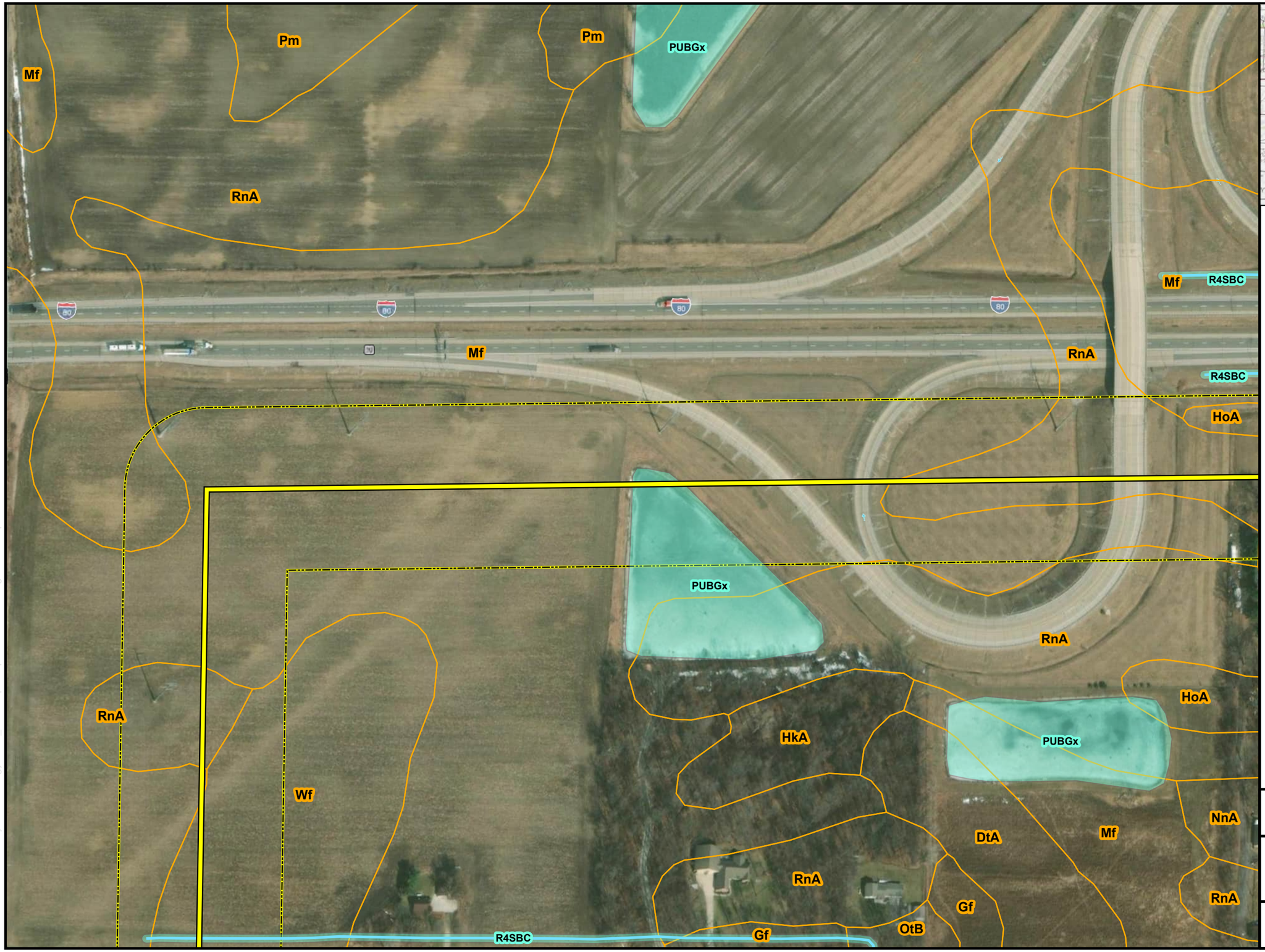

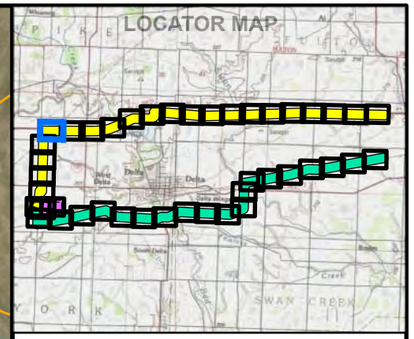

LEGEND:

- 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:
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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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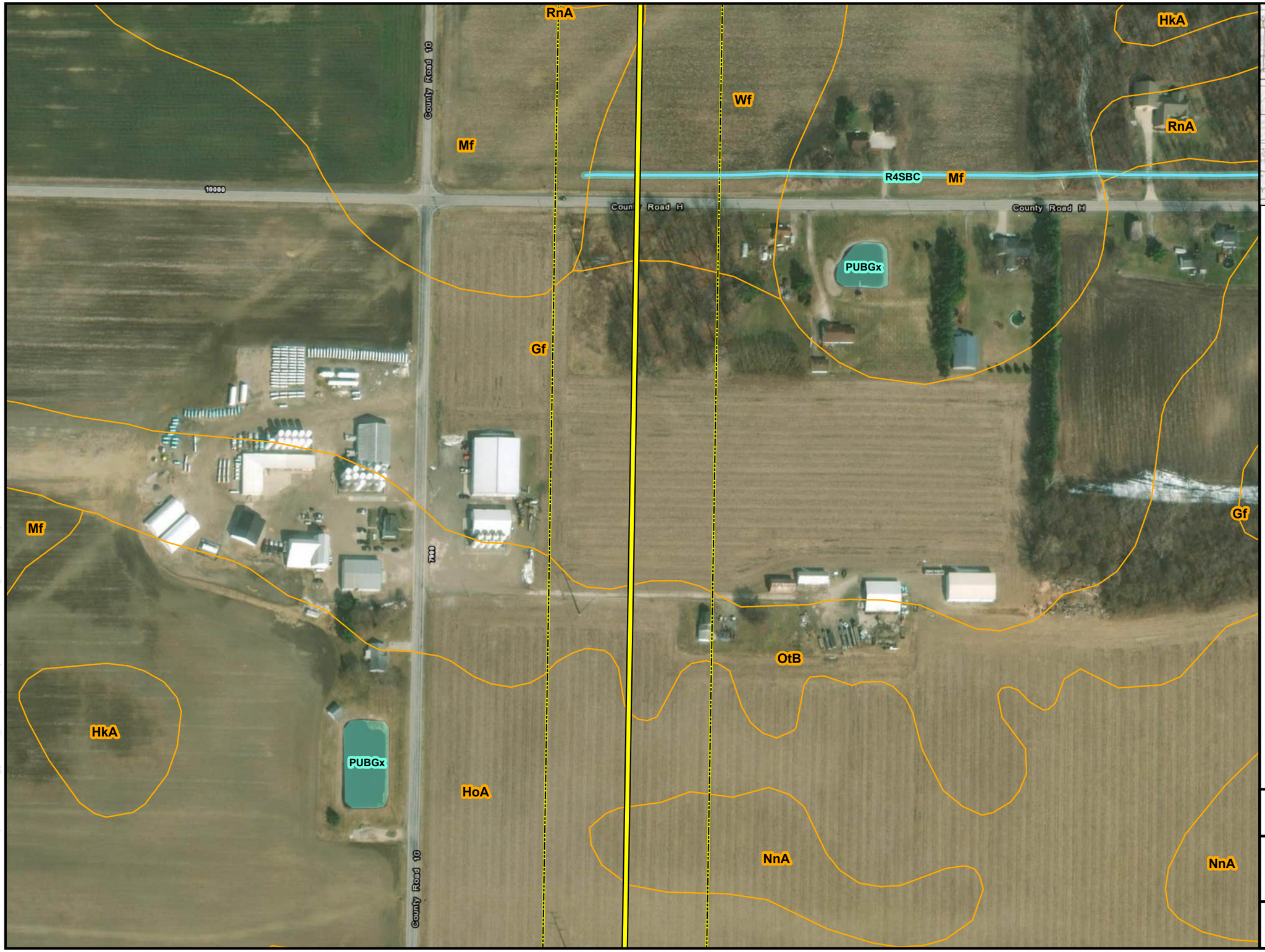

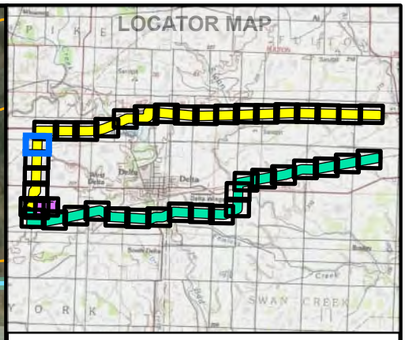

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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

PREFERRED ROUTE
FIGURE 2-18
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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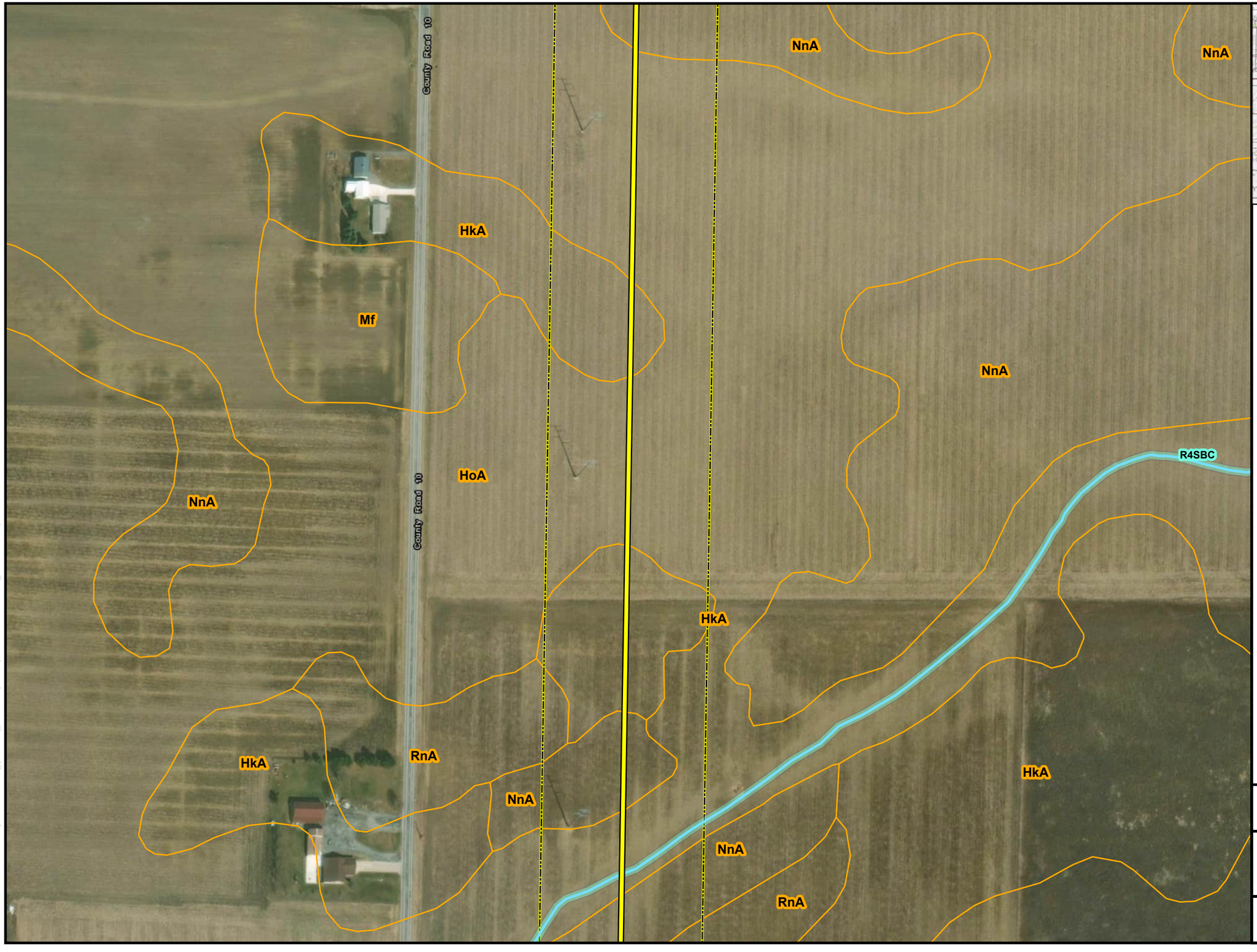

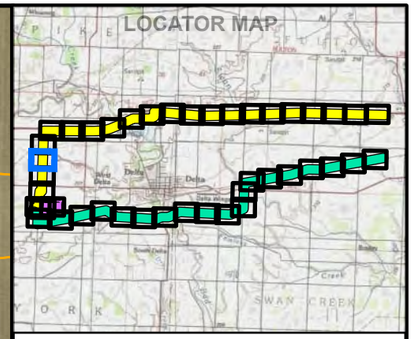

LEGEND:

- 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:
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ATSI American Transmission Systems, Inc.

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

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

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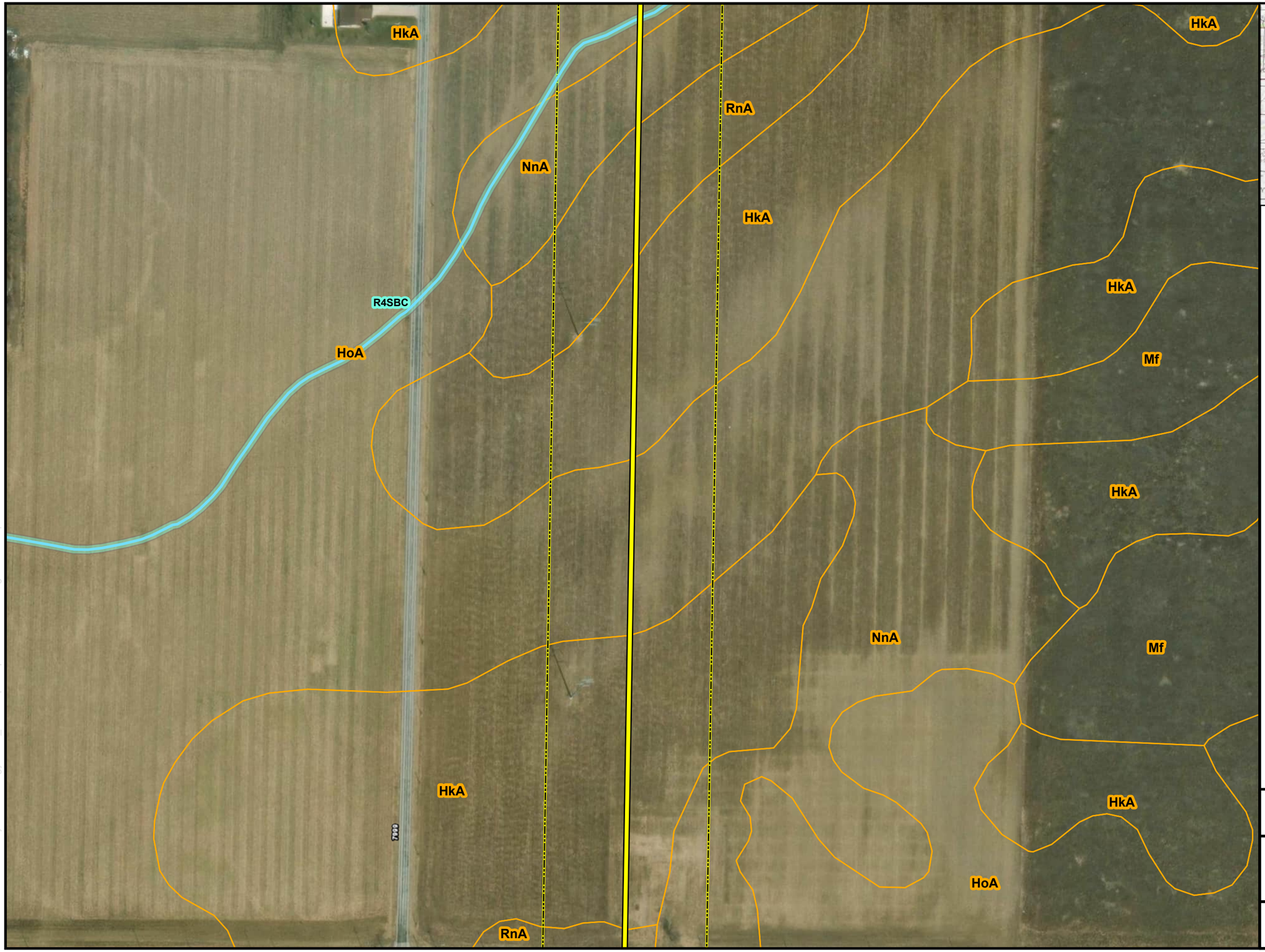

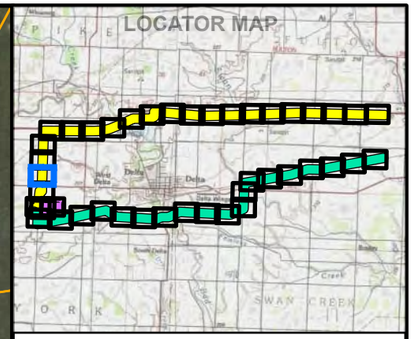

LEGEND:

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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 2-20
SOILS, NHD, NWI, FEMA MAP

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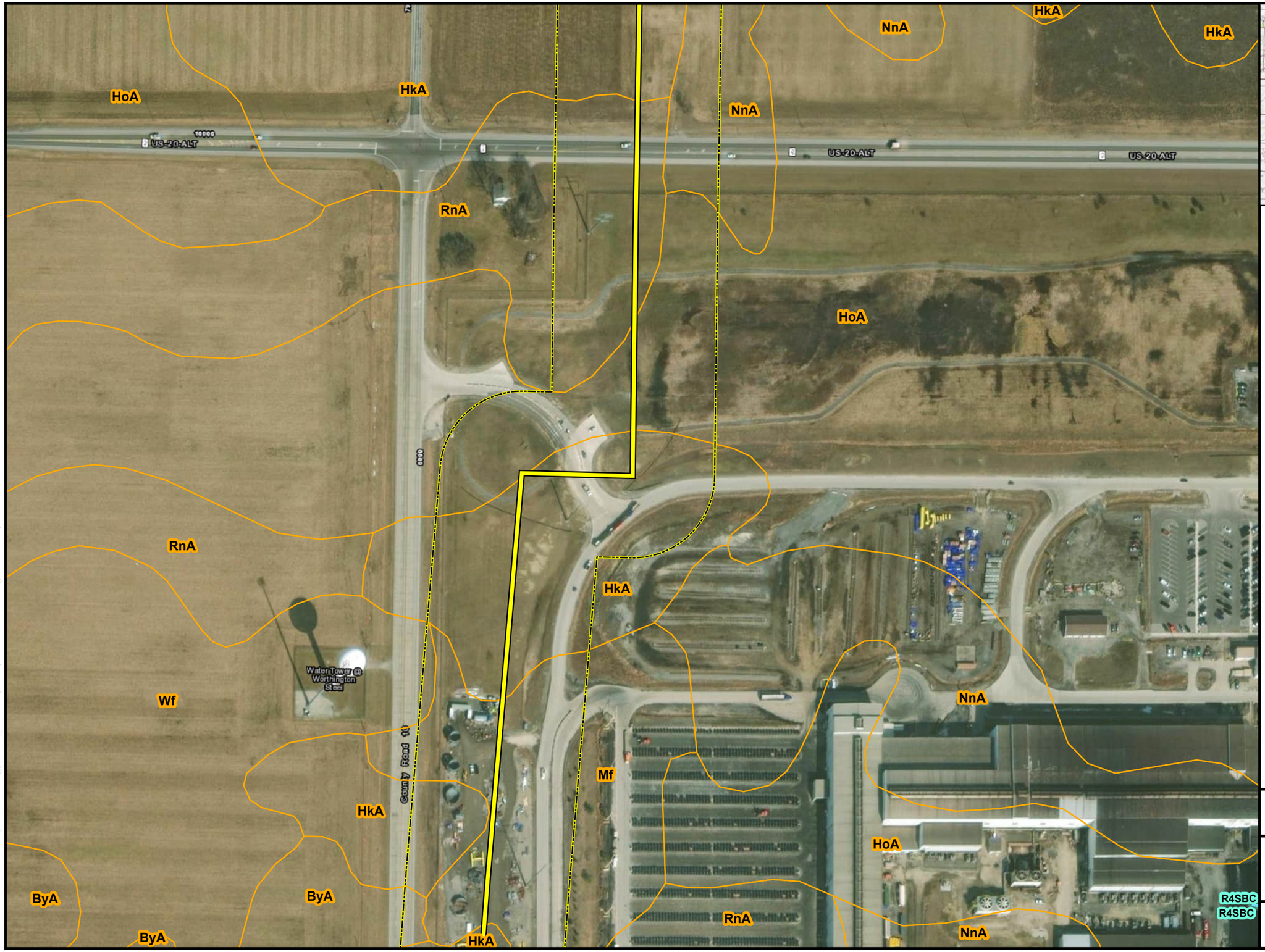

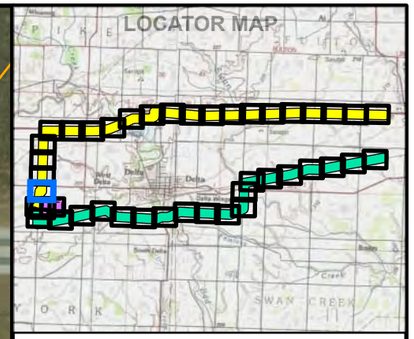

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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FEET

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

PREFERRED ROUTE
FIGURE 2-21
SOILS, NHD, NWI, FEMA MAP

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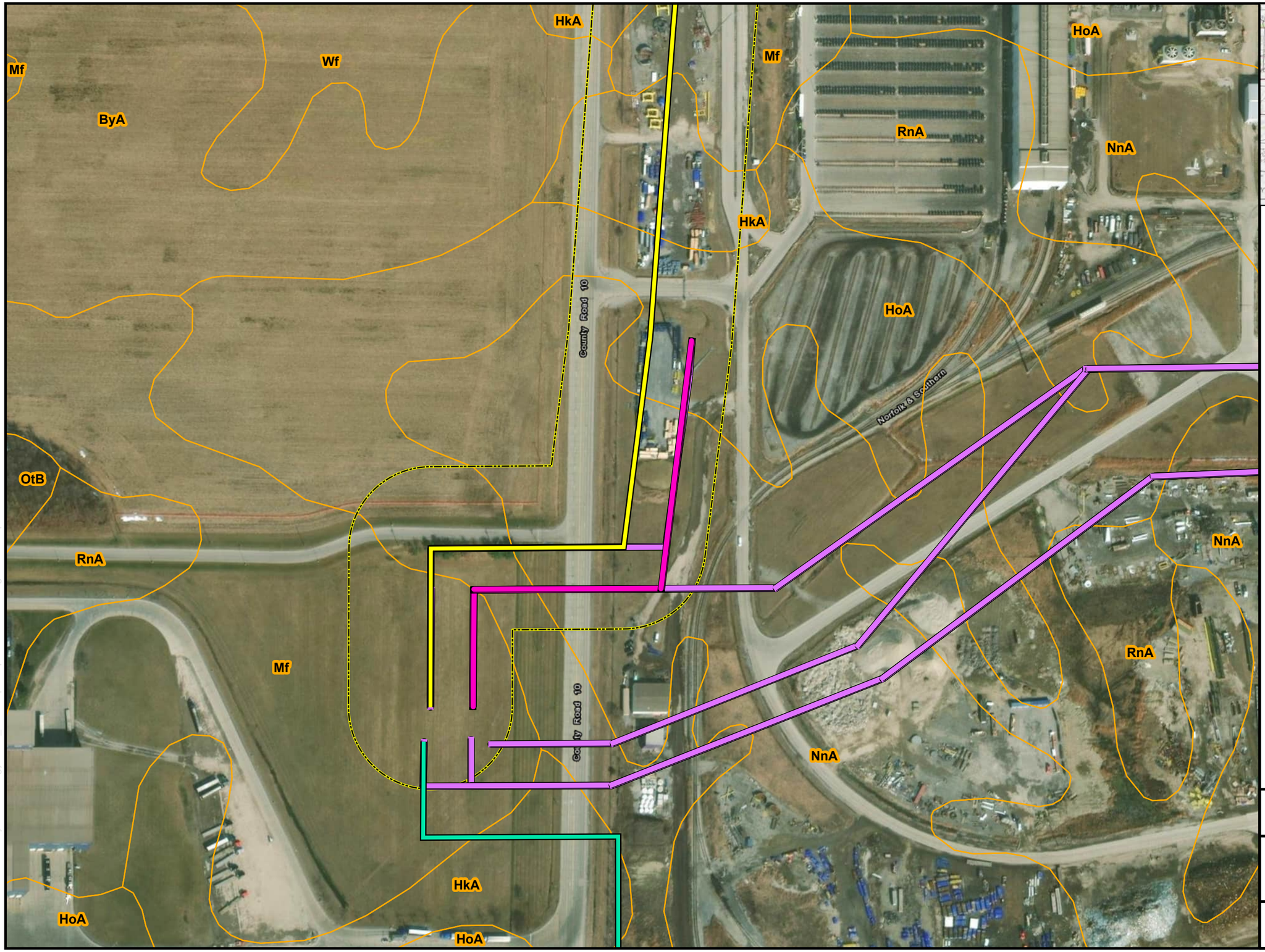

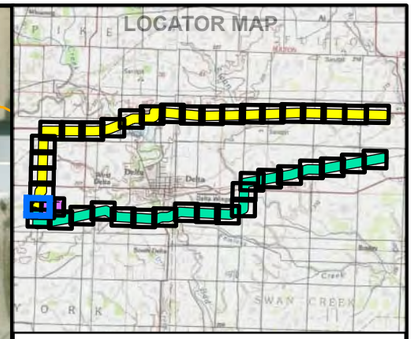

LEGEND:

- 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

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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

DATE: 2/23/2023

Jacobs

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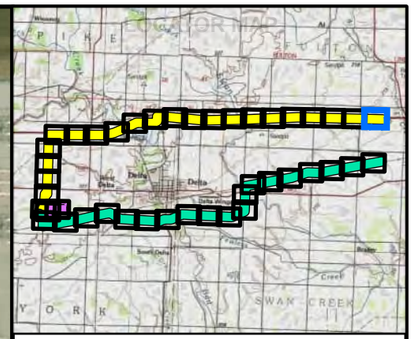

LEGEND:

- 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

N

BASE MAP SOURCE:
Esri World Imagery

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

PREFERRED ROUTE
FIGURE 3-1
DELINEATED FEATURES MAP

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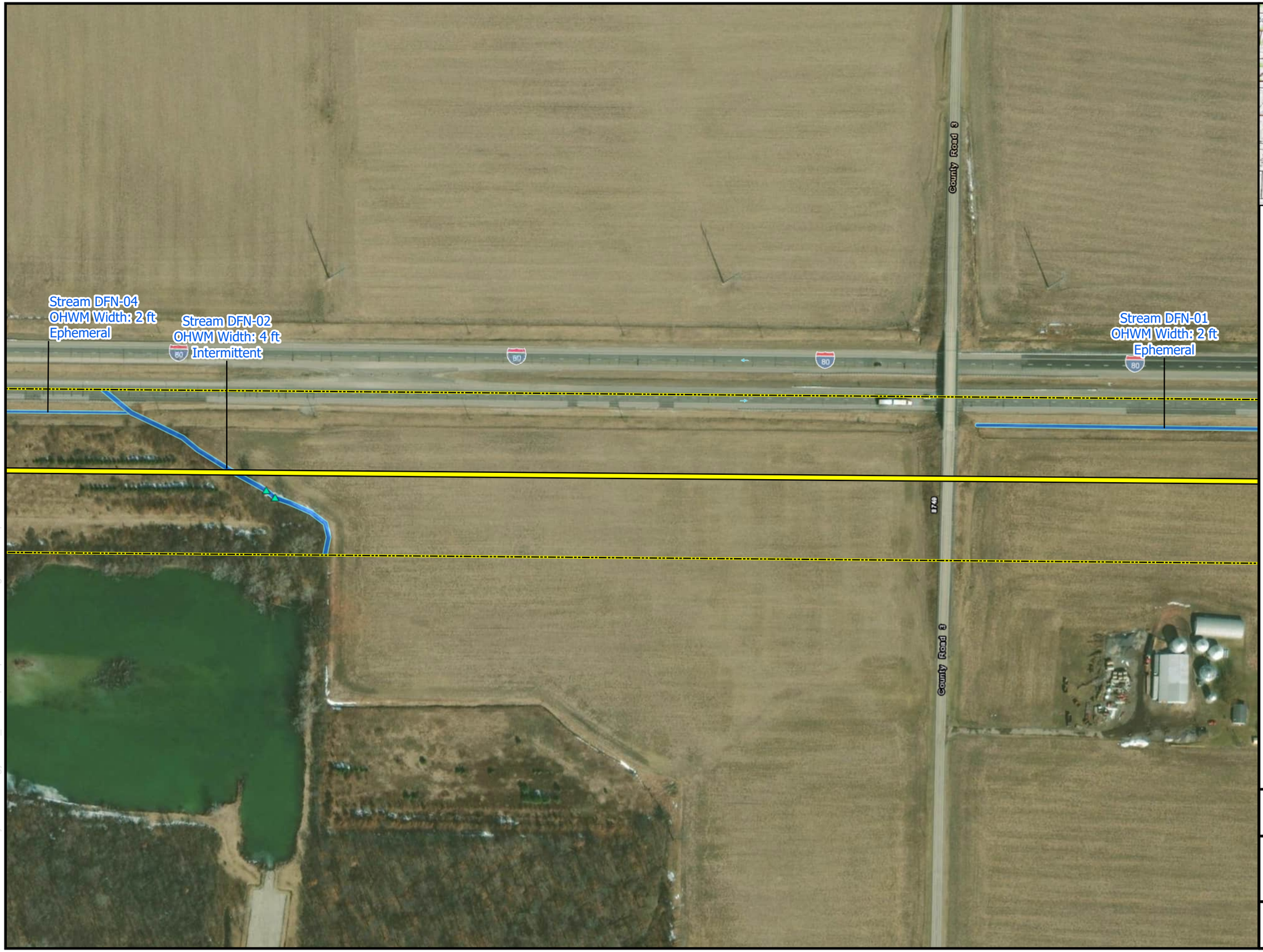

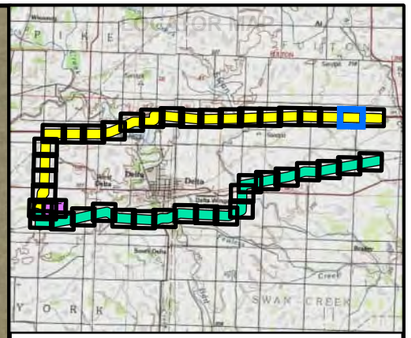

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-2
DELINEATED FEATURES MAP

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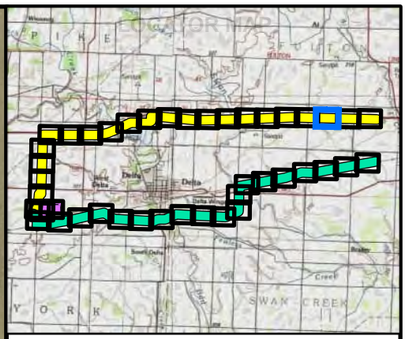

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-3
DELINEATED FEATURES MAP

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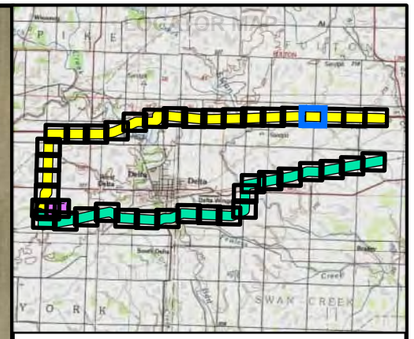

LEGEND:

- 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

N

BASE MAP SOURCE:
Esri World Imagery

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

PREFERRED ROUTE
FIGURE 3-4
DELINEATED FEATURES MAP

DATE: 2/23/2023

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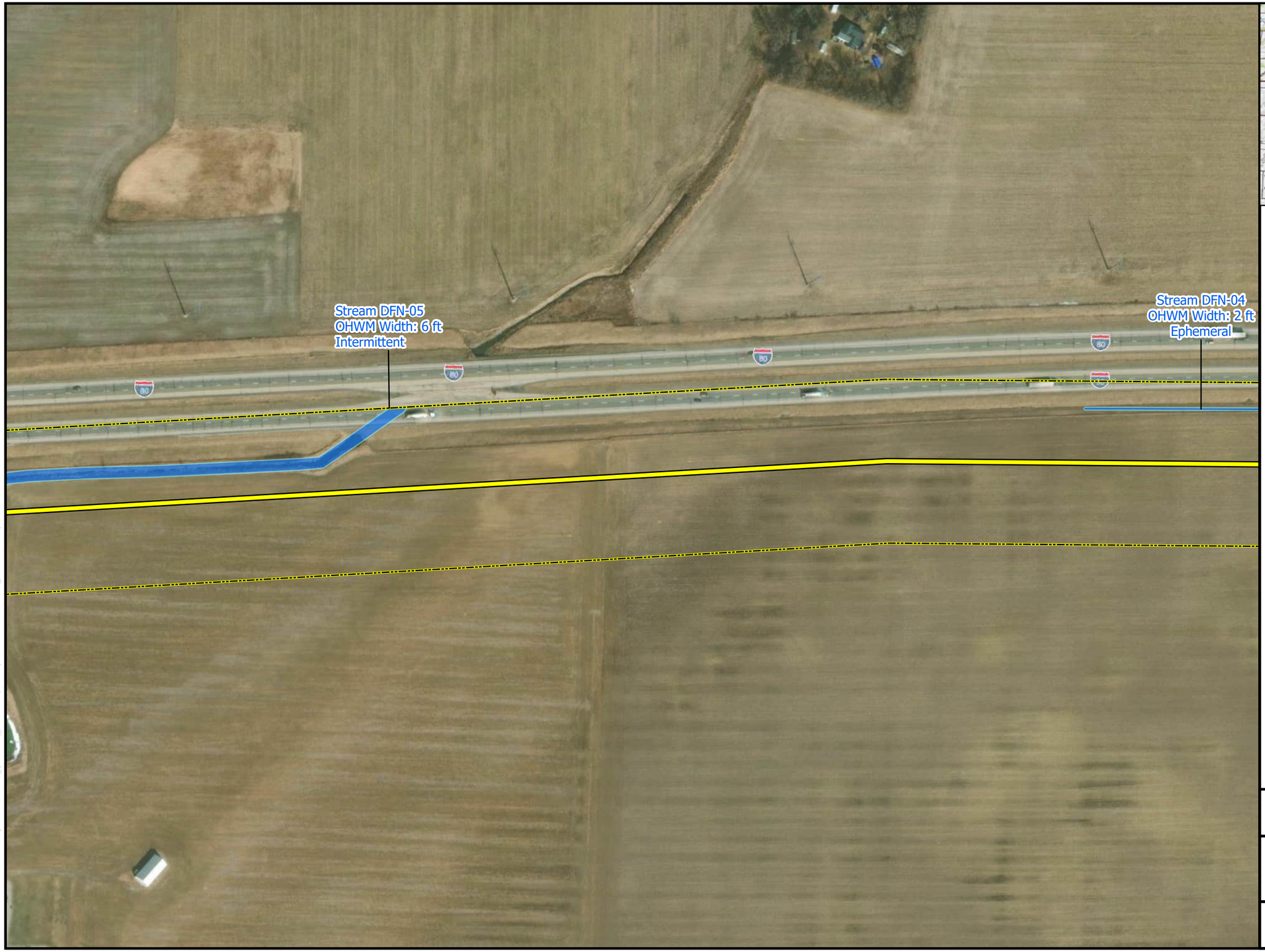

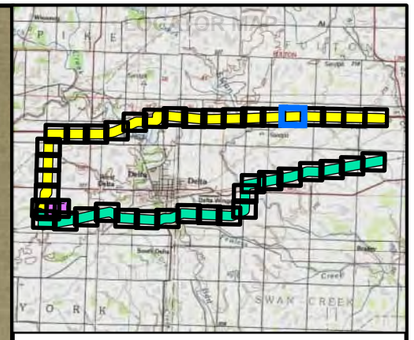

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-5
DELINEATED FEATURES MAP

DATE: 2/23/2023

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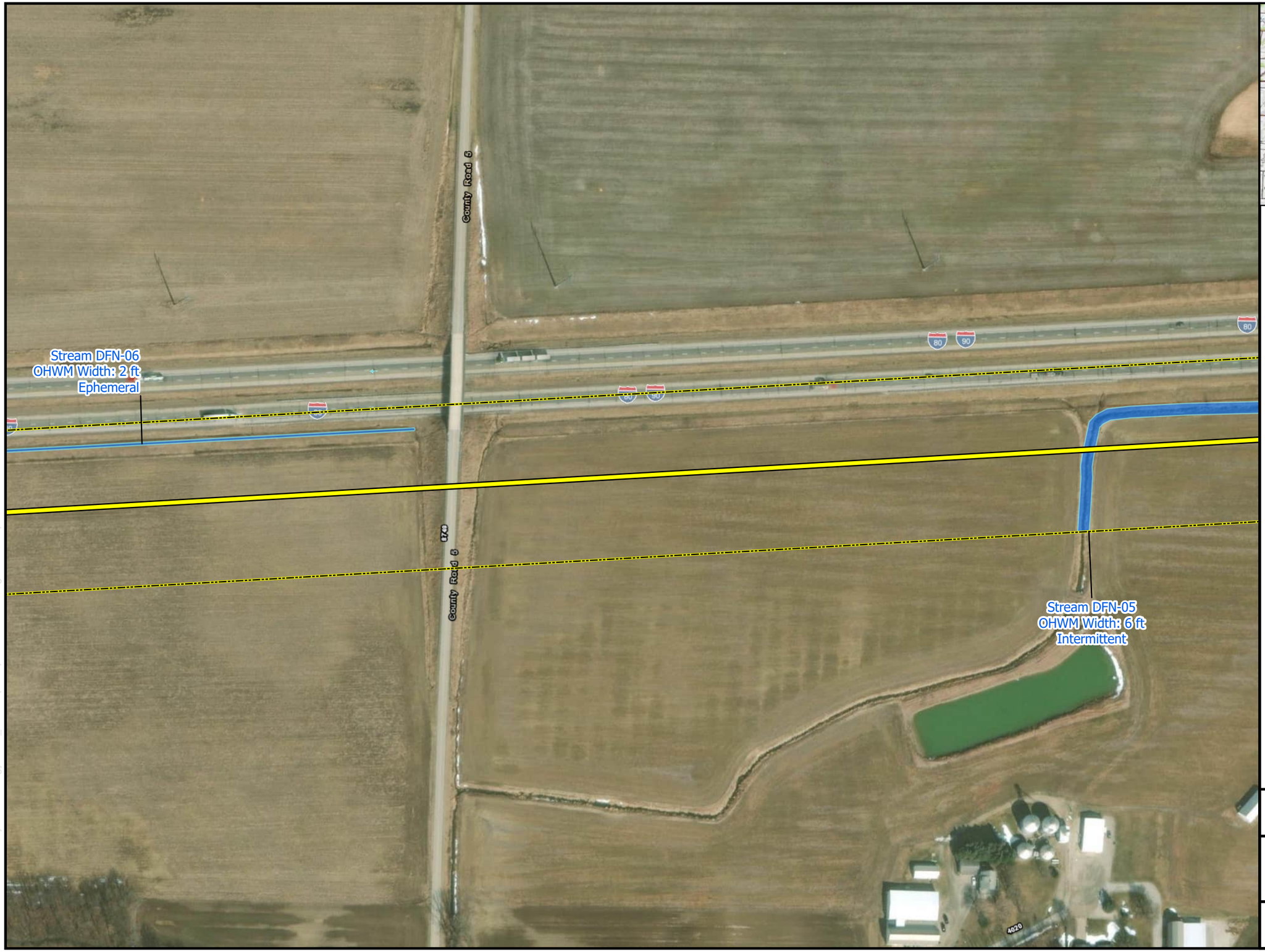

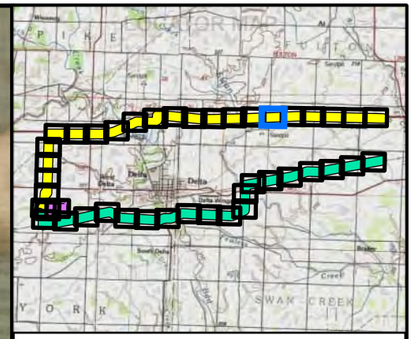

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-6
DELINEATED FEATURES MAP

DATE: 2/23/2023

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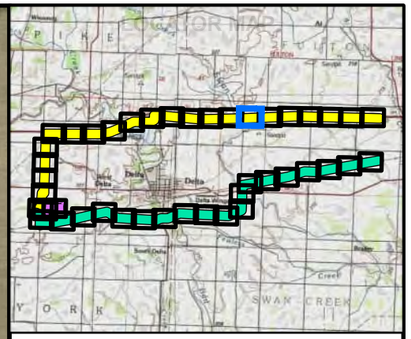

LEGEND:

- 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

N

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

PREFERRED ROUTE
FIGURE 3-7
DELINEATED FEATURES MAP

DATE: 2/23/2023

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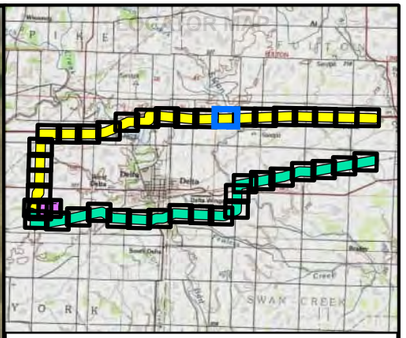

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-8
DELINEATED FEATURES MAP

DATE: 2/23/2023

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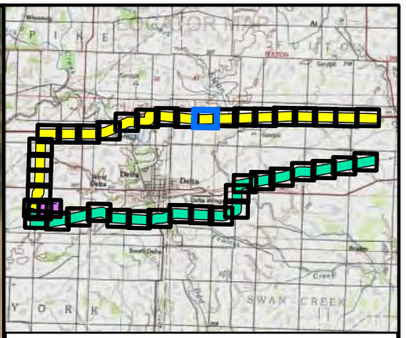

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-9
DELINEATED FEATURES MAP

DATE: 2/23/2023

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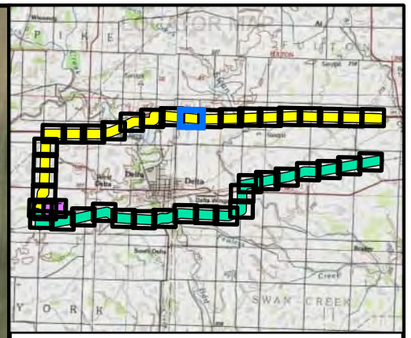

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-10
DELINEATED FEATURES MAP

DATE: 2/23/2023

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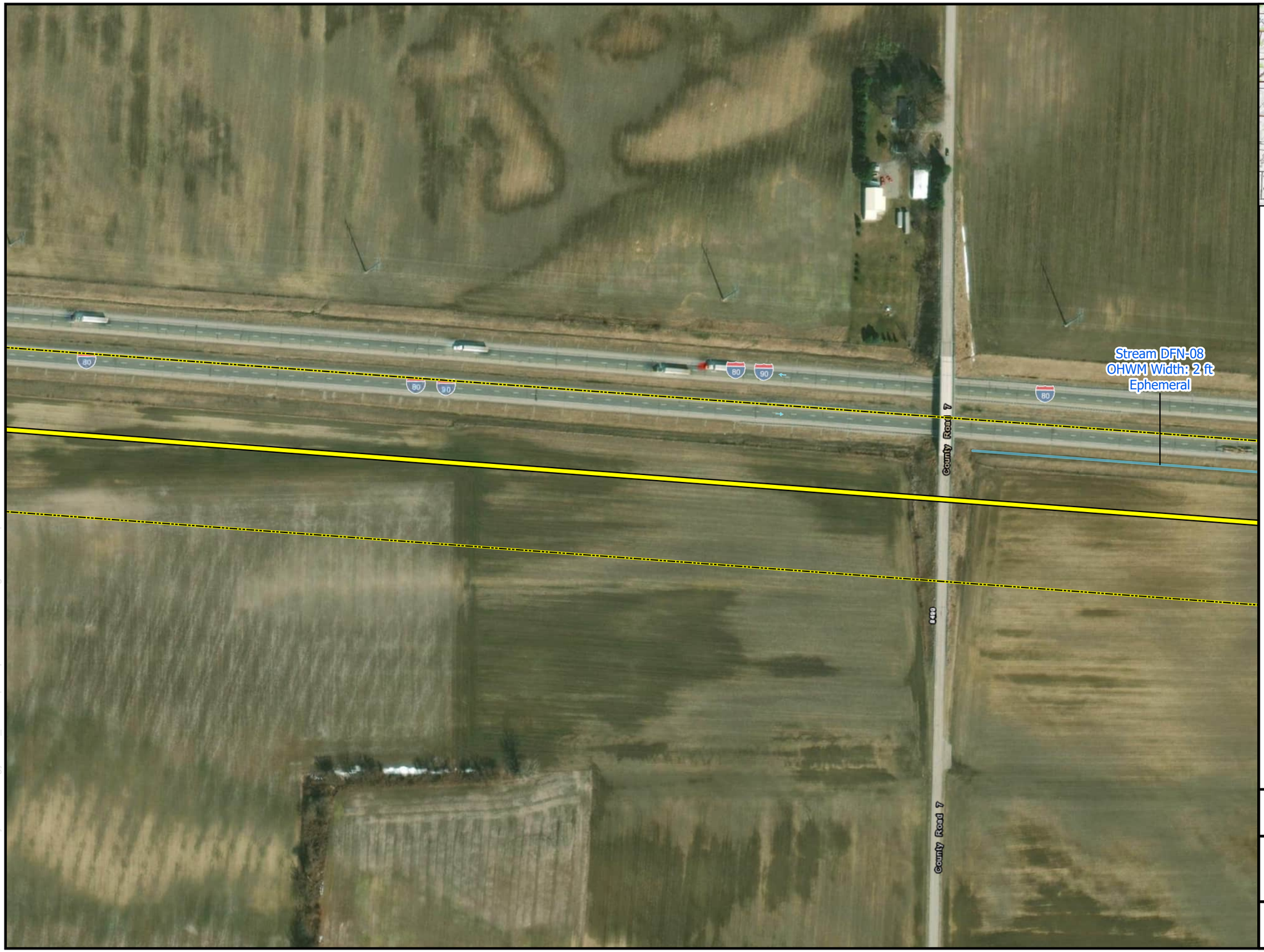

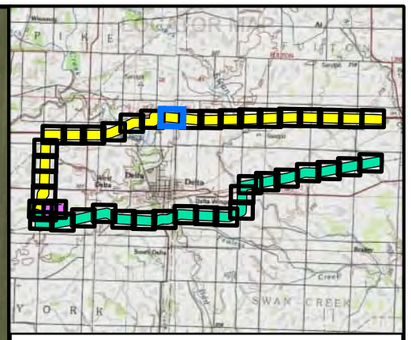

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-11
DELINEATED FEATURES MAP

DATE: 2/23/2023

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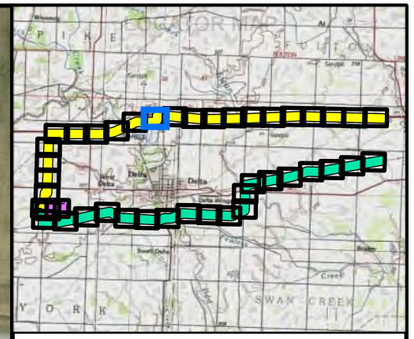

LEGEND:

- 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

N

BASE MAP SOURCE:
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PREFERRED ROUTE
FIGURE 3-12
DELINEATED FEATURES MAP

DATE: 2/23/2023

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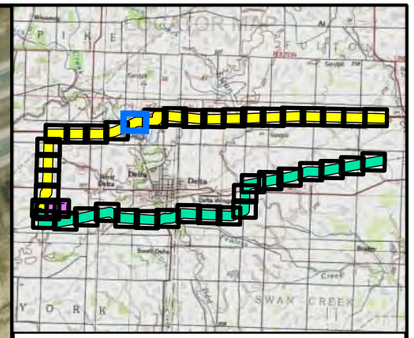

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-13
DELINEATED FEATURES MAP

DATE: 2/23/2023

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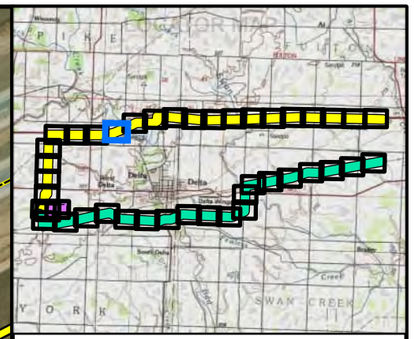

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-14
DELINEATED FEATURES MAP

DATE: 2/23/2023

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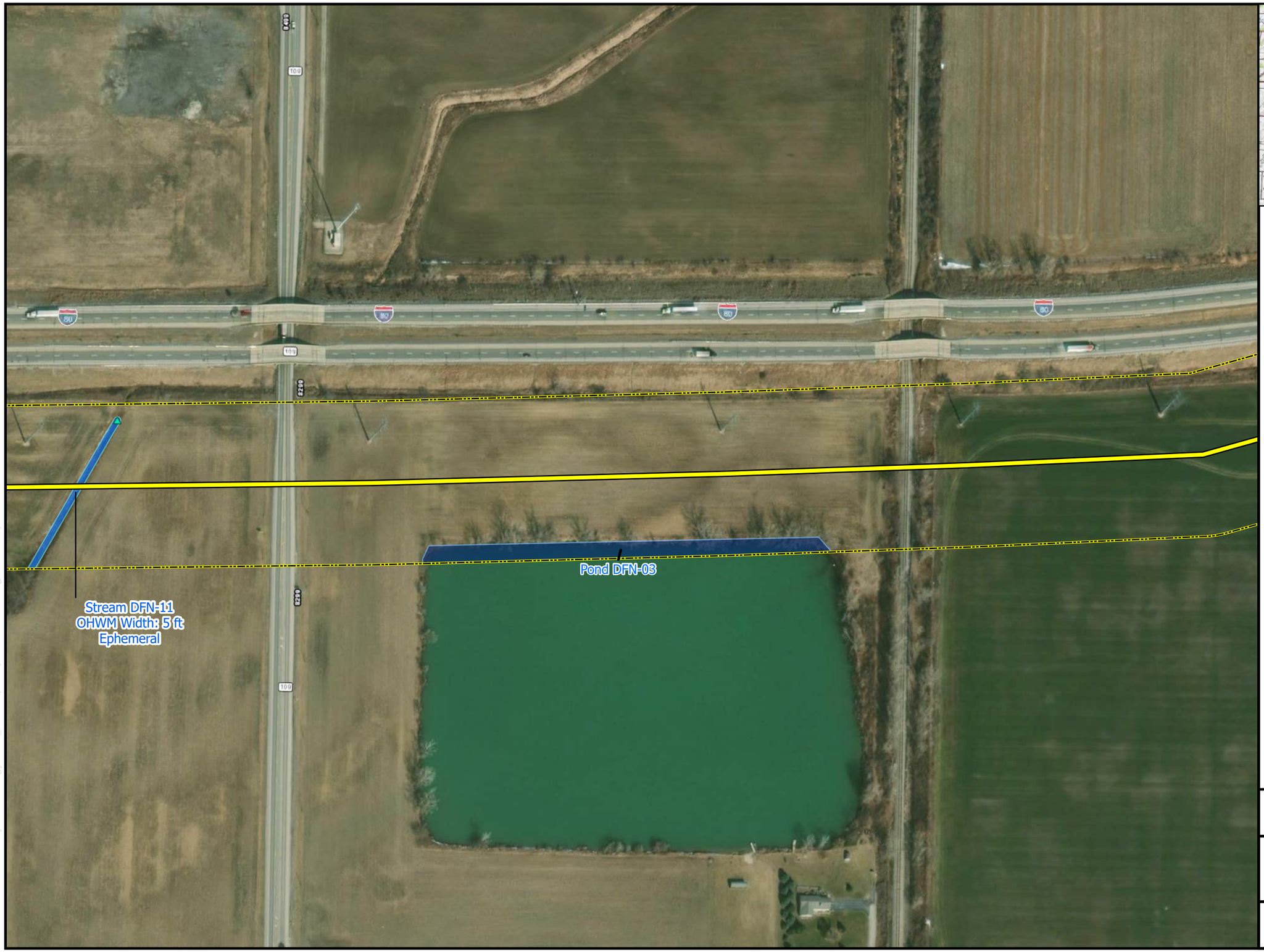

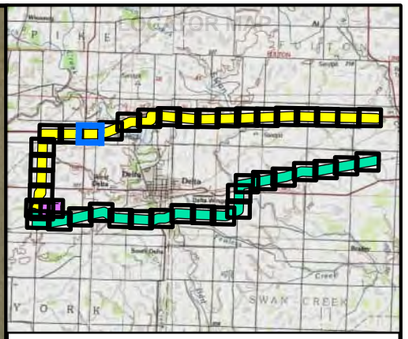

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-15
DELINEATED FEATURES MAP

DATE: 2/23/2023

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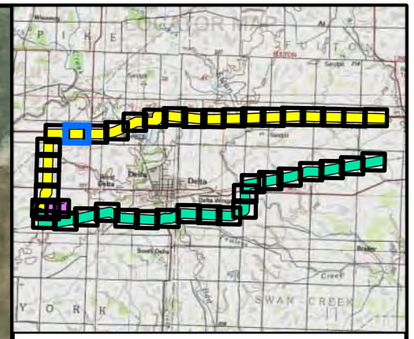

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

PREFERRED ROUTE
FIGURE 3-16
DELINEATED FEATURES MAP

DATE: 2/23/2023

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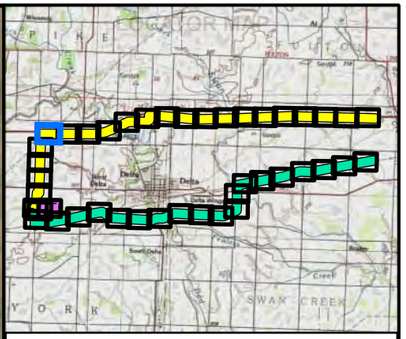

LEGEND:

- 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

N

BASE MAP SOURCE:
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PREFERRED ROUTE
FIGURE 3-17
DELINEATED FEATURES MAP

DATE: 2/23/2023

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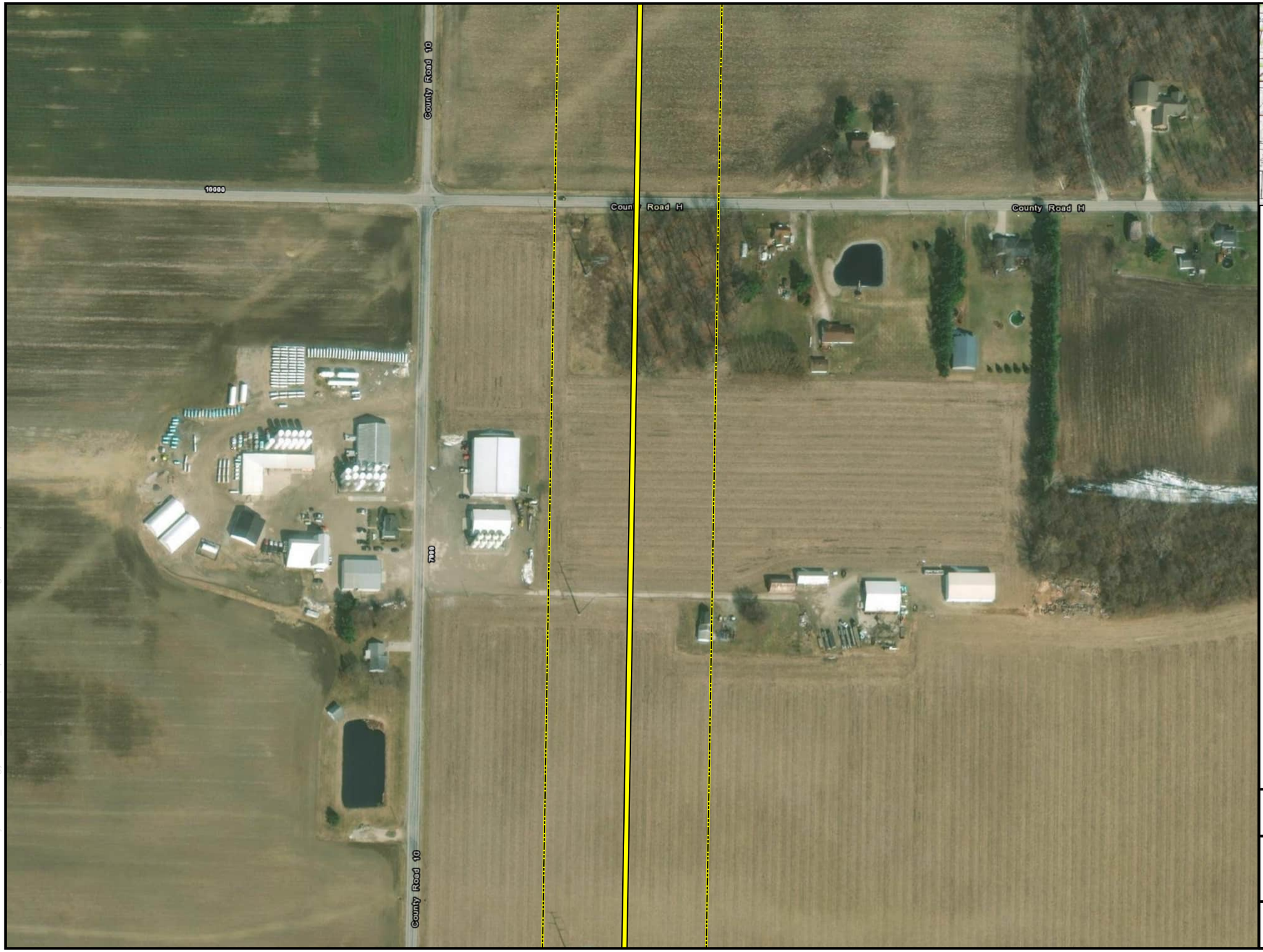

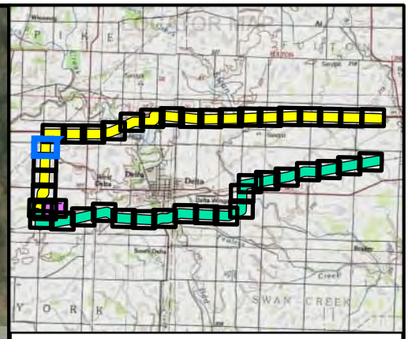

LEGEND:

- 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

N

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

PREFERRED ROUTE
FIGURE 3-18
DELINEATED FEATURES MAP

DATE: 2/23/2023

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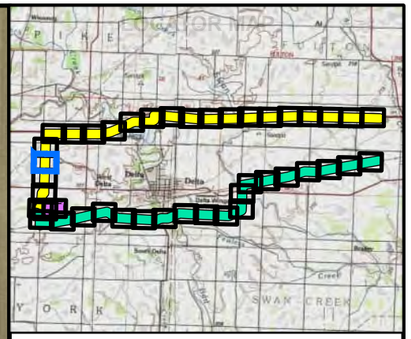

LEGEND:

- 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

N

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PREFERRED ROUTE
FIGURE 3-19
DELINEATED FEATURES MAP

DATE: 2/23/2023

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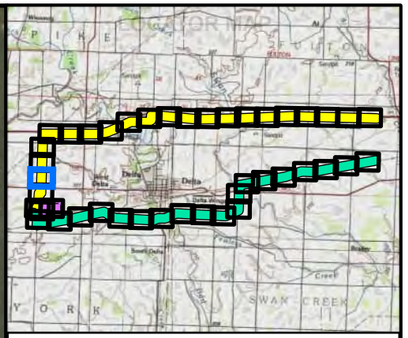

LEGEND:

- 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

N

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PREFERRED ROUTE
FIGURE 3-20
DELINEATED FEATURES MAP

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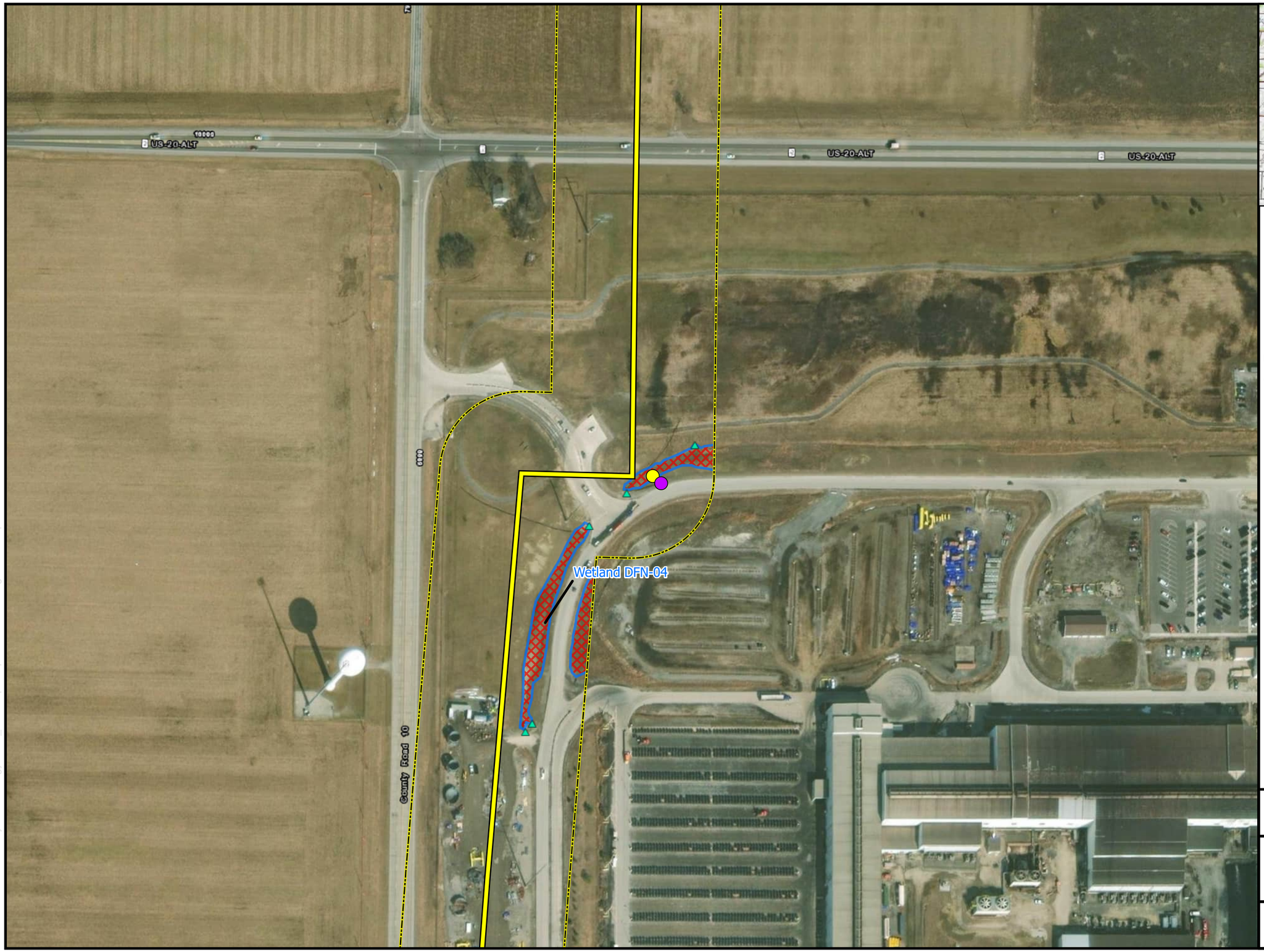

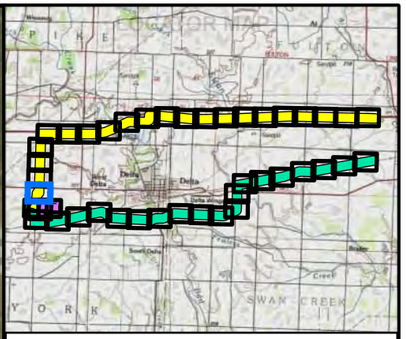

LEGEND:

- 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

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 3-21
DELINEATED FEATURES MAP

DATE: 2/23/2023

Jacobs

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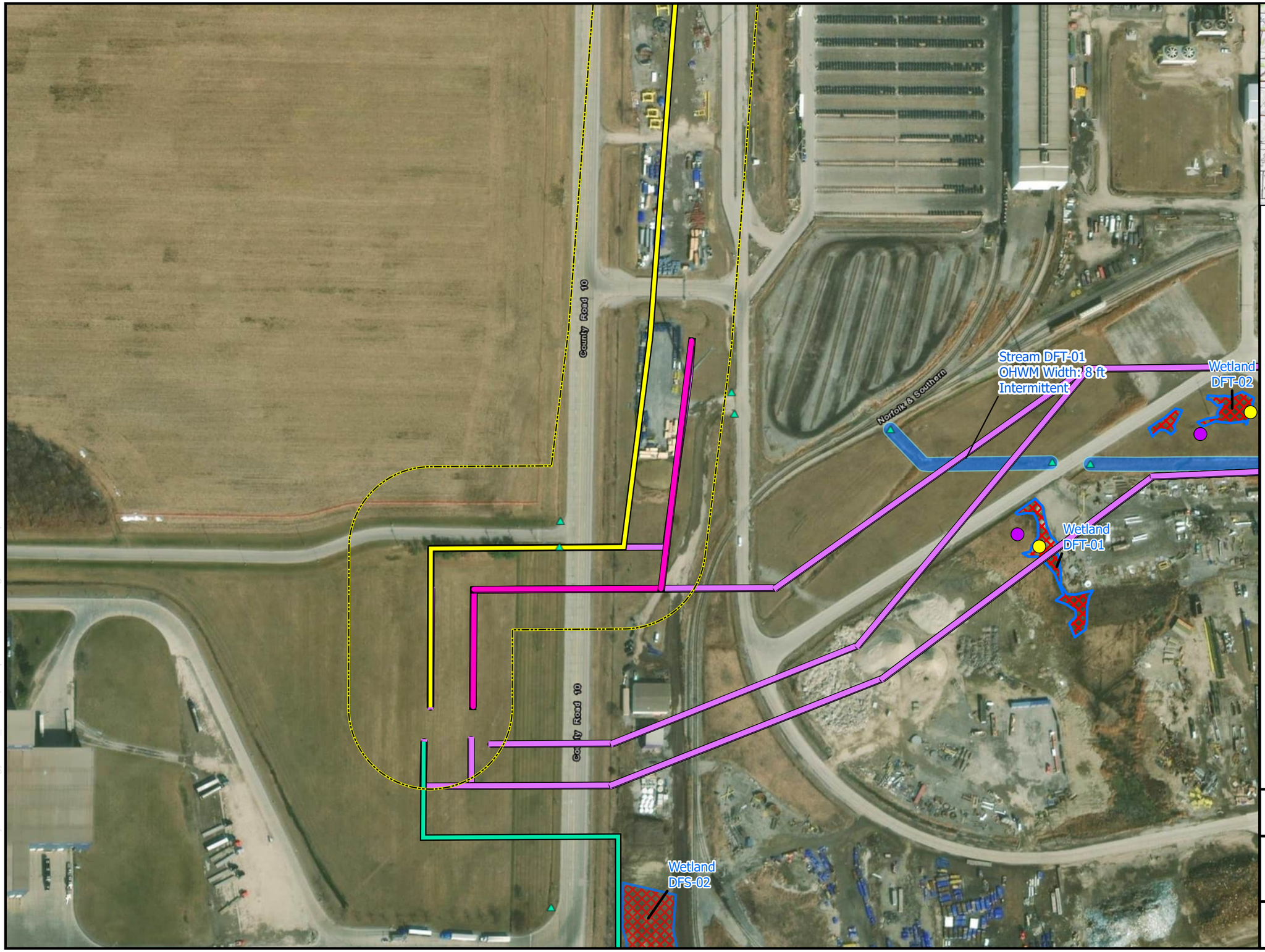

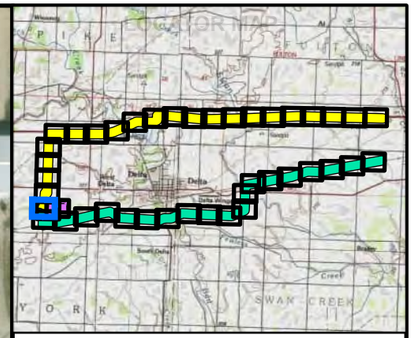

LEGEND:

- 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

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 3-22
DELINEATED FEATURES MAP

DATE: 2/23/2023

Jacobs

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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 DFN-01

Investigator(s): MJA | Section, Township, Range: S 1 T 7N R 7E

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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFN-01

Remarks: (Explain alternative procedures here or in a separate report.)

PFO wetland downslope from reservoir, in stream floodplain

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	60	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	30	Yes	FACW
2. Cornus alba	15	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	45 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Eragrostis hypnoides	40	Yes	OBL
2. Typha latifolia	15	No	OBL
3. Scirpus atrovirens	30	Yes	OBL
4. Carex cristatella	15	No	FACW
5. Symphyotrichum novae-angliae	10	No	FACW
6. Lysimachia nummularia	5	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	75	x 2 =	150
FAC species	60	x 3 =	180
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	220 (A)		415 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFN-01

Soil

S

W

N

General Site Photos	Wetland DFN-01

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 7N R 7E

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 X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Upland DFN-01,02

Remarks: (Explain alternative procedures here or in a separate report.)

Upland data point situated in mowed field, downslope of resevoir.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Schedonorus arundinaceus	70	Yes	FACU
2. Poa pratensis	40	Yes	FACU
3. Plantago lanceolata	10	No	FACU
4. Trifolium pratense	10	No	FACU
5. Cichorium intybus	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	135 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	0	x 2 =	0.0
FAC species	0	x 3 =	0.0
FACU species	135	x 4 =	540.0
UPL species	0	x 5 =	0.0
Column Totals:	135 (A)		540.0 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 4/2	90	5YR 4/6	10	Concer	PL,M	Fine sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): X

Type: Compacted

Depth (inches): 6.0

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

Remarks:

General Site Photos Upland DFN-01,02

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 7N R 7E

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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFN-02

Remarks: (Explain alternative procedures here or in a separate report.)

PEM wetland located downslope of reservoir.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Acer negundo	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Carex vulpinoidea	45	Yes	OBL
2. Cyperus esculentus	30	No	FACW
3. Setaria pumila	20	No	FAC
4. Bidens frondosa	20	No	FACW
5. Lysimachia nummularia	20	No	FACW
6. Eragrostis hypnoides	55	Yes	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	190 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100.0
FACW species	70	x 2 =	140.0
FAC species	25	x 3 =	75.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	195 (A)		315.0 (B)

Prevalence Index = B/A = 1.61538462

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 3/2	90	5YR 4/6	10	Concer	PL,M	Fine sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): X

Type: Compacted

Depth (inches): 8.0

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

Remarks:

General Site Photos Wetland DFN-02

Soil

S

W

E

General Site Photos Wetland DFN-02

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 7N R 7E

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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFN-03

Remarks: (Explain alternative procedures here or in a separate report.)

PFO wetland within woodlot, downslope of resevoir.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	60	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	25	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Carex grayi	45	Yes	FACW
2. Toxicodendron radicans	35	Yes	FAC
3. Lysimachia nummularia	20	No	FACW
4. Fraxinus pennsylvanica	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	155	x 2 =	310.0
FAC species	35	x 3 =	105.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	190 (A)		415.0 (B)

Prevalence Index = B/A = 2.18421053

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 3/1	98	10YR 5/4	2	Concer	M	Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFN-03

Soil

N

E

S

General Site Photos Wetland DFN-03

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 7N R 7E

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 X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFN-03

Remarks: (Explain alternative procedures here or in a separate report.)

Upland data point taken in woodlot.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	30	Yes	FACU
2. Populus deltoides	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Ulmus americana	50	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Ageratina altissima	10	No	FACU
2. Solidago canadensis	20	Yes	FACU
3. Toxicodendron radicans	20	Yes	FAC
4. Parthenocissus quinquefolia	50	Yes	FACU
5. Persicaria virginiana	5	No	FAC
6. Juglans nigra	10	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	115	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	50	x 2 =	100.0
FAC species	65	x 3 =	195.0
FACU species	120	x 4 =	480.0
UPL species	0	x 5 =	0.0
Column Totals:	235 (A)		775.0 (B)

Prevalence Index = B/A = 3.29787234

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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 Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 3/1	100					Silty clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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:

General Site Photos Upland DFN-03

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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFN-04

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:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes X	No _____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

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

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

Remarks:

Mulitple 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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	90	Yes	FACW
2. Eleocharis compressa	10	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	100	x 2 =	200.0
FAC species	0	x 3 =	0.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	100 (A)		200.0 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 19	10YR 5/1	95	10YR 4/4	5	Concer	PL,M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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 soils indicators present

General Site Photos Wetland DFN-04

N

E

S

W

General Site Photos Wetland DFN-04

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 X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFN-04

Remarks: (Explain alternative procedures here or in a separate report.)

Upland 01 between wetland and road on North Star property

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Daucus carota	40	Yes	UPL
2. Melilotus officinalis	40	Yes	FACU
3. Poa pratensis	20	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	0	x 2 =	0.0
FAC species	0	x 3 =	0.0
FACU species	60	x 4 =	240.0
UPL species	40	x 5 =	160.0
Column Totals:	100 (A)		400.0 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/4						Sandy loam	Shovel refusal at 6 inches
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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

General Site Photos Upland DFN-04

E

W

Soil

Appendix C
OEPA ORAM Data Forms

Site: Wetland DFN-01	**Rater(s):** MJA	**Date:** 2022-12-20

3.0 / 3.0 Metric 1. Wetland Area (size).

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)
- [x] 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 / 5.0 Metric 2. Upland buffers and surrounding land use.

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)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

10.5 / 15.5 Metric 3. Hydrology.

max 30 pts. subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [x] other Wetland is dirtbike park. Soil moved around to

5.5 / 21.0 Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

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

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

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

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

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

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

Check all disturbances observed

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

21.0
subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFN-01	**Rater(s):** MJA	**Date:** 2022-12-20

21.0
subtotal first page

0.0 | 21.0 **Metric 5. Special Wetlands.**

max 10 pts. subtotal

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 **Metric 6. Plant communities, interspersion, microtopography.**

max 20 pts. subtotal

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)
- [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)
- [ ] 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 hummucks/tussucks
- [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)**

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

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFN-02	**Rater(s):** MJA	**Date:**

0 | 0 Metric 1. Wetland Area (size).

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)
- [x] <0.1 acres (0.04ha) (0 pts)

5 | 5 Metric 2. Upland buffers and surrounding land use.

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)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

10 | 15 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other Downslope of reservoir

7 | 22 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

- [ ] None or none apparent (4)
- [x] 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)
- [x] Poor (1)

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

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

Check all disturbances observed

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

22

subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFN-02	**Rater(s):** MJA	**Date:**

22
subtotal first page

0 (max 10 pts.) 22 (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 (max 20 pts.) 24 (subtotal) Metric 6. Plant communities, interspersion, 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 hummucks/tussucks
- [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)

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

Site: Wetland DFN-03	**Rater(s):** MJA	**Date:**

0 | 0 Metric 1. Wetland Area (size).

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)
- [x] <0.1 acres (0.04ha) (0 pts)

8 | 8 Metric 2. Upland buffers and surrounding land use.

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)
- [x] 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)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

12.5 | 20.5 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other Downslope of resevoir

10 | 30.5 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

- [ ] None or none apparent (4)
- [x] 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)
- [x] Poor (1)

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

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

Check all disturbances observed

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

30.5

subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFN-03	**Rater(s):** MJA	**Date:**

30.5
subtotal first page

0 (max 10 pts.) | 30.5 (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 (max 20 pts.) | 34.5 (subtotal)

Metric 6. Plant communities, interspersion, 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 hummucks/tussucks
- [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)**

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

Site: Wetland DFN-04	**Rater(s):** JBL	**Date:**

2 / 2 Metric 1. Wetland Area (size).

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)
- [x] 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)

1 / 3 Metric 2. Upland buffers and surrounding land use.

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)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

6 / 9 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

5.5 / 14.5 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [x] 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)
- [x] Poor to fair (2)
- [ ] Poor (1)

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

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

Check all disturbances observed

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

14.5
subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFN-04	**Rater(s):** JBL	**Date:**

14.5
subtotal first page

0 | 14.5 | 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)

-2 | 12.5 | max 20 pts. | subtotal

Metric 6. Plant communities, interspersion, 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

- [X] 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 hummucks/tussucks
- [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)**

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

Appendix D
QHEI Stream Data Forms

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 55.5

Stream & 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.:* (NAD 83 - decimal °) 41.56370 / -83.94712 *Office verified location* [x]

1] *SUBSTRATE* Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
[ ] [ ] BLDR /SLABS [10]			[ ] [ ] HARDPAN [4]		
[ ] [ ] BOULDER [9]			[ ] [ ] DETRITUS [3]		
[ ] [ ] COBBLE [8]	5	10	[ ] [ ] MUCK [2]		
[x] [ ] GRAVEL [7]	10	50	[ ] [ ] SILT [2]	40	10
[ ] [x] SAND [6]	45	30	[ ] [ ] ARTIFICIAL [0]		
[ ] [ ] BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

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

Check ONE (*Or 2 & average*)

ORIGIN
- [ ] LIMESTONE [1]
- [x] TILLS [1]
- [ ] WETLANDS [0]
- [ ] HARDPAN [0]
- [ ] SANDSTONE [0]
- [ ] RIP/RAP [0]
- [ ] LACUSTURINE [0]
- [ ] SHALE [-1]
- [ ] COAL FINES [-2]

SILT / EMBEDDEDNESS

QUALITY
- [ ] HEAVY [-2]
- [x] MODERATE [-1]
- [x] NORMAL [0]
- [ ] FREE [1]
- [ ] EXTENSIVE [-2]
- [x] MODERATE [-1]
- [x] NORMAL [0]
- [ ] NONE [1]

Substrate 13 *Maximum 20*

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.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
2	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	1	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)
- [ ] EXTENSIVE >75% [11]
- [x] MODERATE 25-75% [7]
- [x] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Cover Maximum 20 8

3] *CHANNEL MORPHOLOGY* Check ONE in each category (*Or 2 & average*)

SINUOSITY
- [ ] HIGH [4]
- [ ] MODERATE [3]
- [x] LOW [2]
- [ ] NONE [1]

DEVELOPMENT
- [ ] EXCELLENT [7]
- [ ] GOOD [5]
- [x] FAIR [3]
- [ ] POOR [1]

CHANNELIZATION
- [ ] NONE [6]
- [ ] RECOVERED [4]
- [x] RECOVERING [3]
- [ ] RECENT OR NO RECOVERY [1]

STABILITY
- [ ] HIGH [3]
- [x] MODERATE [2]
- [x] LOW [1]

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

L	R	
[ ]	[ ]	NONE / LITTLE [3]
[x]	[x]	MODERATE [2]
[x]	[x]	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
[ ]	[ ]	WIDE > 50m [4]
[ ]	[ ]	MODERATE 10-50m [3]
[ ]	[ ]	NARROW 5-10m [2]
[x]	[x]	VERY NARROW < 5m [1]
[ ]	[ ]	NONE [0]

FLOOD PLAIN QUALITY

L	R	
[ ]	[ ]	FOREST, SWAMP [3]
[ ]	[ ]	SHRUB OR OLD FIELD [2]
[ ]	[ ]	RESIDENTIAL, PARK, NEW FIELD [1]
[ ]	[ ]	FENCED PASTURE [1]
[x]	[x]	OPEN PASTURE, ROWCROP [0]

L	R	
[ ]	[ ]	CONSERVATION TILLAGE [1]
[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	MINING / CONSTRUCTION [0]

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]
- [x] < 0.2m [0]

CHANNEL WIDTH Check ONE (*Or 2 & average*)
- [x] POOL WIDTH > RIFFLE WIDTH [2]
- [ ] POOL WIDTH = RIFFLE WIDTH [1]
- [ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply
- [ ] TORRENTIAL [-1]
- [ ] VERY FAST [1]
- [ ] FAST [1]
- [ ] MODERATE [1]
- [x] SLOW [1]
- [ ] INTERSTITIAL [-1]
- [ ] INTERMITTENT [-2]
- [ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back) x

Pool / Current Maximum 12 3

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH
- [ ] BEST AREAS > 10cm [2]
- [ ] BEST AREAS 5-10cm [1]
- [x] BEST AREAS < 5cm [metric=0]

RUN DEPTH
- [ ] MAXIMUM > 50cm [2]
- [x] MAXIMUM < 50cm [1]

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

RIFFLE / RUN EMBEDDEDNESS
- [ ] NONE [2]
- [ ] LOW [1]
- [x] MODERATE [0]
- [ ] EXTENSIVE [-1]

Riffle / Run Maximum 8 1.5

6] *GRADIENT* (8.61 ft/mi)

DRAINAGE AREA (11.1 mi²)
- [ ] VERY LOW - LOW [2-4]
- [x] MODERATE [6-10]
- [ ] HIGH - VERY HIGH [10-6]

%POOL: 50 **%GLIDE:** 35 **%RUN:** 10 **%RIFFLE:** 5

Gradient Maximum 10 10

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

CLARITY

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

CANOPY

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

pass 1st _____ cm

pass 2nd _____ cm

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

multiple reaches of the stream present throughout the survey areas. Each reach was determined to have the same flow regime and similar stream characteristics as the other reaches.

B] AESTHETICS

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

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

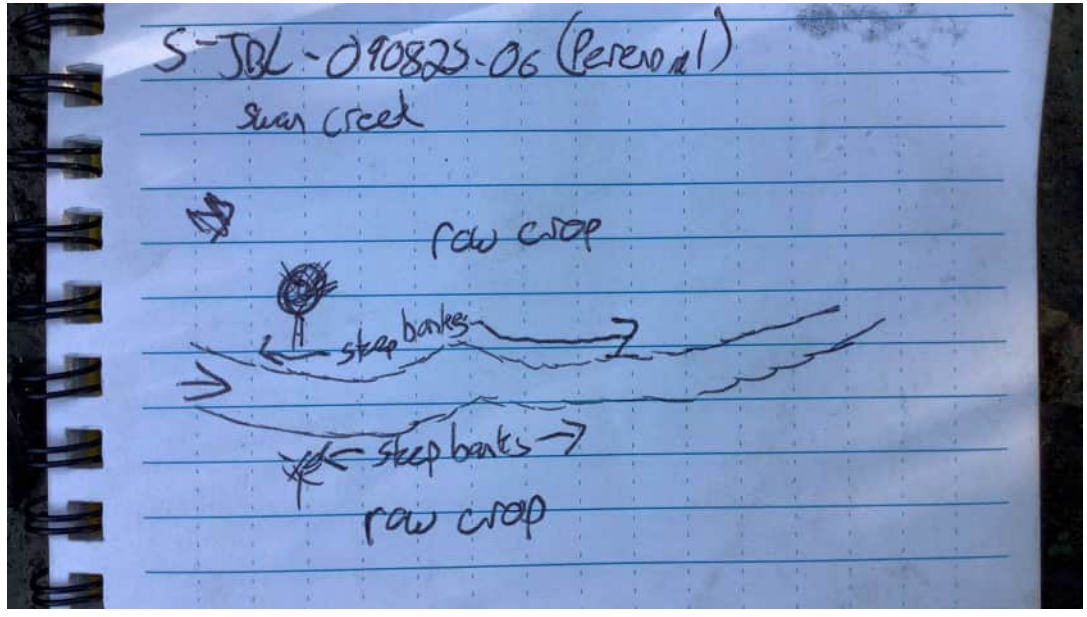
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / 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

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 47.5

Stream & Location: Stream DFN-10 *RM:* 18.2 *Date:* 9/8/22

S-JBL-090822-04 *Scorers Full Name & Affiliation:* JBL Jacobs

River Code: 04100009 03 02 *STORET #:* _____ *Lat./ Long.:* (NAD 83 - decimal °) 41.55176 / -83.98877 *Office verified location* [x]

1] *SUBSTRATE* Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
[ ] [ ] BLDR /SLABS [10]			[ ] [ ] HARDPAN [4]		
[ ] [ ] BOULDER [9]			[ ] [ ] DETRITUS [3]		
[x] [ ] COBBLE [8]	10	70	[ ] [ ] MUCK [2]		
[ ] [ ] GRAVEL [7]	0	10	[ ] [x] SILT [2]	80	10
[ ] [ ] SAND [6]	10	10	[ ] [ ] ARTIFICIAL [0]		
[ ] [ ] BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

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

ORIGIN		QUALITY
[ ] LIMESTONE [1]	SILT	[ ] HEAVY [-2]
[x] TILLS [1]		[x] MODERATE [-1]
[ ] WETLANDS [0]		[ ] NORMAL [0]
[ ] HARDPAN [0]		[ ] FREE [1]
[ ] SANDSTONE [0]	EMBEDDEDNESS	[ ] EXTENSIVE [-2]
[ ] RIP/RAP [0]		[x] MODERATE [-1]
[ ] LACUSTURINE [0]		[ ] NORMAL [0]
[ ] SHALE [-1]		[ ] NONE [1]
[ ] COAL FINES [-2]		

Substrate 9 *Maximum 20*

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.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	1	ROOTWADS [1]	1	AQUATIC MACROPHYTES [1]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT Check ONE (*Or 2 & average*)

[ ] EXTENSIVE >75% [11]
[x] MODERATE 25-75% [7]
[x] SPARSE 5-<25% [3]
[ ] NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 9

3] *CHANNEL MORPHOLOGY* Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
[ ] HIGH [4]	[ ] EXCELLENT [7]	[ ] NONE [6]	[ ] HIGH [3]
[ ] MODERATE [3]	[ ] GOOD [5]	[ ] RECOVERED [4]	[x] MODERATE [2]
[x] LOW [2]	[x] FAIR [3]	[x] RECOVERING [3]	[ ] LOW [1]
[ ] NONE [1]	[ ] POOR [1]	[ ] 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 & average*)

River right looking downstream

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

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

Comments

Riparian Maximum 10 3

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

MAXIMUM DEPTH Check **ONE** (*ONLY!*)

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

CHANNEL WIDTH Check ONE (*Or 2 & average*)

[x] POOL WIDTH > RIFFLE WIDTH [2]
[ ] POOL WIDTH = RIFFLE WIDTH [1]
[ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply

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

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact x
(circle one and comment on back)

Comments

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 & average*). [ ] NO RIFFLE [metric=0]

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

Comments

Riffle / Run Maximum 8 2

6] *GRADIENT* (5.3 ft/mi)
DRAINAGE AREA (42.8 mi²)

[ ] VERY LOW - LOW [2-4]
[x] MODERATE [6-10]
[ ] HIGH - VERY HIGH [10-6]

%POOL: 40 **%GLIDE:** 40
%RUN: 10 **%RIFFLE:** 10

Gradient Maximum 10 8

A] SAMPLED REACH

Check ALL that apply

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE

1st -sample pass- 2nd	
[ ] HIGH	[ ]
[ ] UP	[ ]
[x] NORMAL	[ ]
[ ] LOW	[ ]
[ ] DRY	[ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

_____ meters

CLARITY

1st --sample pass-- 2nd	
[ ] < 20 cm	[ ]
[x] 20-<40 cm	[ ]
[ ] 40-70 cm	[ ]
[ ] > 70 cm/ CTB	[ ]
[ ] SECCHI DEPTH	[ ]

CANOPY

- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass _____ cm

2nd _____ cm

C] RECREATION

POOL: [Nc] >100ft² [Nc] >3ft

AREA DEPTH

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

B] AESTHETICS

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

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

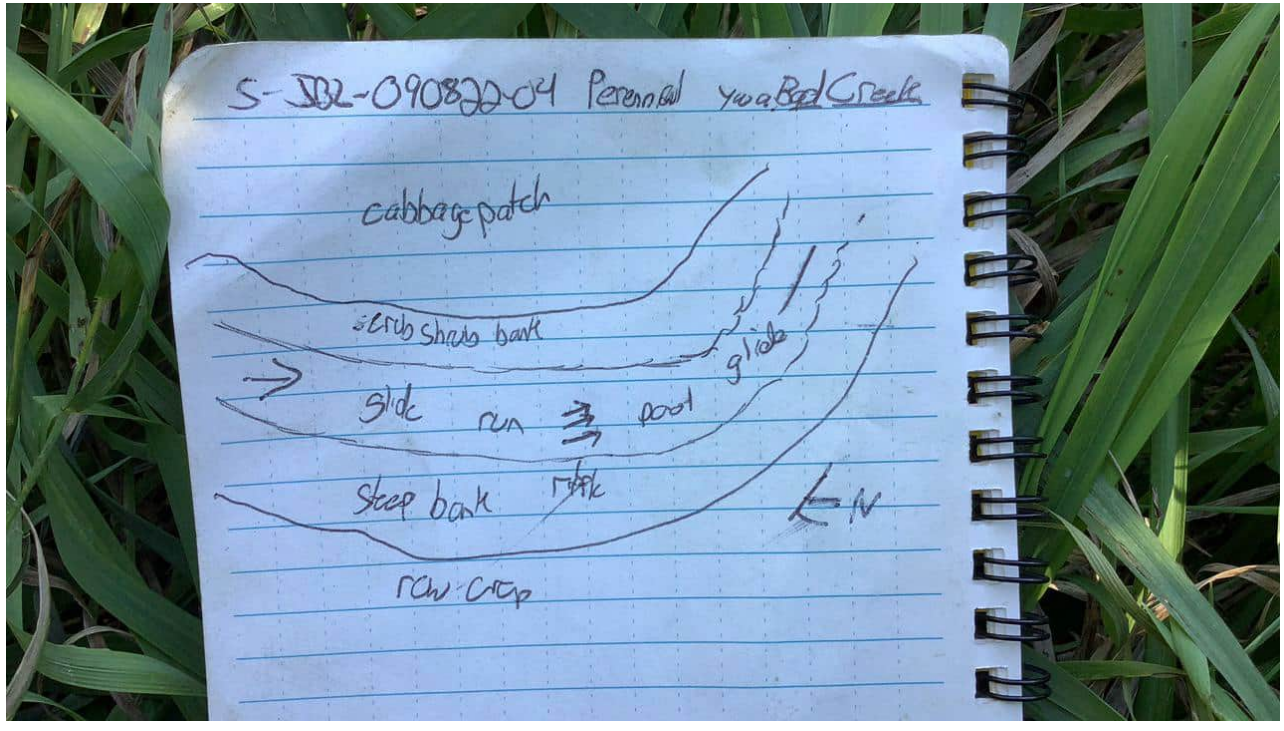
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / 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

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 (mi²) 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
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	50
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	BEDROCK **[16 pts]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☒	CLAY or HARDPAN **[0 pt]**	50
☐	GRAVEL (2-64 mm) **[9 pts]**		☐	MUCK **[0 pts]**	
☐	SAND (<2 mm) **[6 pts]**		☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 3

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☒	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 0

Pool Depth Max = 30

0

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 2

Bankfull Width Max=30

5

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)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☒	☒	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☒	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Highway along left bank

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☒	Dry channel, no water (ephemeral)

COMMENTS _____

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

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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 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): 100

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): _____

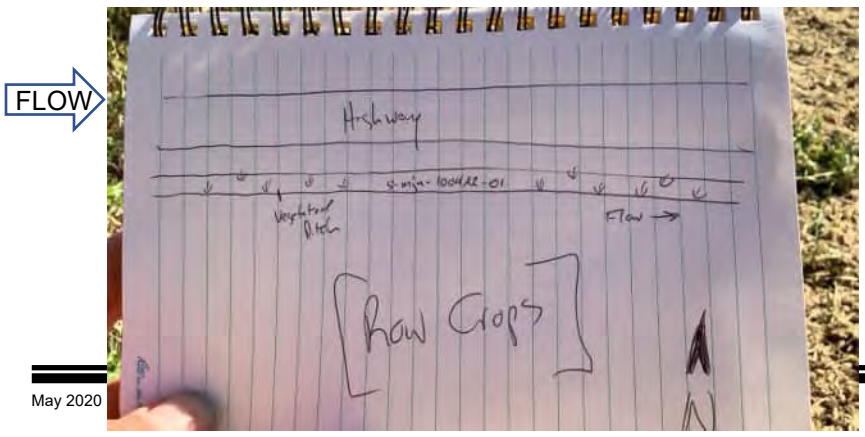
Salamanders Observed? (Y/N) _____ Species observed (if known): _____

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



Site Photos	Stream DFN-01

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 (mi²) 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
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	65
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	25
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**	10	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6 **(B)** **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☒	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 1

Pool Depth Max = 30

5

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

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 4

Bankfull Width Max=30

15

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)

L	R	
☐	☒	Wide >10m
☐	☐	Moderate 5-10m
☒	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R	
☐	☐	Mature Forest, Wetland
☐	☐	Immature Forest, Shrub or Old Field
☐	☐	Residential, Park, New Field
☐	☐	Fenced Pasture

L	R	
☐	☒	Conservation Tillage
☐	☐	Urban or Industrial
☒	☐	Open Pasture, Row Crop
☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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): 20

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

Site Photos	Stream DFN-02

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 (mi²) 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

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
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

8

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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☒	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 2

Pool Depth Max = 30

5

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 7

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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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): 100

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

Site Photos	Stream DFN-03

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 (mi²) 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

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
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	50
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	BEDROCK **[16 pts]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☒	CLAY or HARDPAN **[0 pt]**	50
☐	GRAVEL (2-64 mm) **[9 pts]**		☐	MUCK **[0 pts]**	
☐	SAND (<2 mm) **[6 pts]**		☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 3

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☒	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 0

Pool Depth Max = 30

0

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 2

Bankfull Width Max=30

5

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)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☒	☒	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☒	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Highway on left bank

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☒	Dry channel, no water (ephemeral)

COMMENTS _____

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

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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: 09/26/2022 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): _____

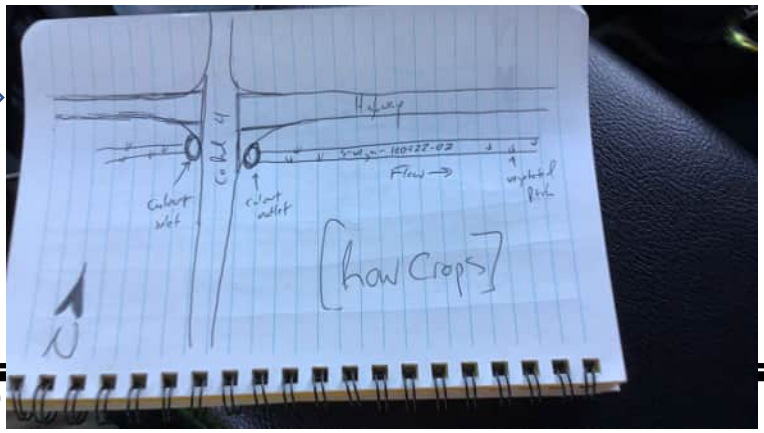
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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

FLOW



Site Photos	Stream DFN-04

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 (mi²) 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
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	50
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	40
☐	BEDROCK **[16 pts]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☐	CLAY or HARDPAN **[0 pt]**	
☐	GRAVEL (2-64 mm) **[9 pts]**		☐	MUCK **[0 pts]**	
☐	SAND (<2 mm) **[6 pts]**	10	☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 4

Pool Depth Max = 30

25

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS TOB approx 25 feet **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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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): 100

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

Site Photos	Stream DFN-05

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 (mi²) 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

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
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	50
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 3

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☒	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 0

Pool Depth Max = 30

0

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 2

Bankfull Width Max=30

5

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)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☒	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Highway along right bank

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☒	Dry channel, no water (ephemeral)

COMMENTS _____

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

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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 0.07 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): _____

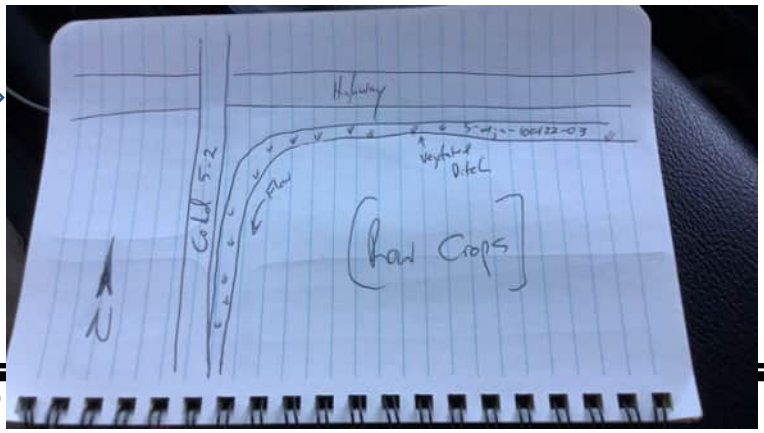
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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

FLOW



Site Photos	Stream DFN-06

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 (mi²) 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

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
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	15
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**	5	☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**	10	☐ ☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 3

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

7

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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☒	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 0

Pool Depth Max = 30

0

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 2

Bankfull Width Max=30

5

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)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☒	Dry channel, no water (ephemeral)

COMMENTS _____

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

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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 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): 100

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): _____

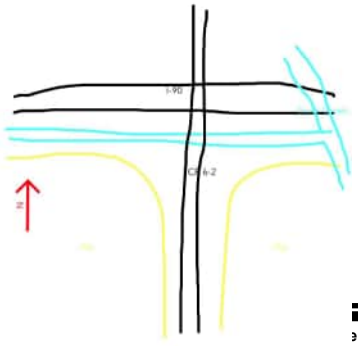
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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



Site Photos	Stream DFN-08

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 (mi²) 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
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	20
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	50
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 3

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate 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):

☒	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	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):**

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☒	Moderate 5-10m
☒	☐	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R	
☐	☐	Mature Forest, Wetland
☐	☒	Immature Forest, Shrub or Old Field
☐	☐	Residential, Park, New Field
☐	☐	Fenced Pasture

L	R	
☐	☐	Conservation Tillage
☐	☐	Urban or Industrial
☒	☐	Open Pasture, Row Crop
☐	☐	Mining or Construction

COMMENTS _____

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

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	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):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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): 30

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): _____

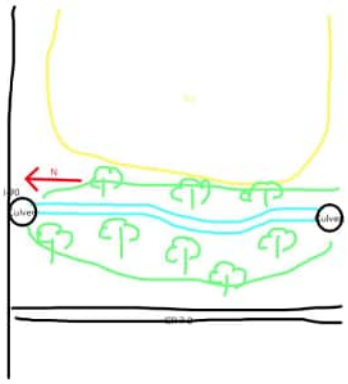
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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



Site Photos	Stream DFN-09

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 (mi²) 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

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
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☒	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	40
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☒	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 0

Pool Depth Max = 30

0

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 5

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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☒	Dry channel, no water (ephemeral)

COMMENTS _____

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

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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 0.84 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): 100

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): _____

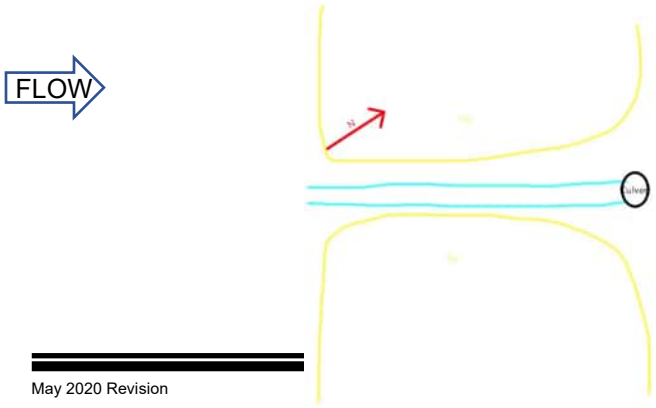
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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

Vegetated channelized
NHD between ag fields.



Site Photos	Stream DFN-11

Upstream

Downstream

Substrate

Appendix F
Jacobs Open Water / Pond Data Forms

Jacobs

P-MJA-122022-02

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

Site Photos	Pond DFN-01

S

Substrate

E

N

Jacobs

P-MJA-122022-01

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

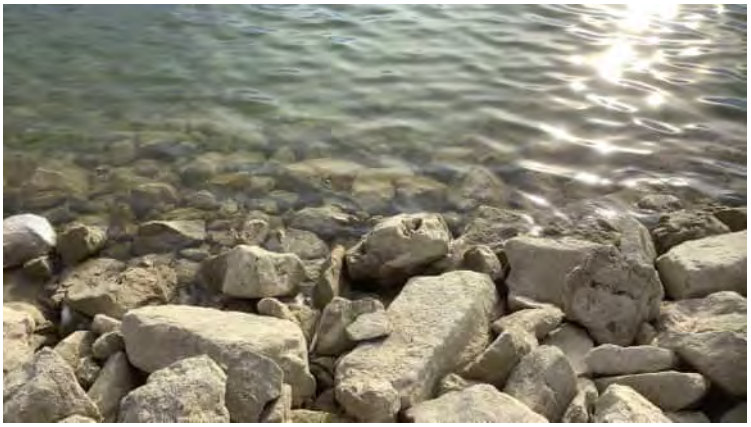
COMMENTS

Site Photos	Pond DFN-02

S

SE

SW



Substrate

Jacobs

P-MJA-100322-03

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

Site Photos	Pond DFN-03

SE

SW

Substrate

Jacobs

P-MJA-100322-01

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

Site Photos	Pond DFN-04

W

S

S

Substrate

Jacobs

P-MJA-100322-02

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

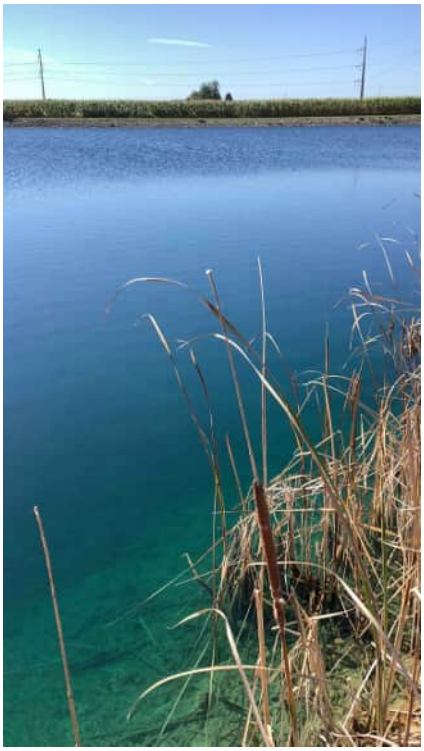
QUALITATIVE ATTRIBUTES

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

Site Photos Pond DFN-05

S



W

Substrate

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

Wetland and Waterbody Delineation Report

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

Prepared for

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

February 2023

Jacobs

Jacobs Engineering Group Inc.
2 Crowne Point Court, Suite 100
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Contents

1 Introduction 1-1

2 Background Information 2-1
2.1 Annual Precipitation 2-1
2.2 Drainage Basins 2-1
2.3 Traditional Navigable Waters 2-2

3 Wetland and Waterbody Delineation 3-1
3.1 Desktop Review 3-1
3.2 Field Survey Methodology 3-2
3.2.1 Wetland Delineation 3-3
3.2.2 Stream Assessment 3-4

4 Field Survey Results 4-1
4.1 Wetlands 4-1
4.1.1 Wetland ORAM Results 4-1
4.2 Streams 4-2
4.2.1 QHEI Results 4-2
4.2.2 HHEI Results 4-3
4.3 Ponds/Open Water 4-3

5 Conclusion 5-1

6 References 6-1

Tables

2-1 Recent Precipitation Data
2-2 12-Digit Hydrologic Unit Codes Crossed by the Project
3-1 Soil Map Units
3-2 Mapped National Wetland Inventory Features
4-1 Delineated Wetland Table
4-2 Delineated Stream Table
4-3 Delineated Pond Table
4-4 Wetland Summary Table
4-5 QHEI Stream Summary Table
4-6 HHEI Stream Summary Table

Appendices

A Figures
1 Overview Map
2-1 to 2-2 Soils, NDH, NWI, FEMA Map
3-1 to 3-22 Delineated Features Map
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

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

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 exising 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

Precipiation 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[1,3]	3.22	5.82	1.51	1.10	2.21	1.95	15.81
Normal Precipitation[2,3]	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

[1]Monthly weather summary from weather station WAUSEON WATER PLANT, OH
[2]USDA WETS Station Climate Data 1971-2000 (USDA 2022)
[3]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

04100009 07 01	Ai Creek

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 22 soil map units (Figures 2-1 to 2-19). Of these, three units are listed as nonhydric, 12 are predominantly nonhydric, and seven are predominantly hydric (Table 3-1). Hydric or predominantly hydric soils comprise 54 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-Alternate Route

Soil type	Soil type description	Hydric status	Acres (ac) within ESB
ByA	Brady sandy loam, 0 to 3 percent slopes	Predominantly Nonydric	6.7
Cn	Colwood loam	Predominantly Hydric	2.1
DmA	Digby loam, 0 to 3 percent slopes	Predominantly Nonydric	15.1
DtA	Dixboro fine sandy loam, 0 to 3 percent slopes	Predominantly Nonydric	2.2
Gf	Gilford fine sandy loam	Predominantly Hydric	3.4
GoC3	Glynwood clay loam, 6 to 12 percent slopes, severely eroded	Nonhydric	2.5
HkA	Haskins loam, 0 to 3 percent slopes	Predominantly Nonydric	51.7
HoA	Hoytville clay loam, 0 to 1 percent slopes	Predominantly Hydric	121.3
Mf	Mermill loam	Predominantly Hydric	44.9
Mo	Millgrove loam	Predominantly Hydric	17.5
NnA	Nappanee loam, 0 to 2 percent slopes	Predominantly Nonydric	74.7
NnB	Nappanee loam, 2 to 6 percent slopes	Nonhydric	2.6
OtB	Ottokee fine sand, 0 to 6 percent slopes	Predominantly Nonydric	0.7
PeB	Perrin sandy loam, 2 to 6 percent slopes	Predominantly Nonydric	0.0
RbB	Rawson sandy loam, 2 to 6 percent slopes	Predominantly Nonydric	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[1]	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	

[1]Cowardin et al. 1979.

4.1.1 Wetland ORAM Results

The two wetlands identifeid within the ESB were Category 1 wetlands. No Category 2 or 3 wetlands were identified with 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[1]	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				

[1]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[1]	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

[1]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

Jacobs conducted an environmental survey of the Alternate Route of theDowling-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^2) and four streams were assessed using the HHEI methodology (drainage area less than 1 mi^2). 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 ESBThe 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

Fulton Substation

Proposed Melbourne Substation

Sydney Substation

Delta Substation

Delta Wings Airport

Delta Reservoir

Fulton Pond

Radio Tower

Grieser Airport

MAUMEE STATE FOREST

MSF

PIKE

FULTON

YORK

SWAN CREEK

FULTON CO

LUCAS CO

Swan Creek

Branch

Fewless Ditch

Bad Creek

Brailey Creek

Turkeyfoot Creek

Winameg

Sandpit

Delta

West Delta

South Delta

Ridge

FRANKFORT

LINE

TURNPIKE

ROAD

TOLL

R4E

R5E

R8E

R9E

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
Topograch Quadrangles:
Delta and Swanton

Coordinate System: State Plane
Ohio North FIPS 3401 Feet
Datum: NAD 1983
Scale: 1:24,000

2/6/2023

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

FIGURE 1
OVERVIEW MAP

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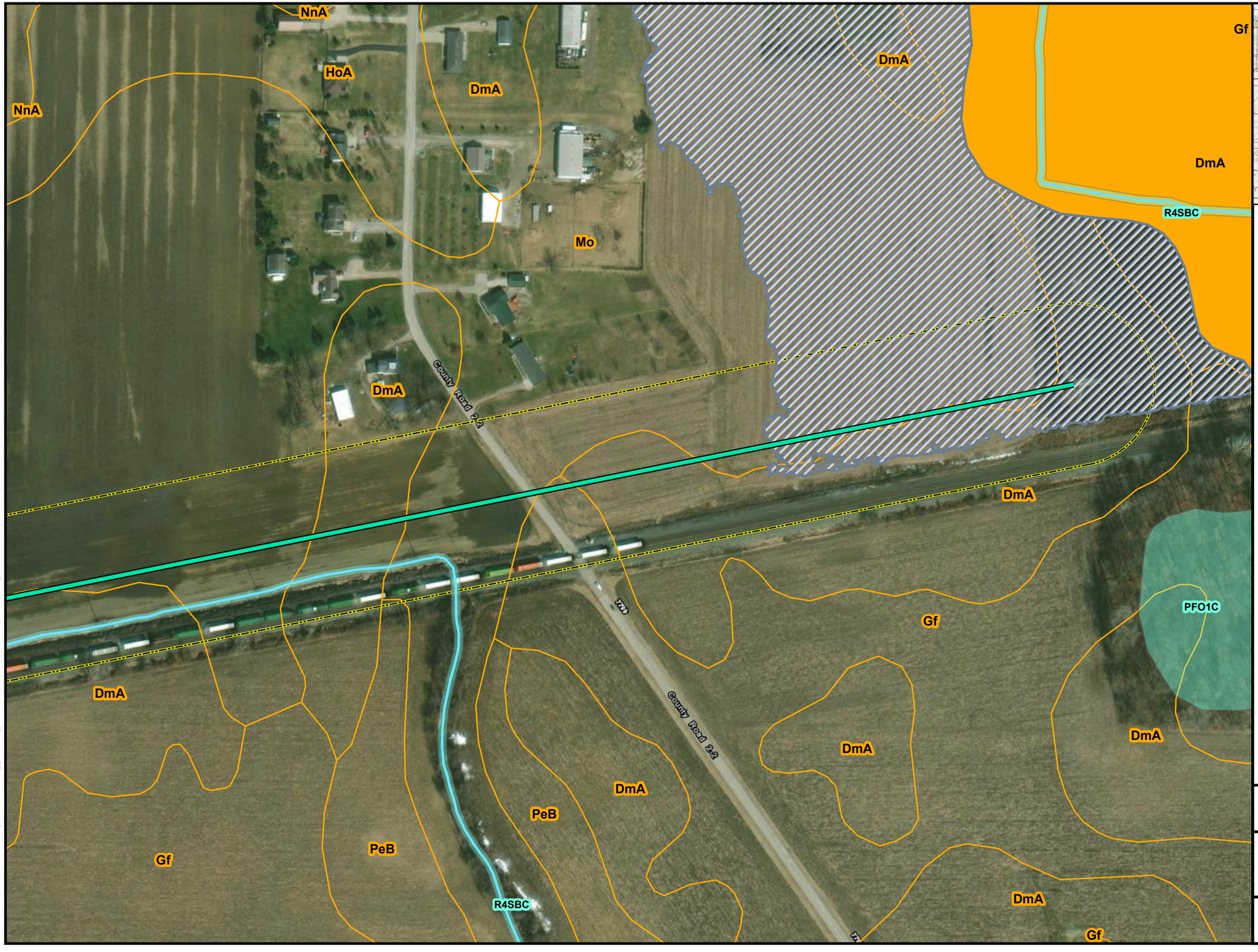

LEGEND:

- 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

0 200 400
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ALTERNATE ROUTE
FIGURE 2-1
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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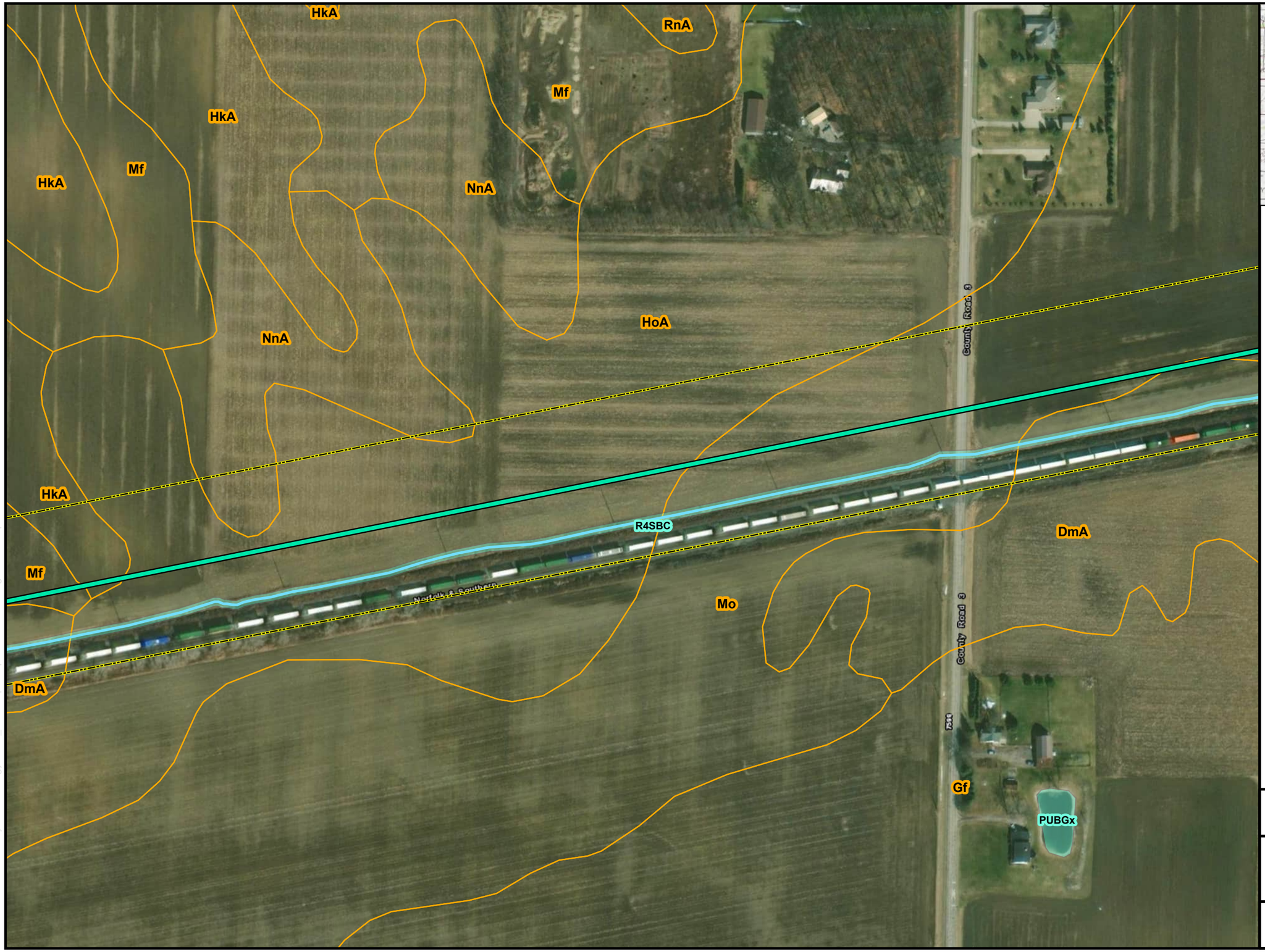

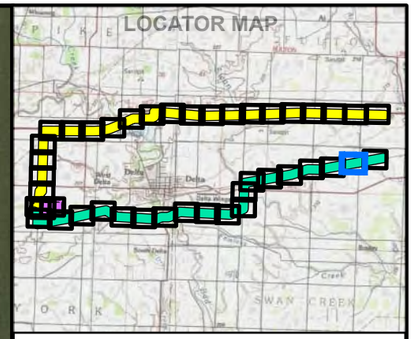

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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

DATE: 2/23/2023

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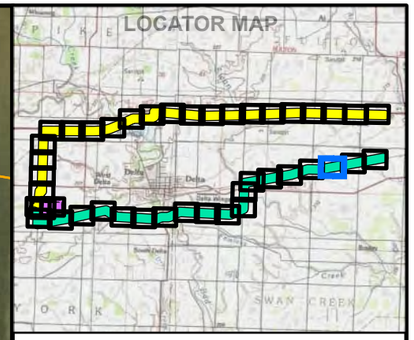

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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ALTERNATE ROUTE
FIGURE 2-3
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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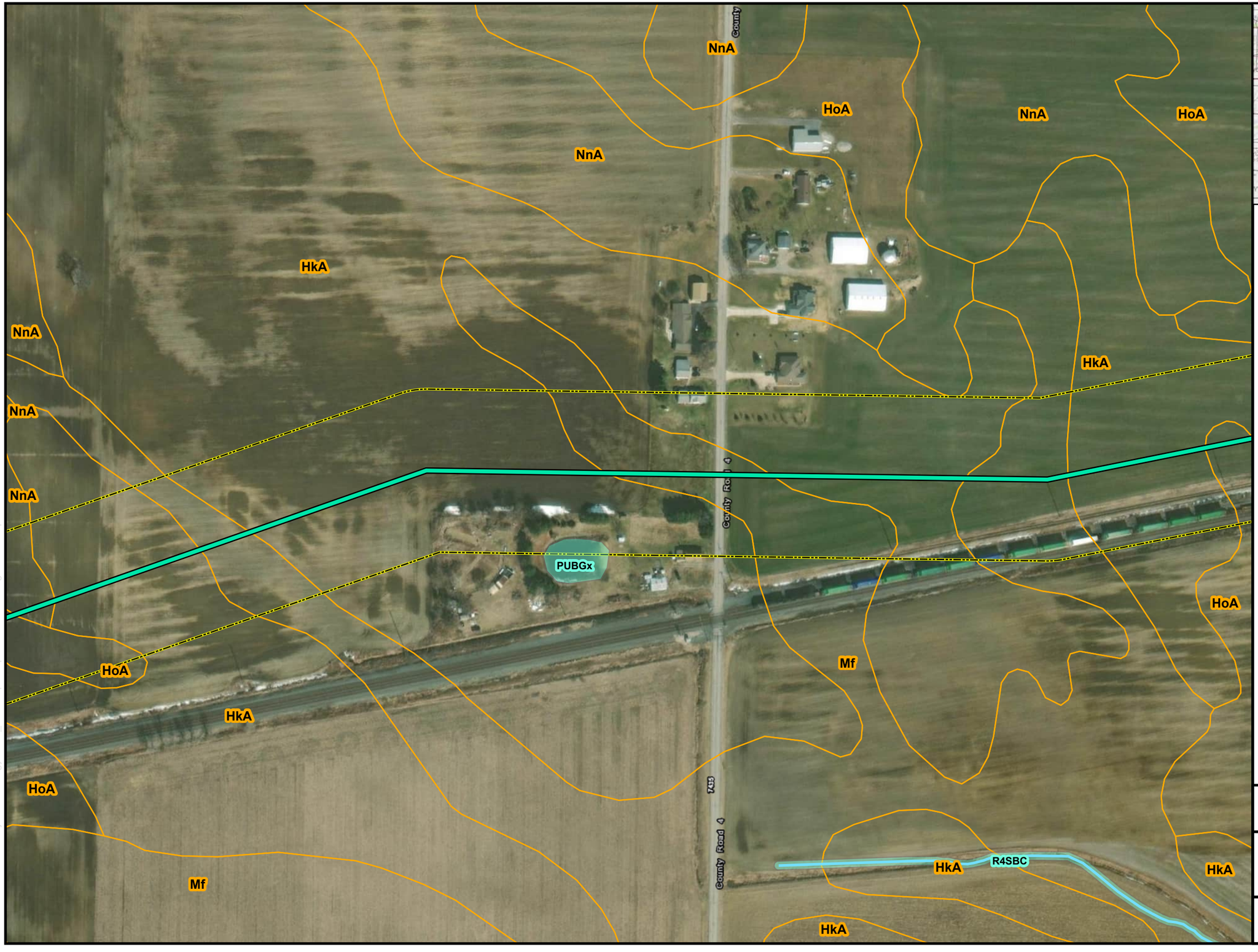

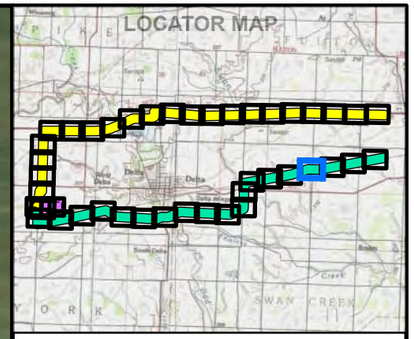

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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

DATE: 2/23/2023

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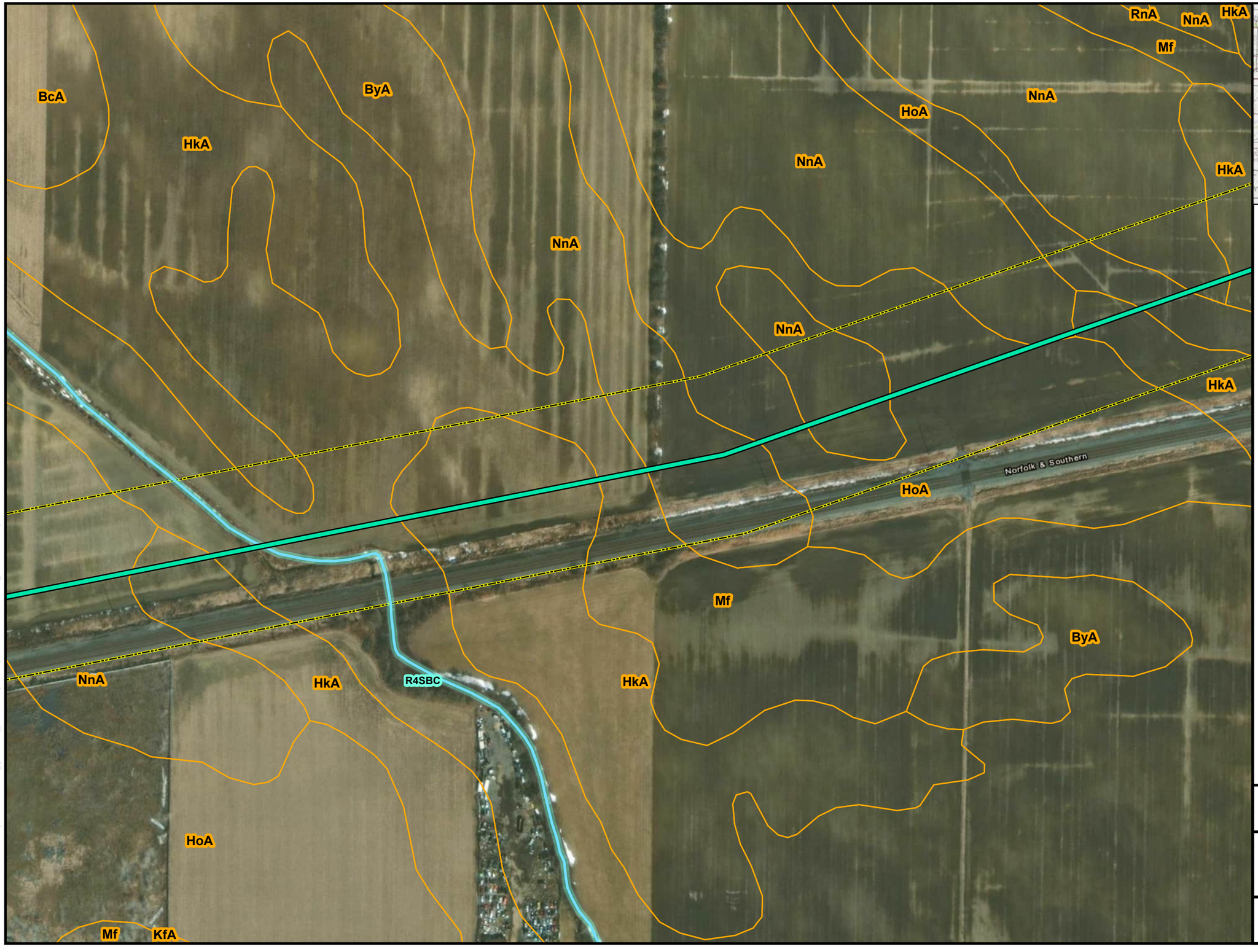

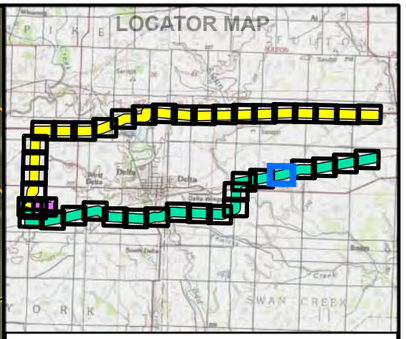

LEGEND:

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

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 2-5
SOILS, NHD, NWI, FEMA MAP

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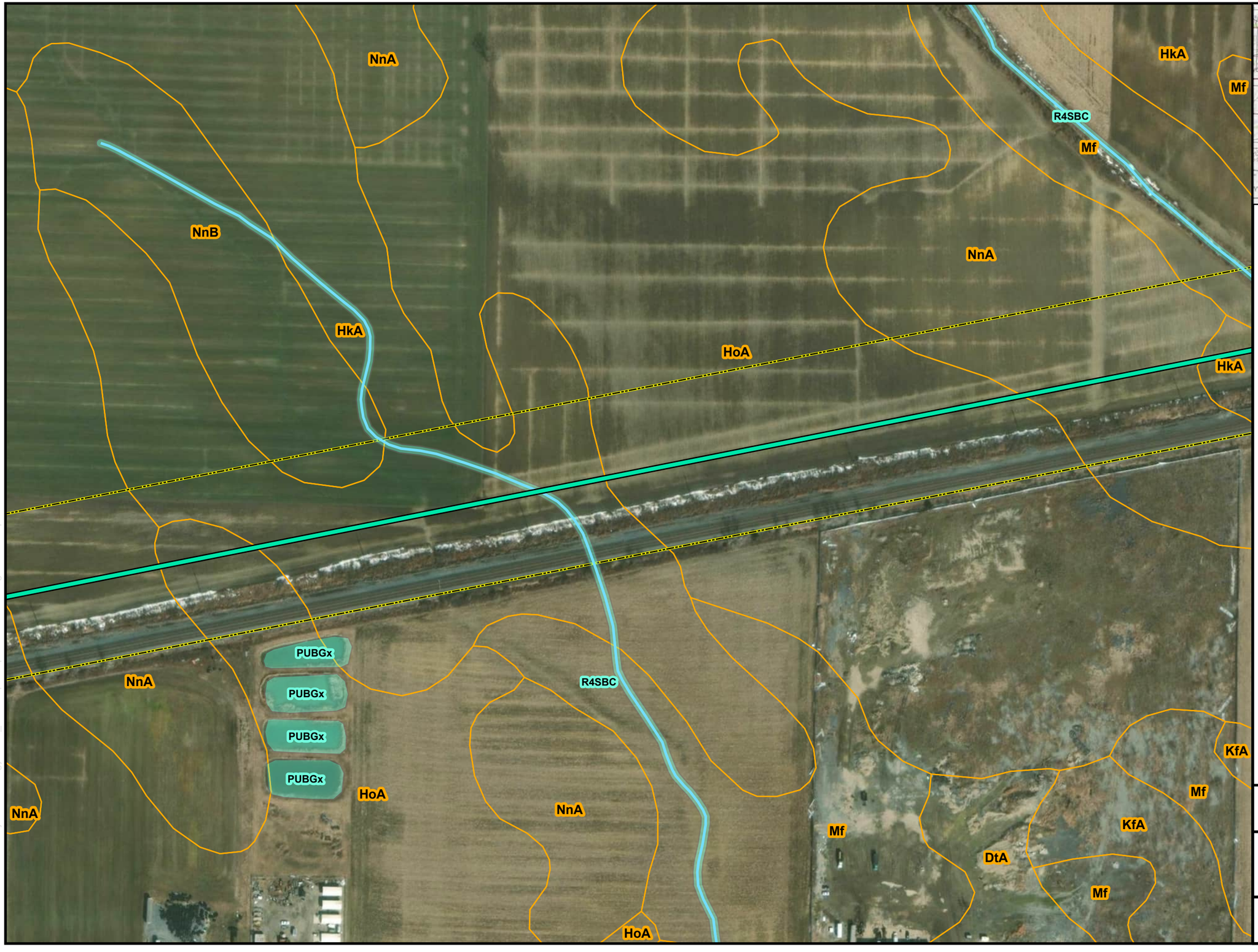

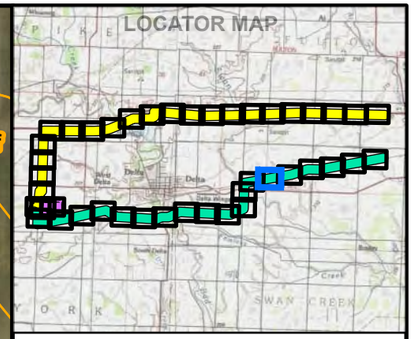

LEGEND:

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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 2-6
SOILS, NHD, NWI, FEMA MAP

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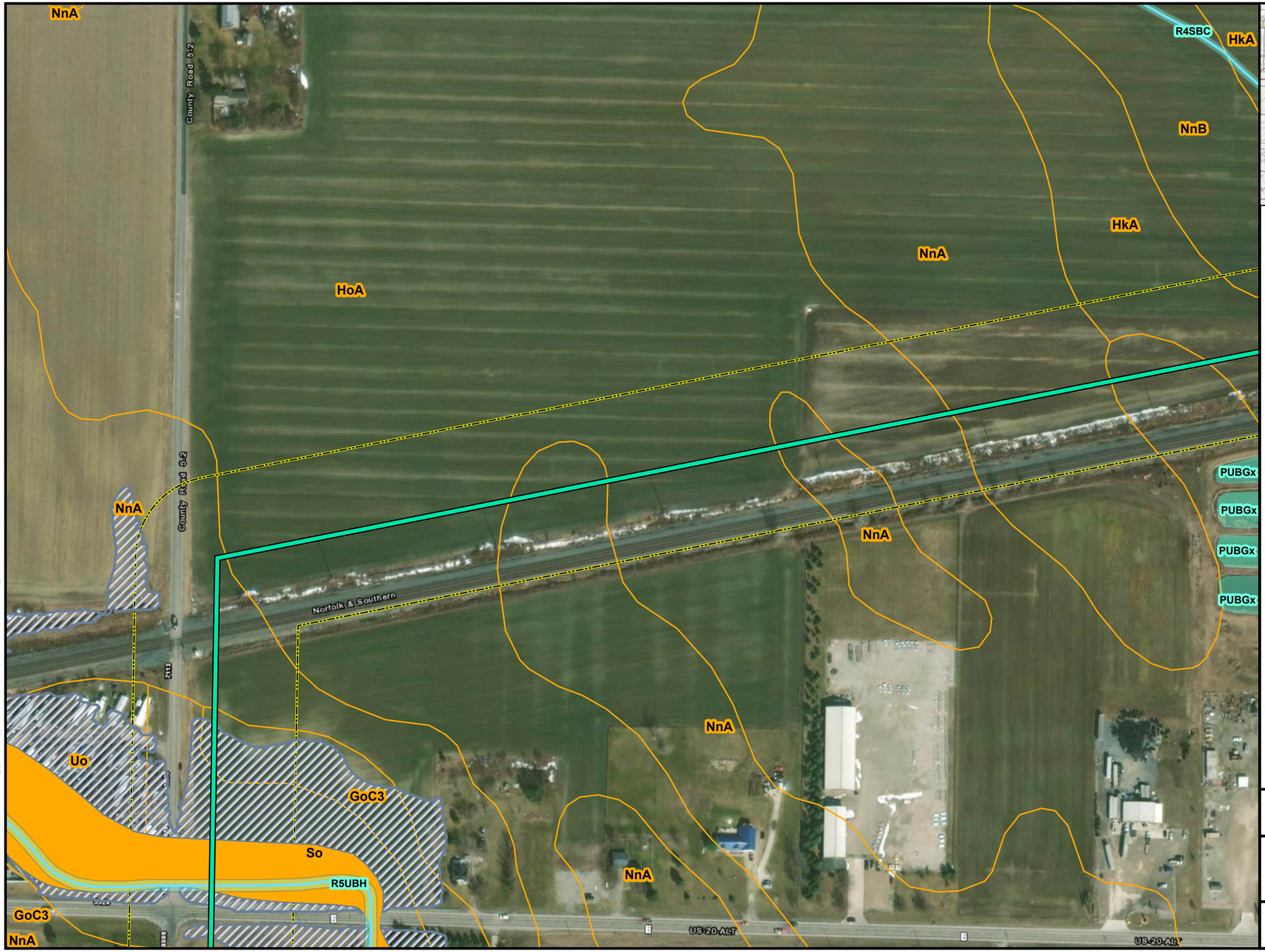

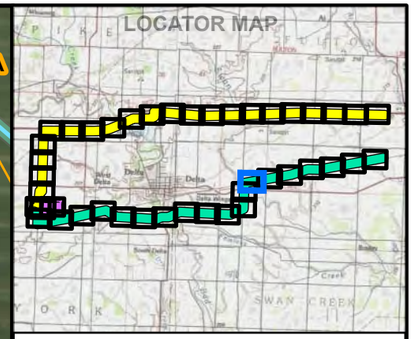

LEGEND:

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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 2-7
SOILS, NHD, NWI, FEMA MAP

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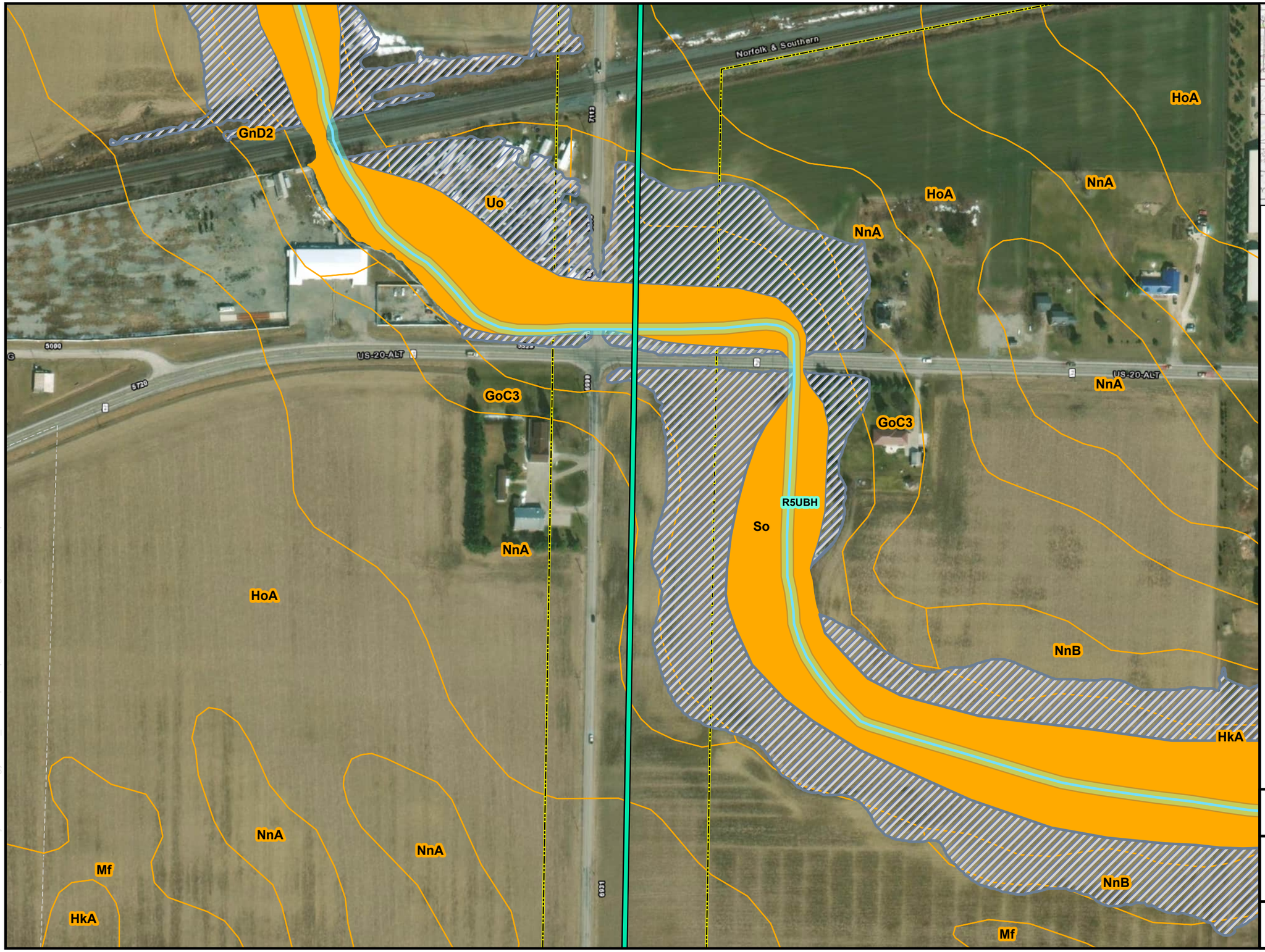

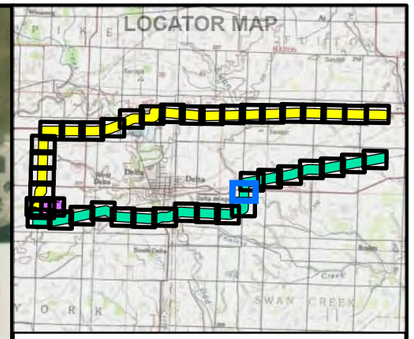

LEGEND:

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

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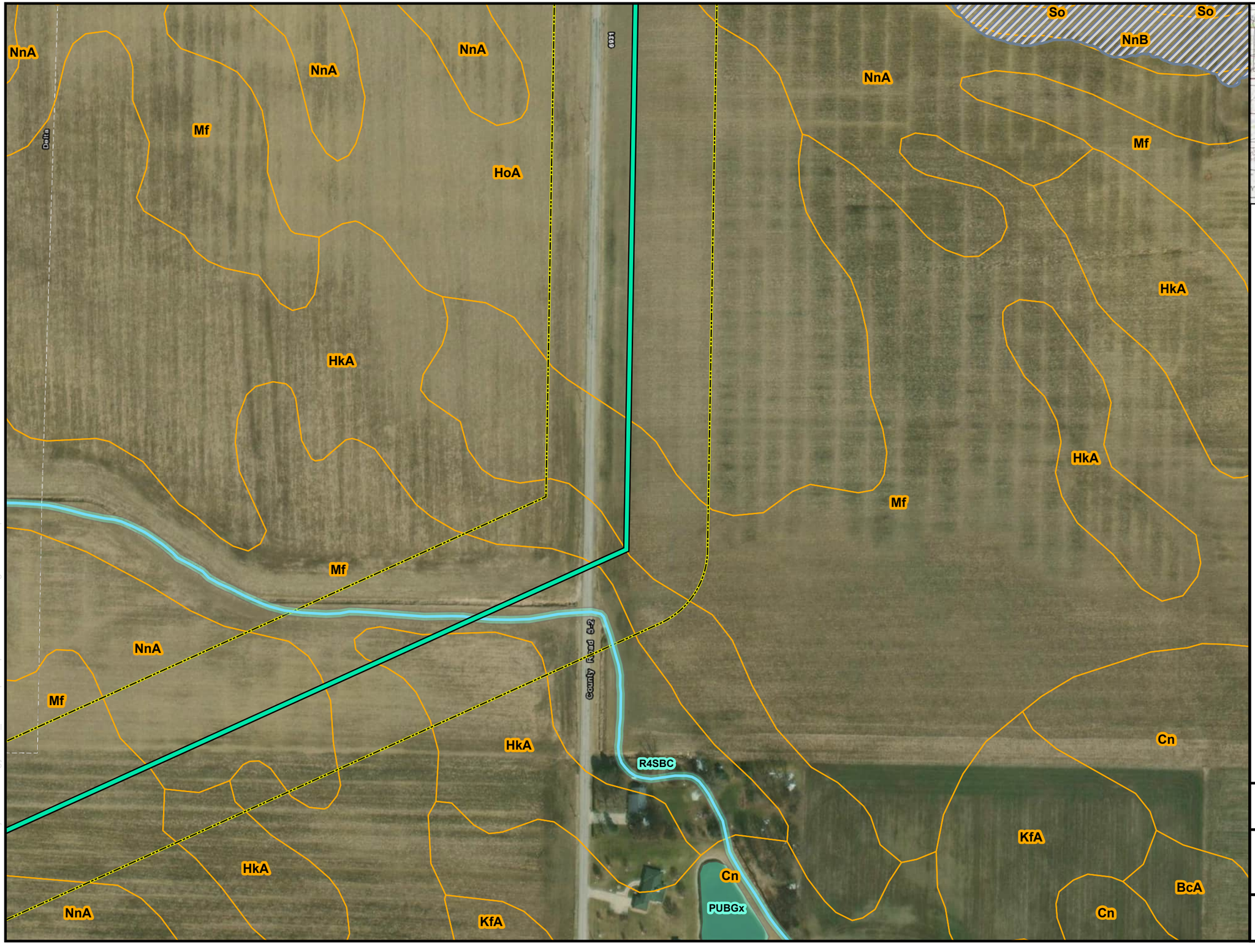

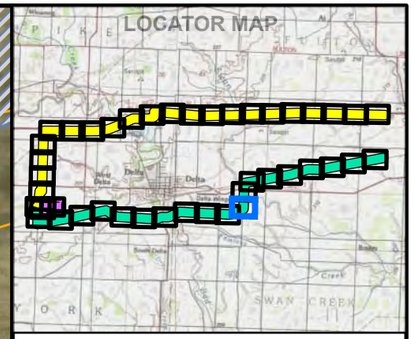

LEGEND:

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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 2-9
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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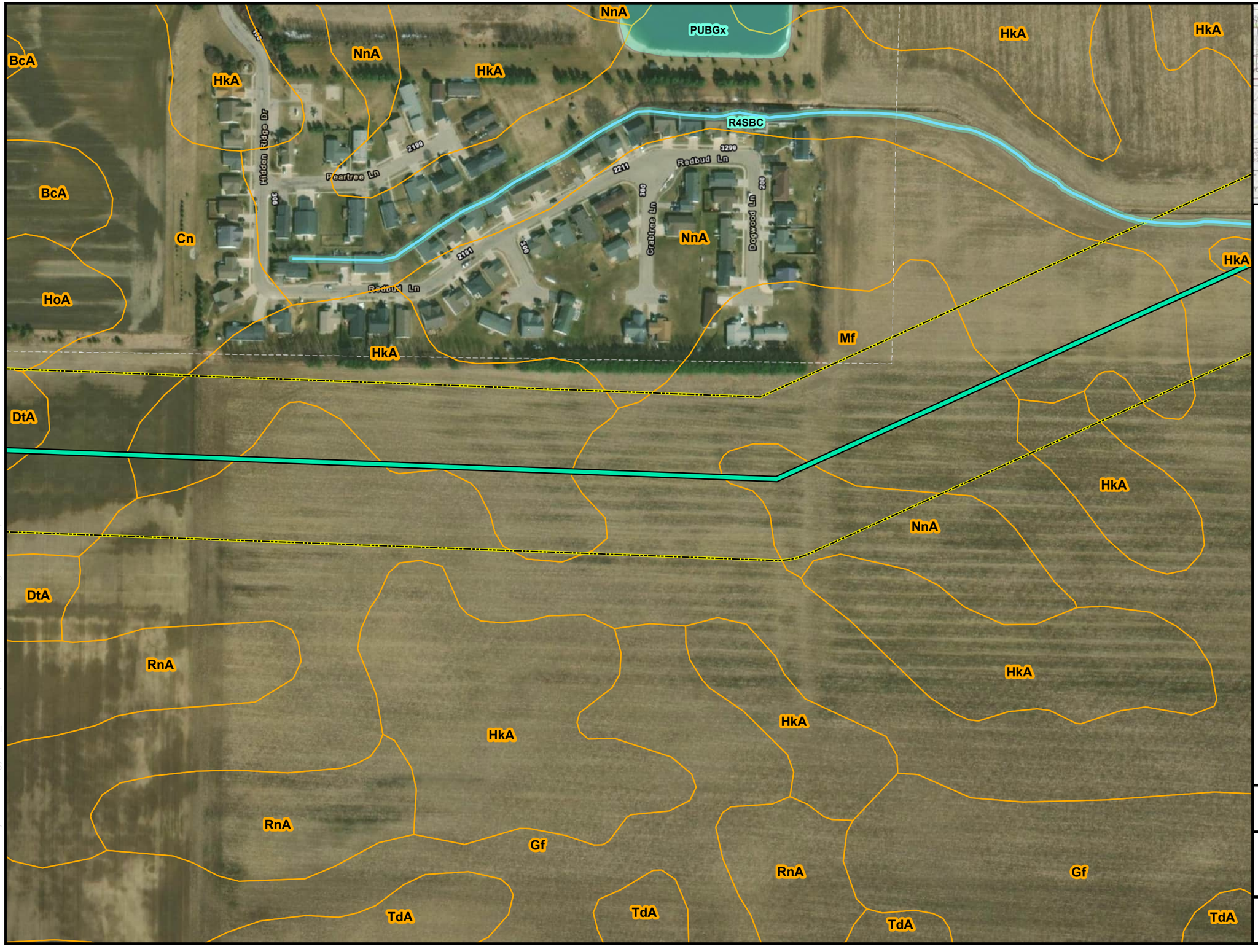

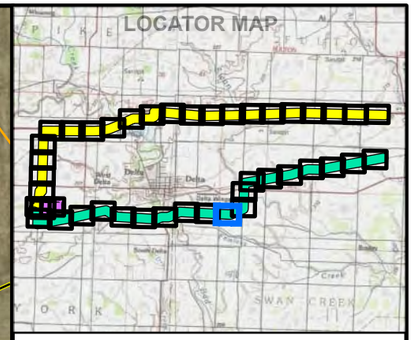

LEGEND:

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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 2-10
SOILS, NHD, NWI, FEMA MAP

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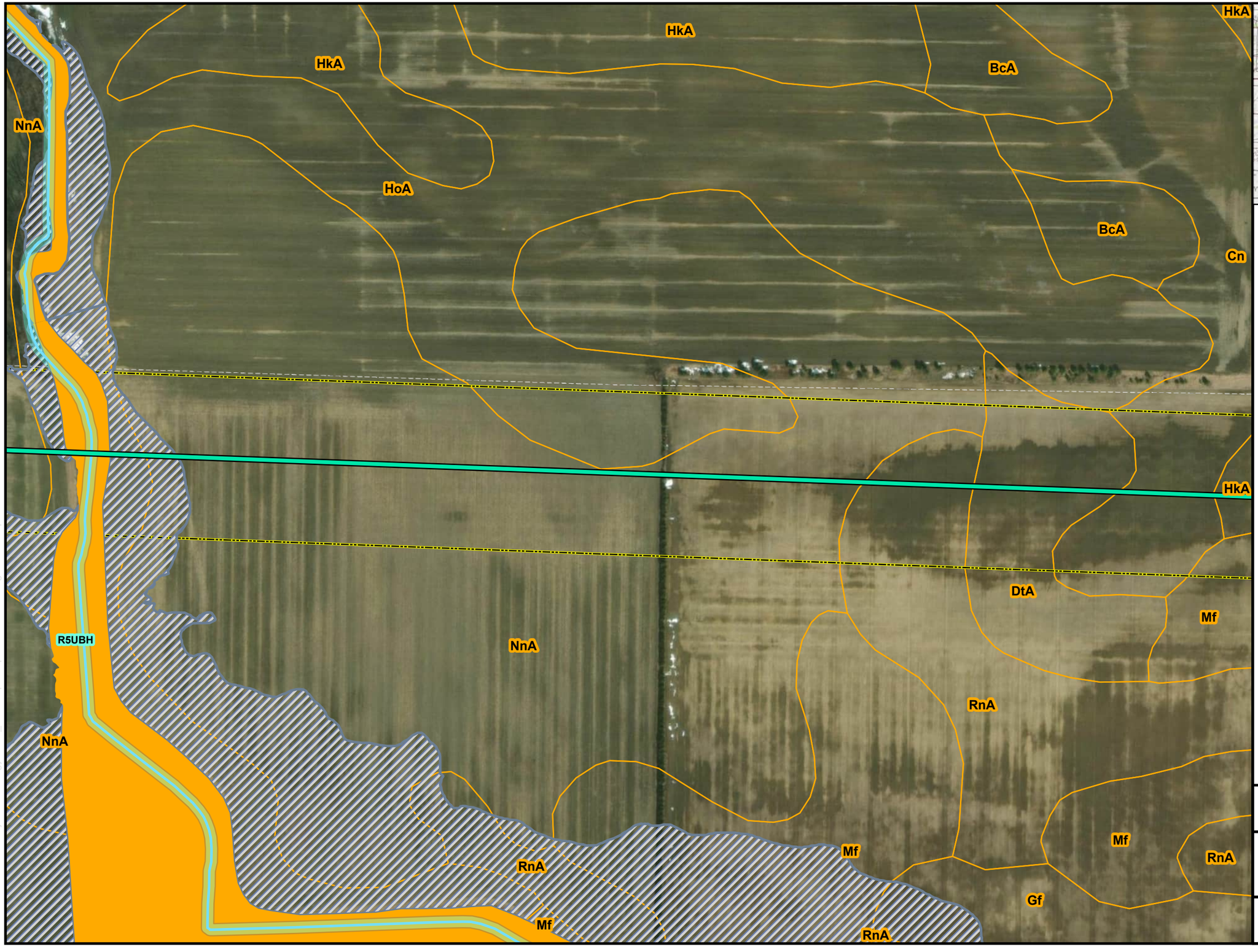

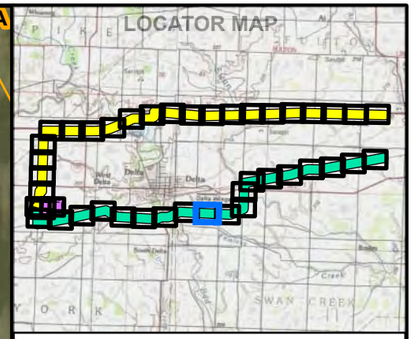

LEGEND:

- 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 2-11
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

N

BASE MAP SOURCE:
Esri World Imagery

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ALTERNATE ROUTE
FIGURE 2-12
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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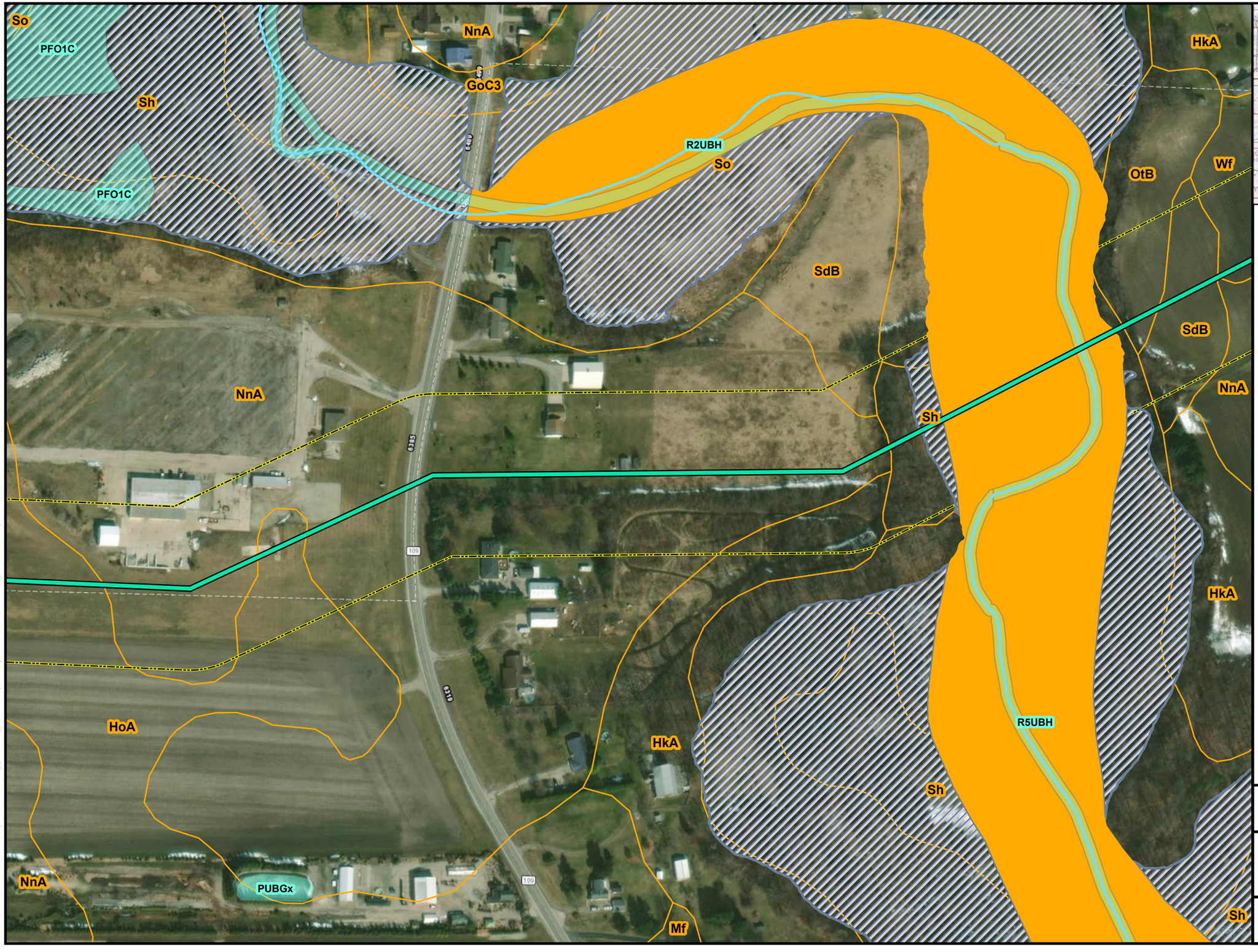

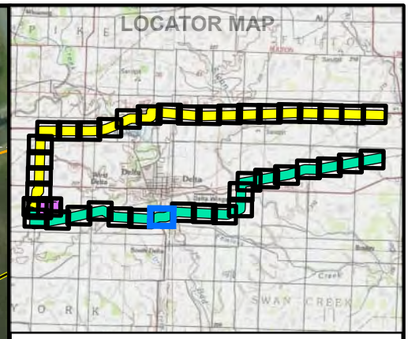

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

0 200 400
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 2-13
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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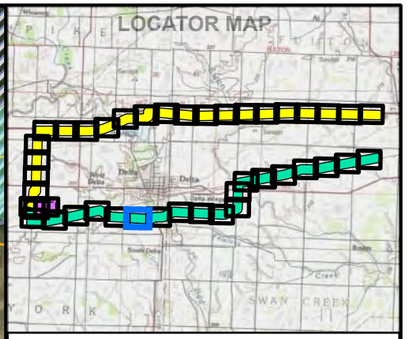

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

0 200 400
FEET

ATSI American Transmission Systems, Inc.

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

ALTERNATE ROUTE
FIGURE 2-14
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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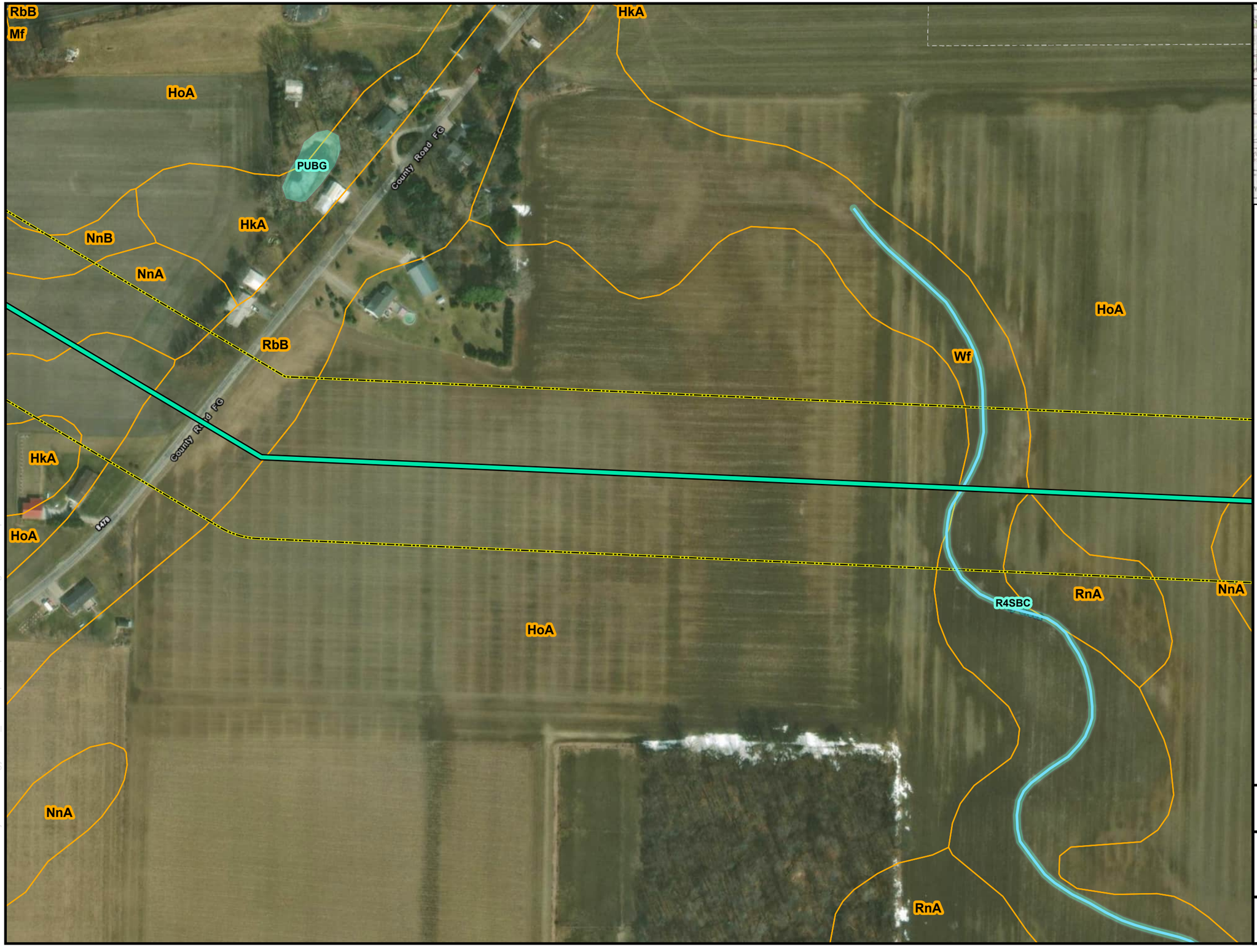

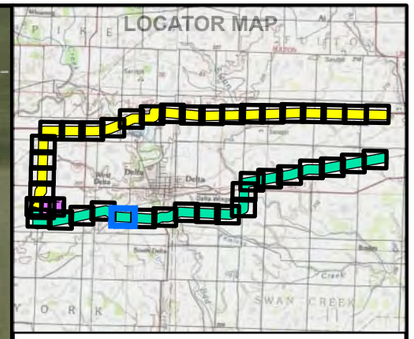

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

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ALTERNATE ROUTE
FIGURE 2-15
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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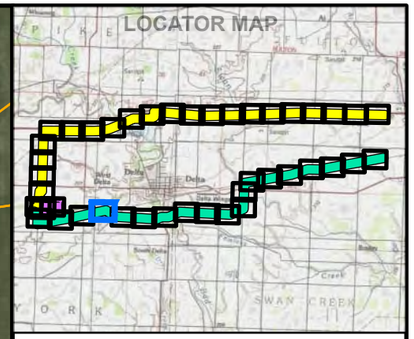

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

0 200 400
FEET

ATSI American Transmission Systems, Inc.

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

ALTERNATE ROUTE
FIGURE 2-16
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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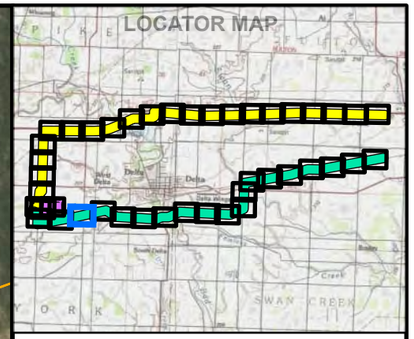

LEGEND:

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

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 2-17
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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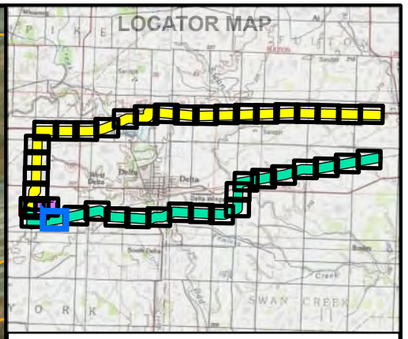

LEGEND:

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

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 2-18
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

Jacobs

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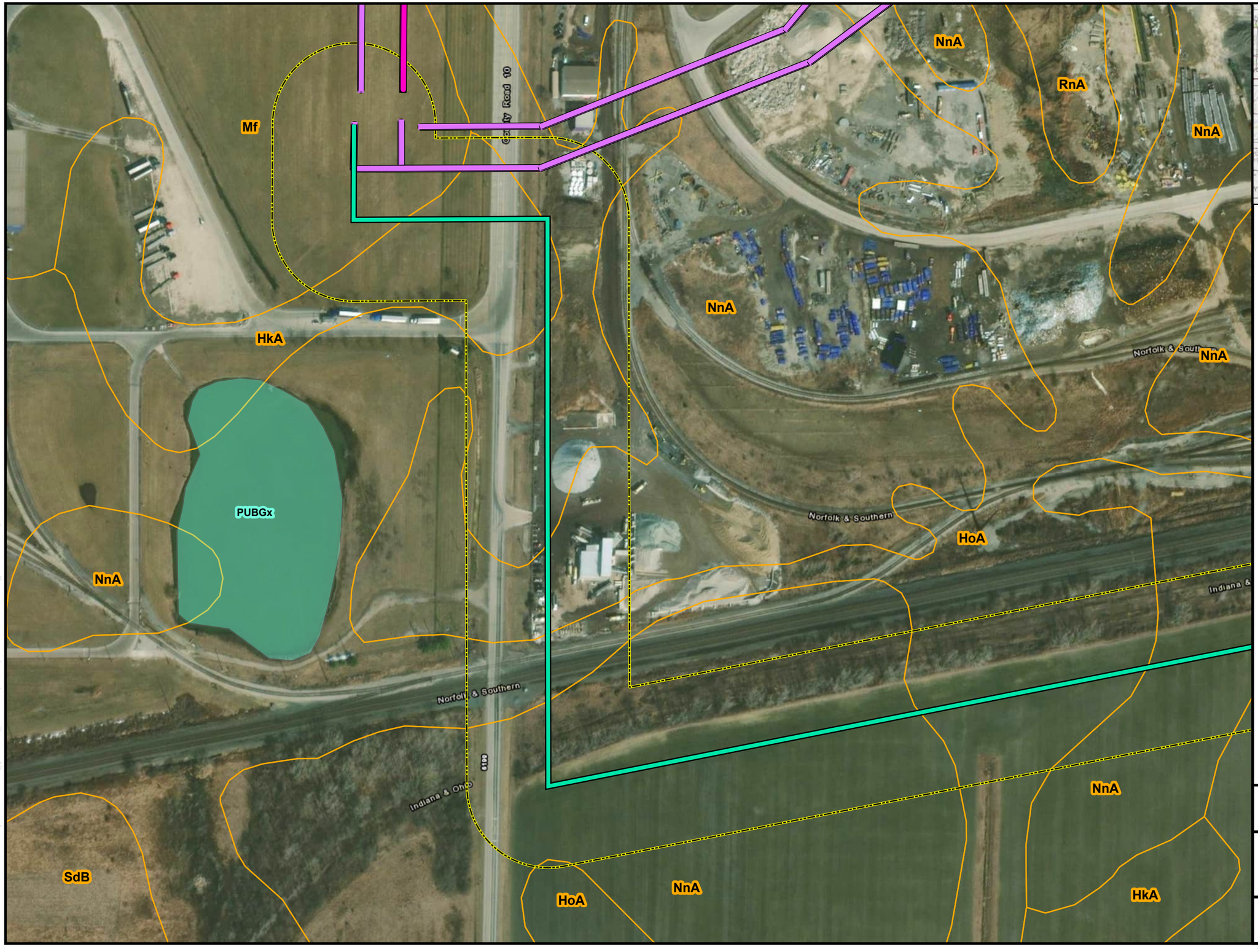

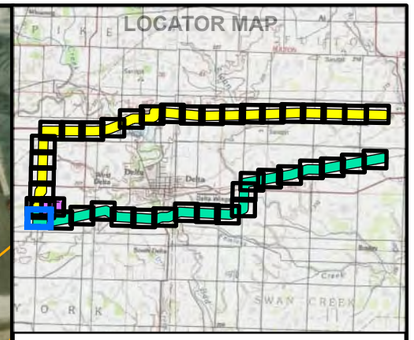

LEGEND:

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

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 2-19
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

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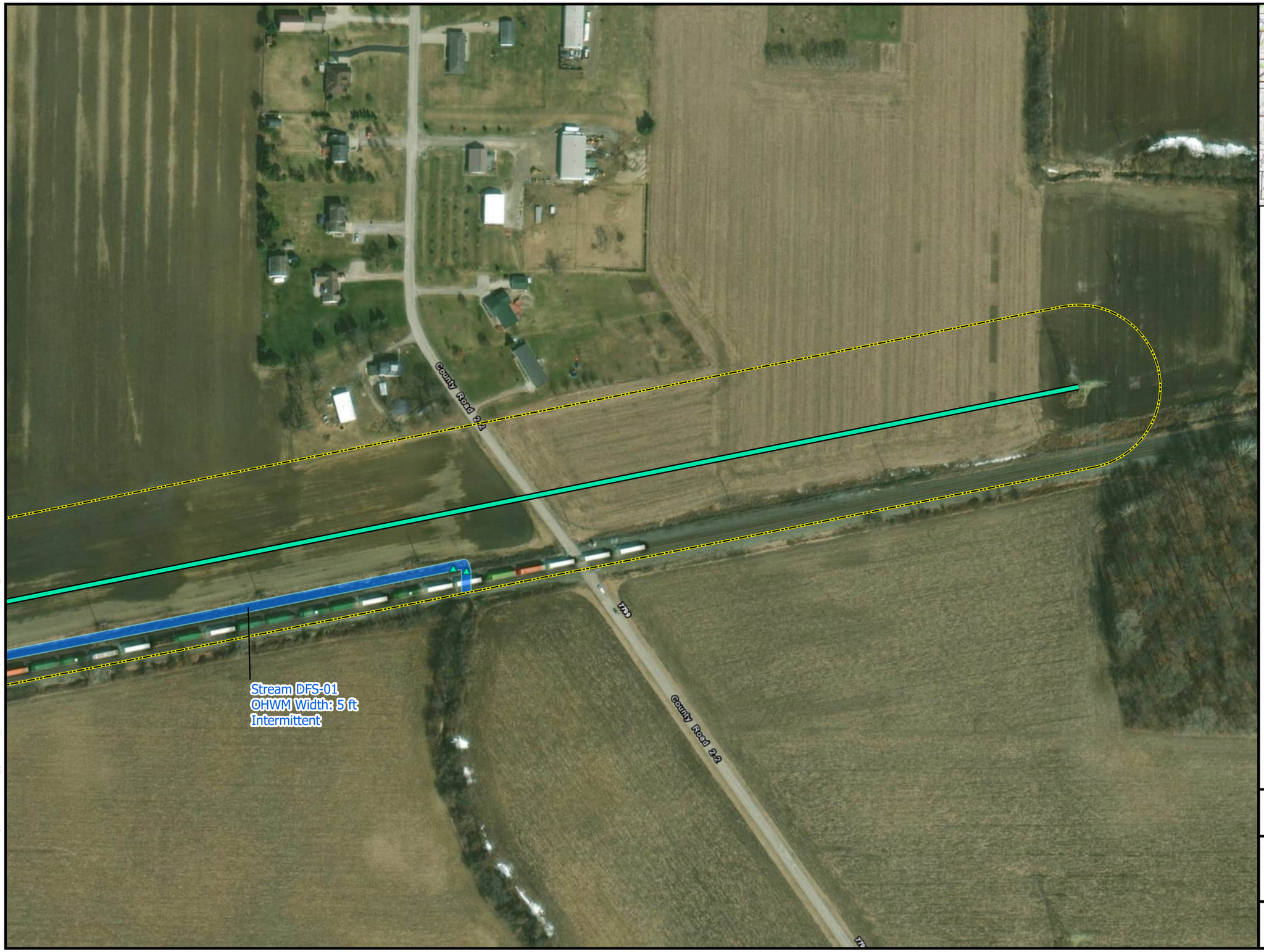

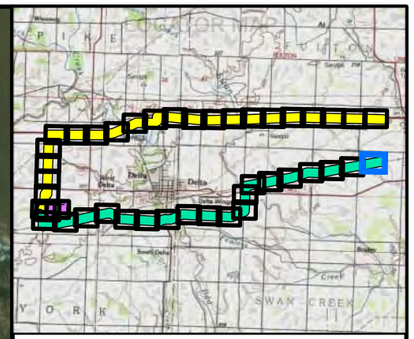

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-1
DELINEATED FEATURES MAP

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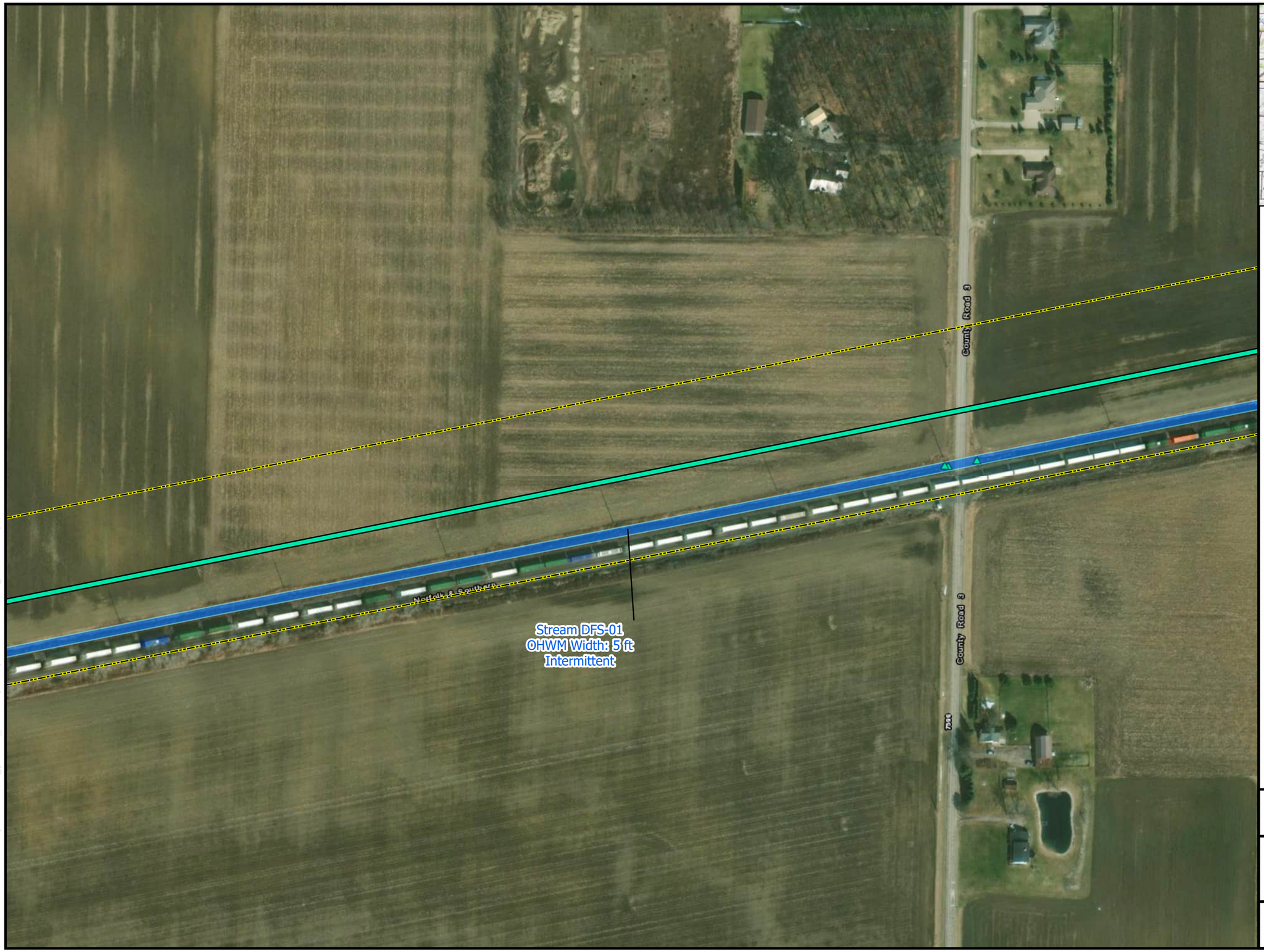

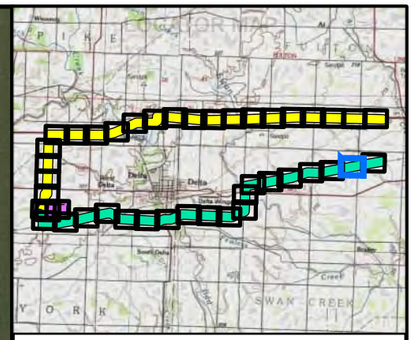

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-2
DELINEATED FEATURES MAP

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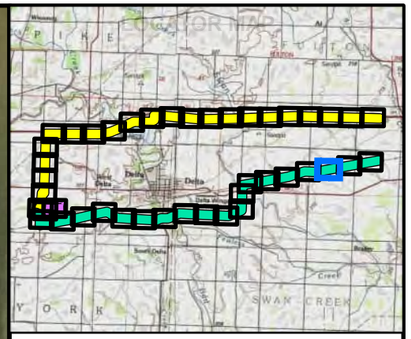

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-3
DELINEATED FEATURES MAP

DATE: 2/23/2023

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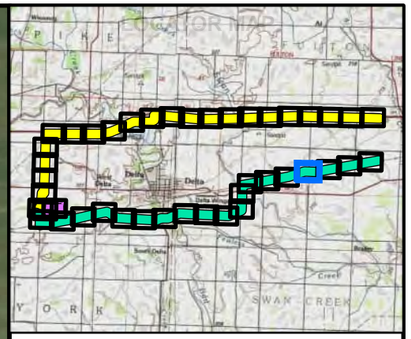

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-4
DELINEATED FEATURES MAP

DATE: 2/23/2023

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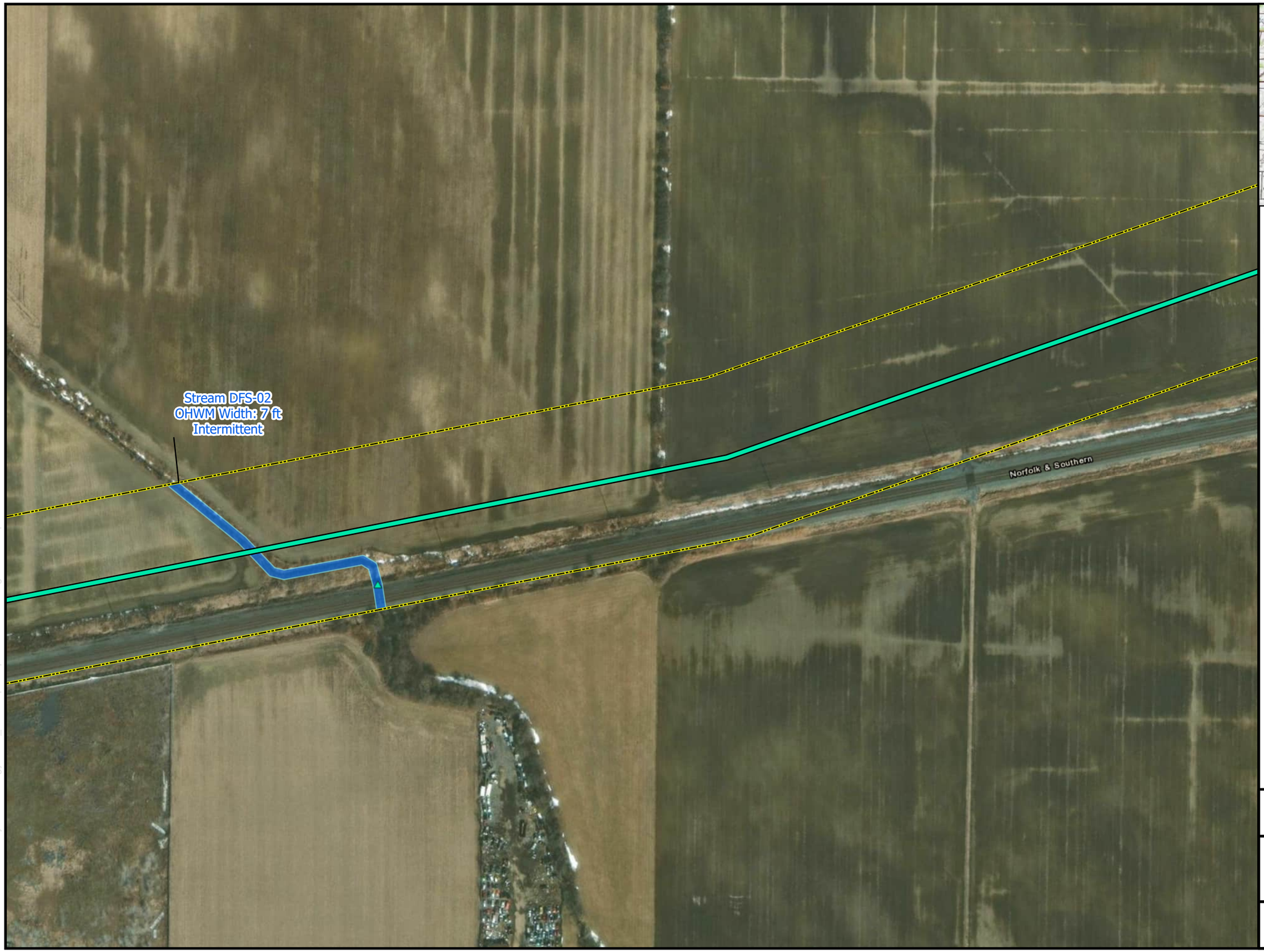

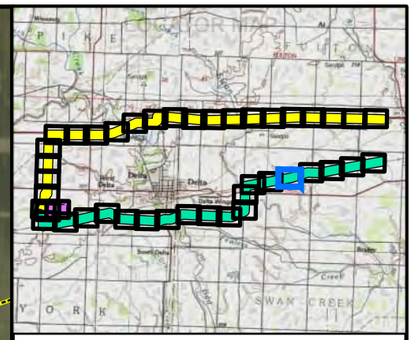

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-5
DELINEATED FEATURES MAP

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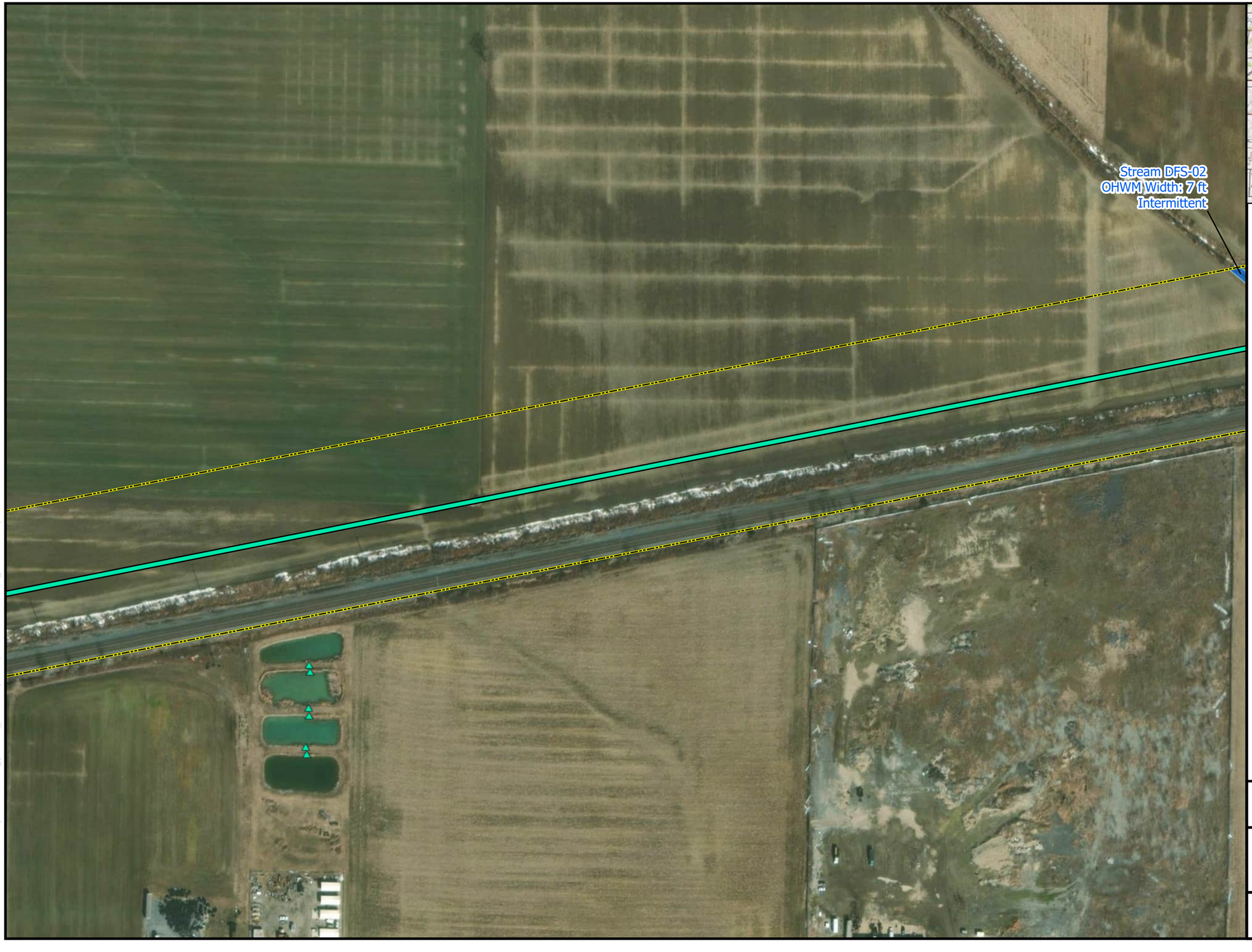

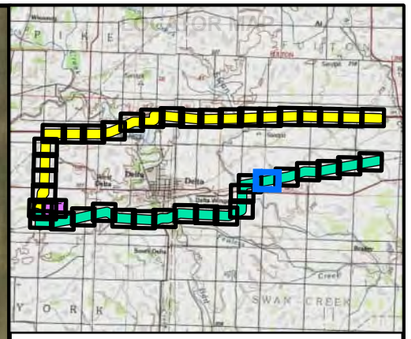

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-6
DELINEATED FEATURES MAP

DATE: 2/23/2023

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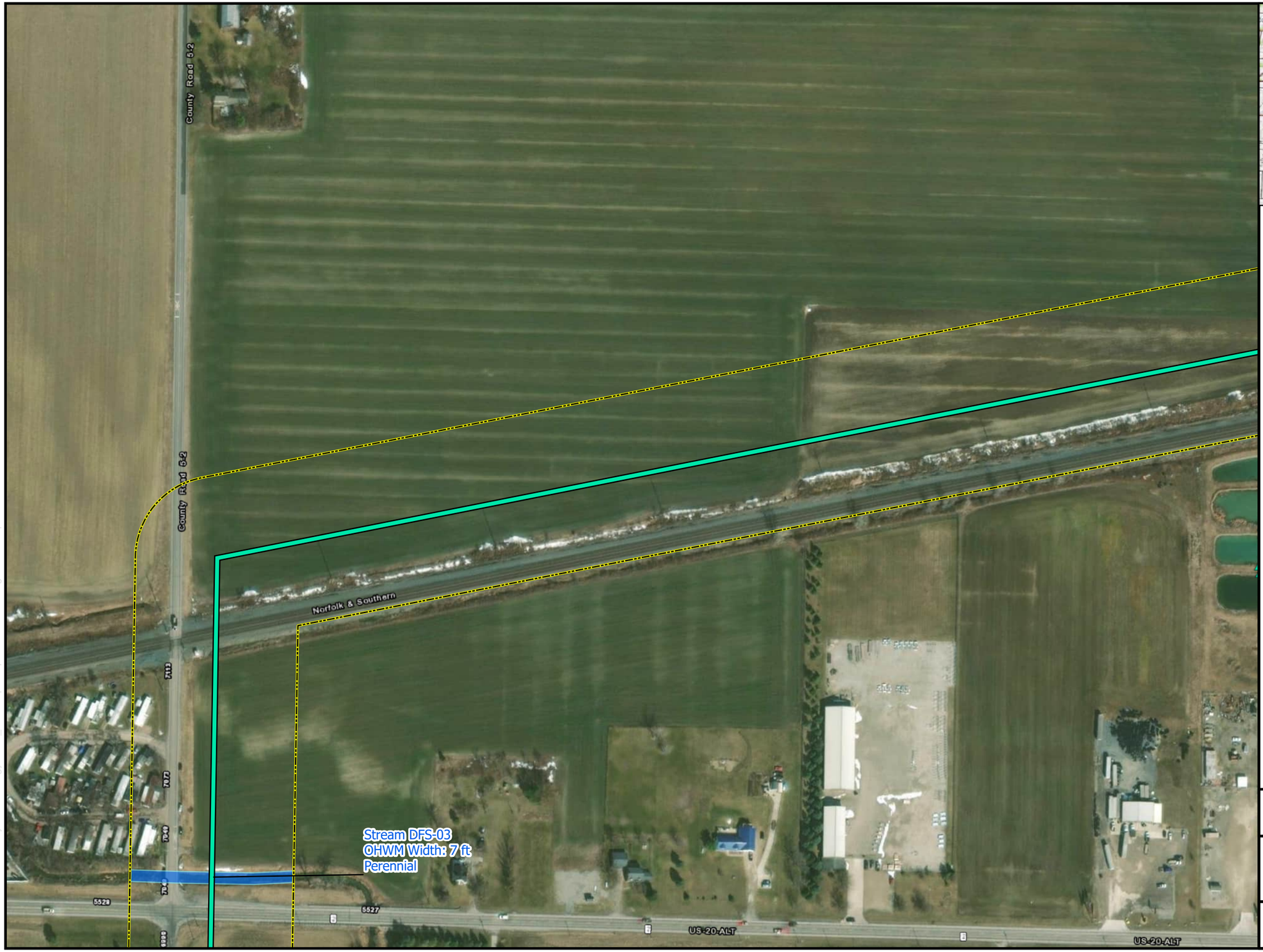

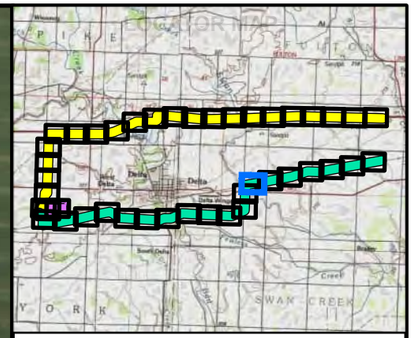

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-7
DELINEATED FEATURES MAP

DATE: 2/23/2023

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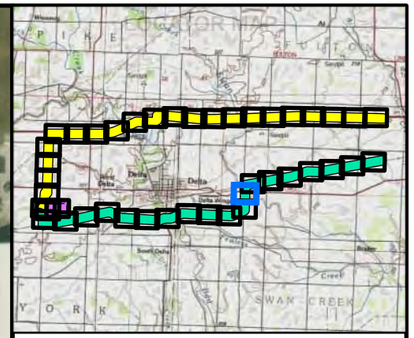

LEGEND:

- 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

N

BASE MAP SOURCE:
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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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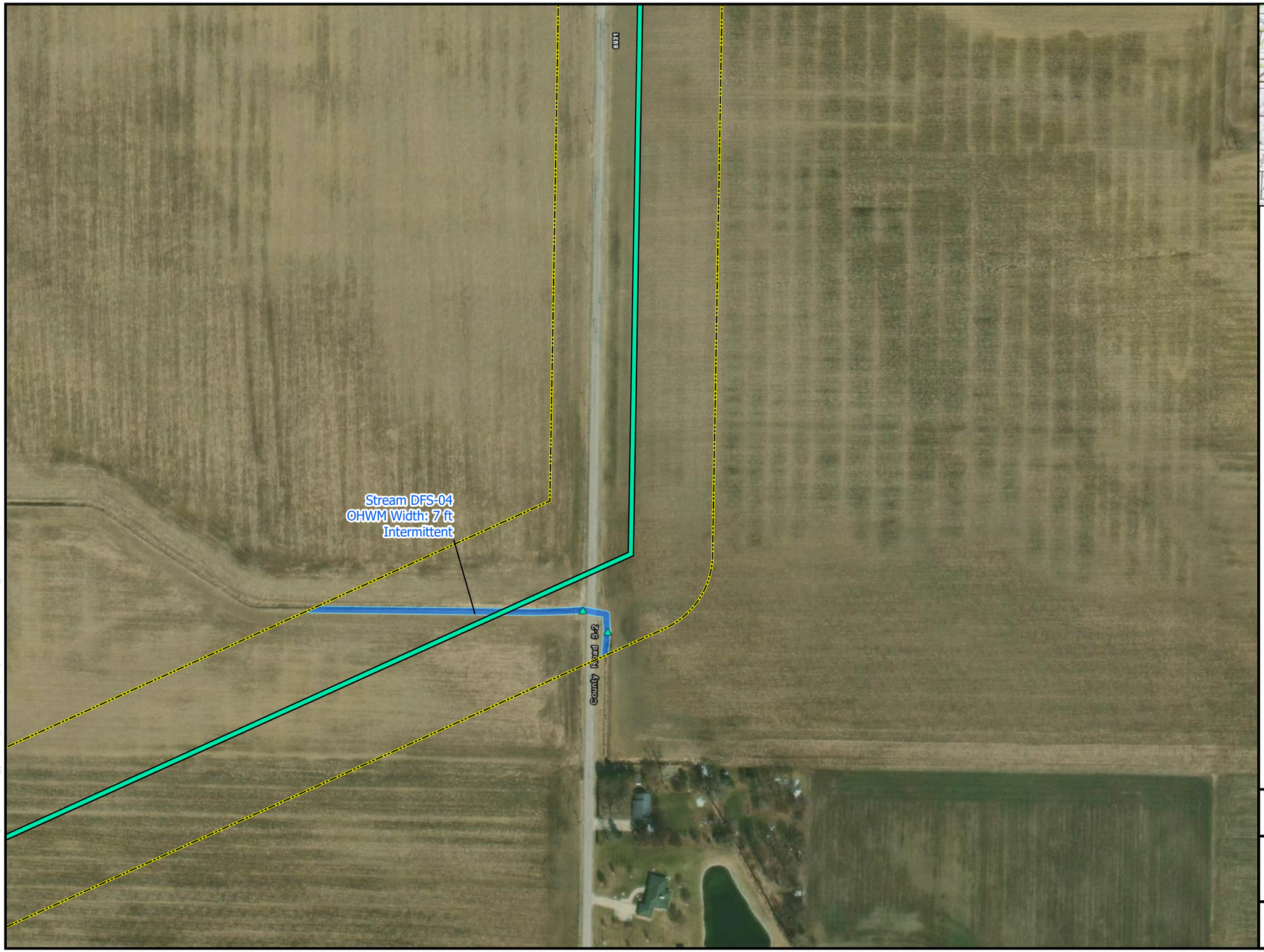

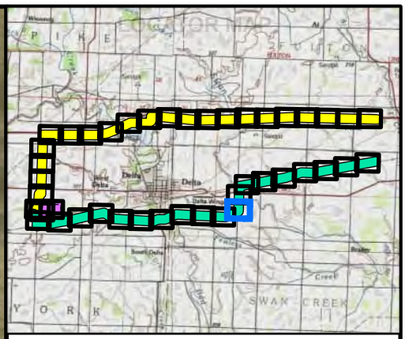

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-9
DELINEATED FEATURES MAP

DATE: 2/23/2023

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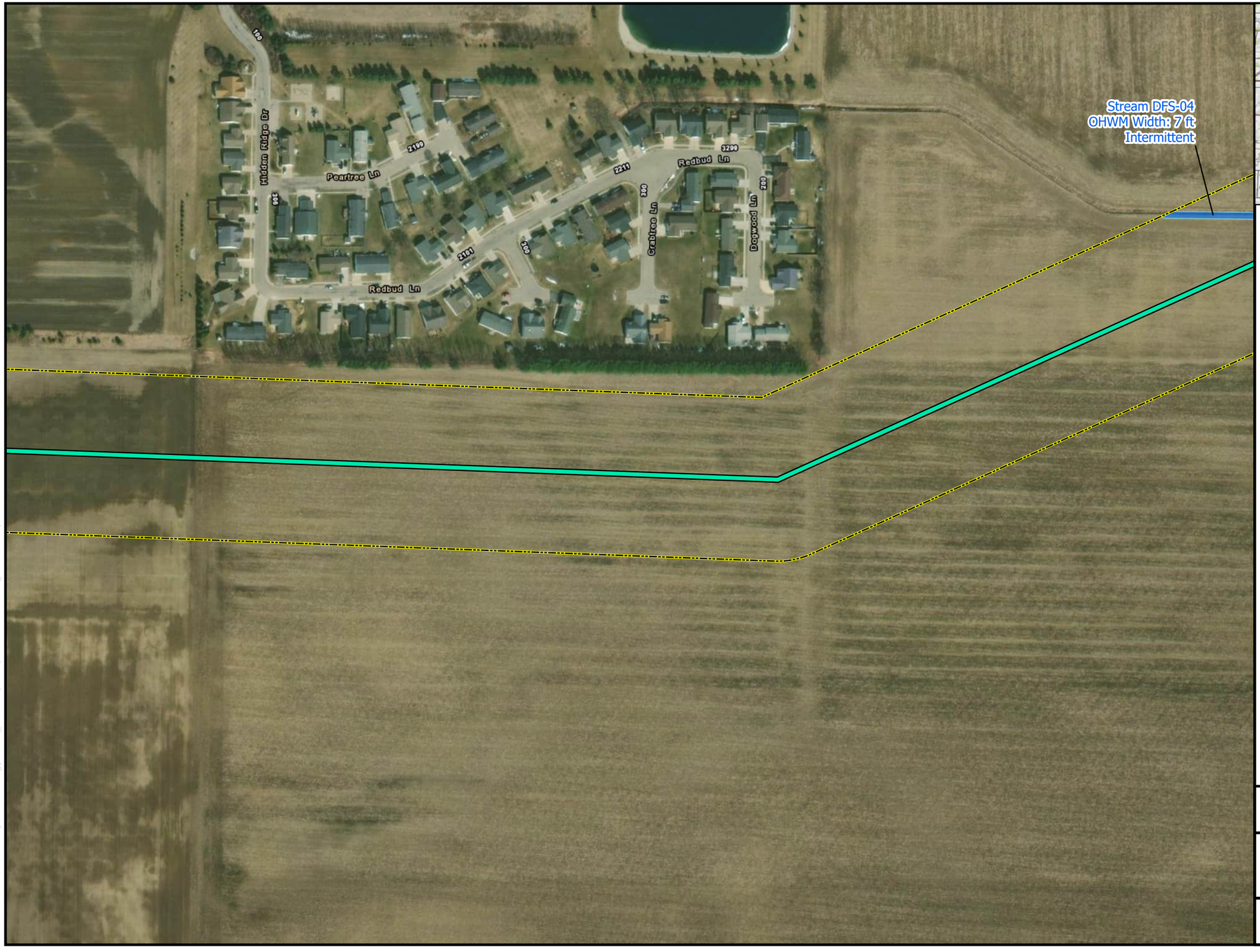

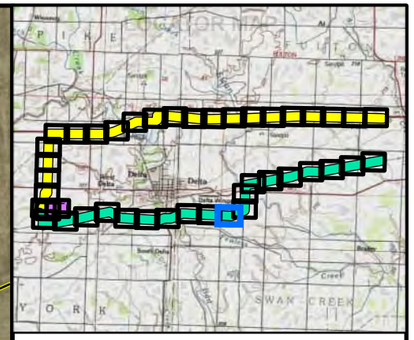

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-10
DELINEATED FEATURES MAP

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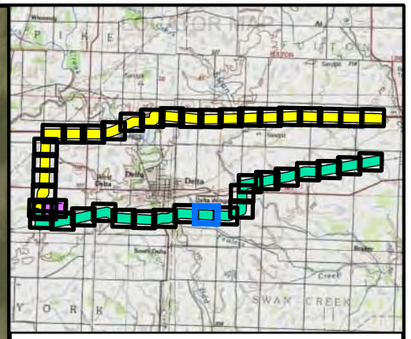

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-11
DELINEATED FEATURES MAP

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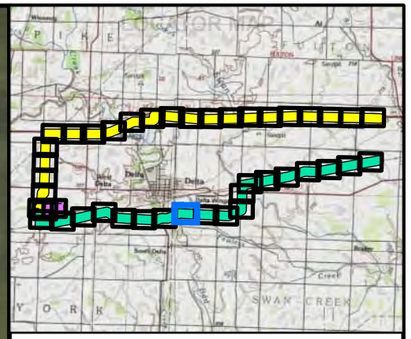

LEGEND:

- 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

N

BASE MAP SOURCE:
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Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

ALTERNATE ROUTE
FIGURE 3-12
DELINEATED FEATURES MAP

DATE: 2/23/2023

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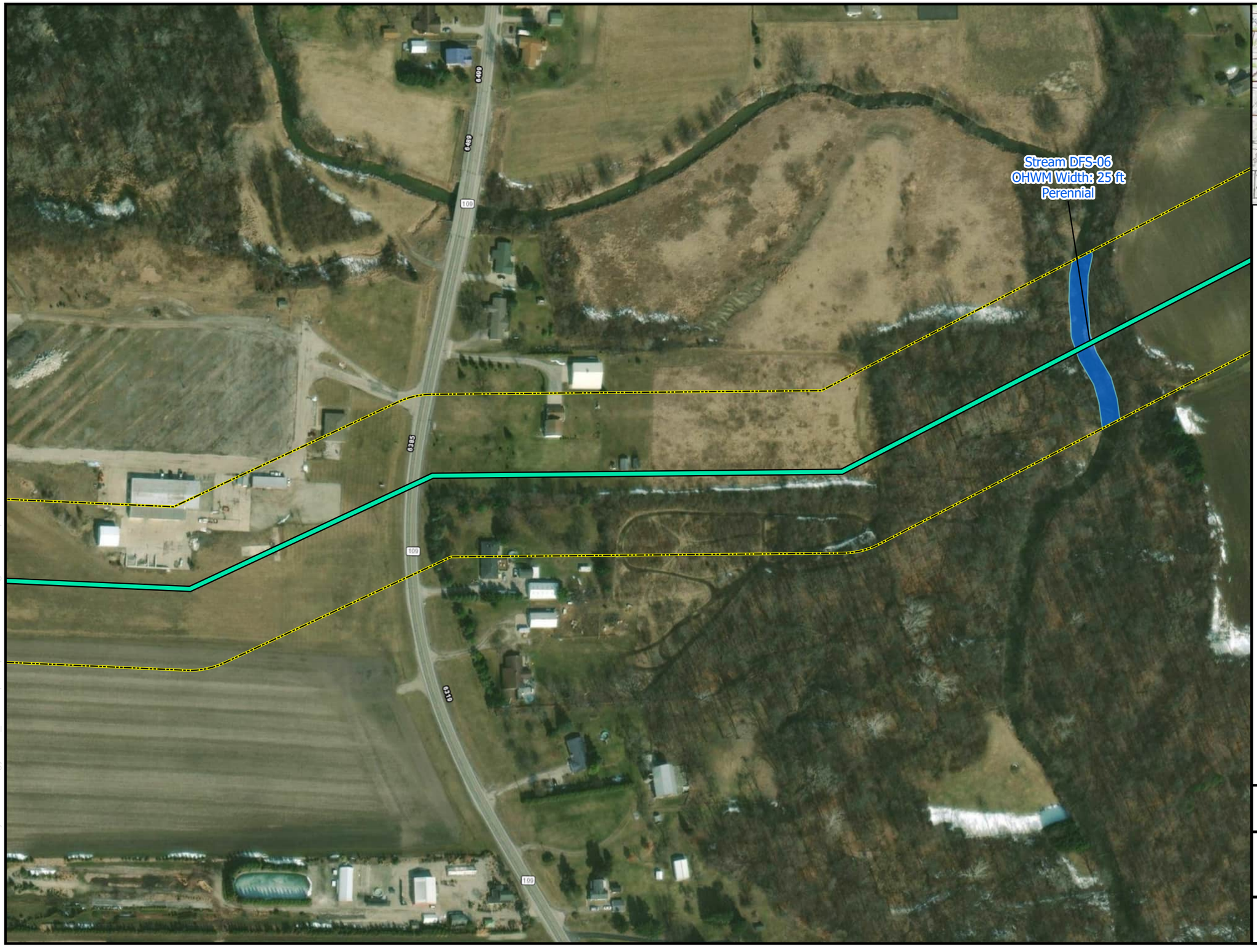

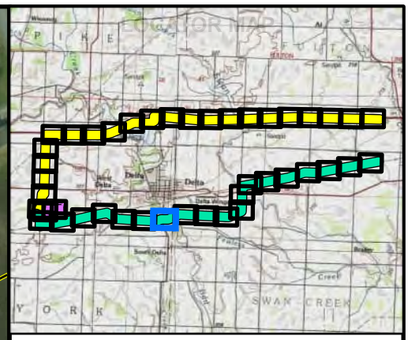

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-13
DELINEATED FEATURES MAP

DATE: 2/23/2023

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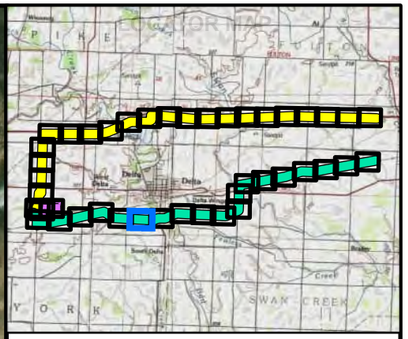

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-14
DELINEATED FEATURES MAP

DATE: 2/23/2023

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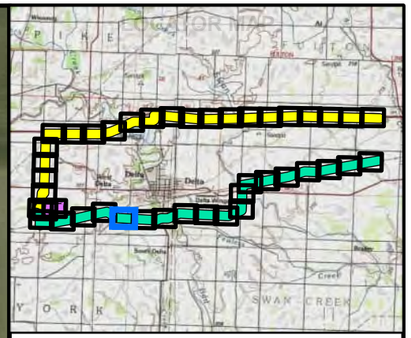

LEGEND:

- 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

N

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ALTERNATE ROUTE
FIGURE 3-15
DELINEATED FEATURES MAP

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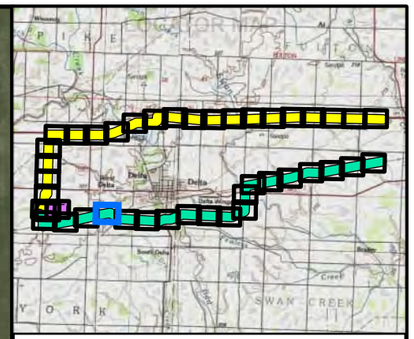

LEGEND:

- 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

N

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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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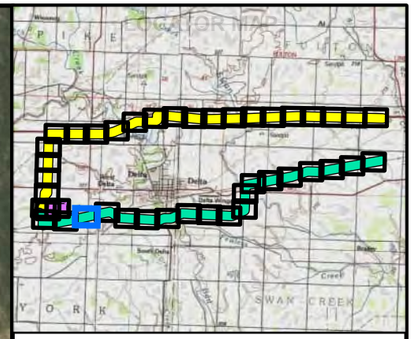

LEGEND:

- 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

N

BASE MAP SOURCE:
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ALTERNATE ROUTE
FIGURE 3-17
DELINEATED FEATURES MAP

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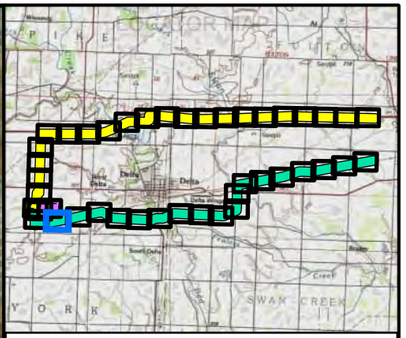


LEGEND:

- 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

N

BASE MAP SOURCE:
Esri World Imagery

0 200 400
FEET

ATSI American Transmission Systems, Inc.

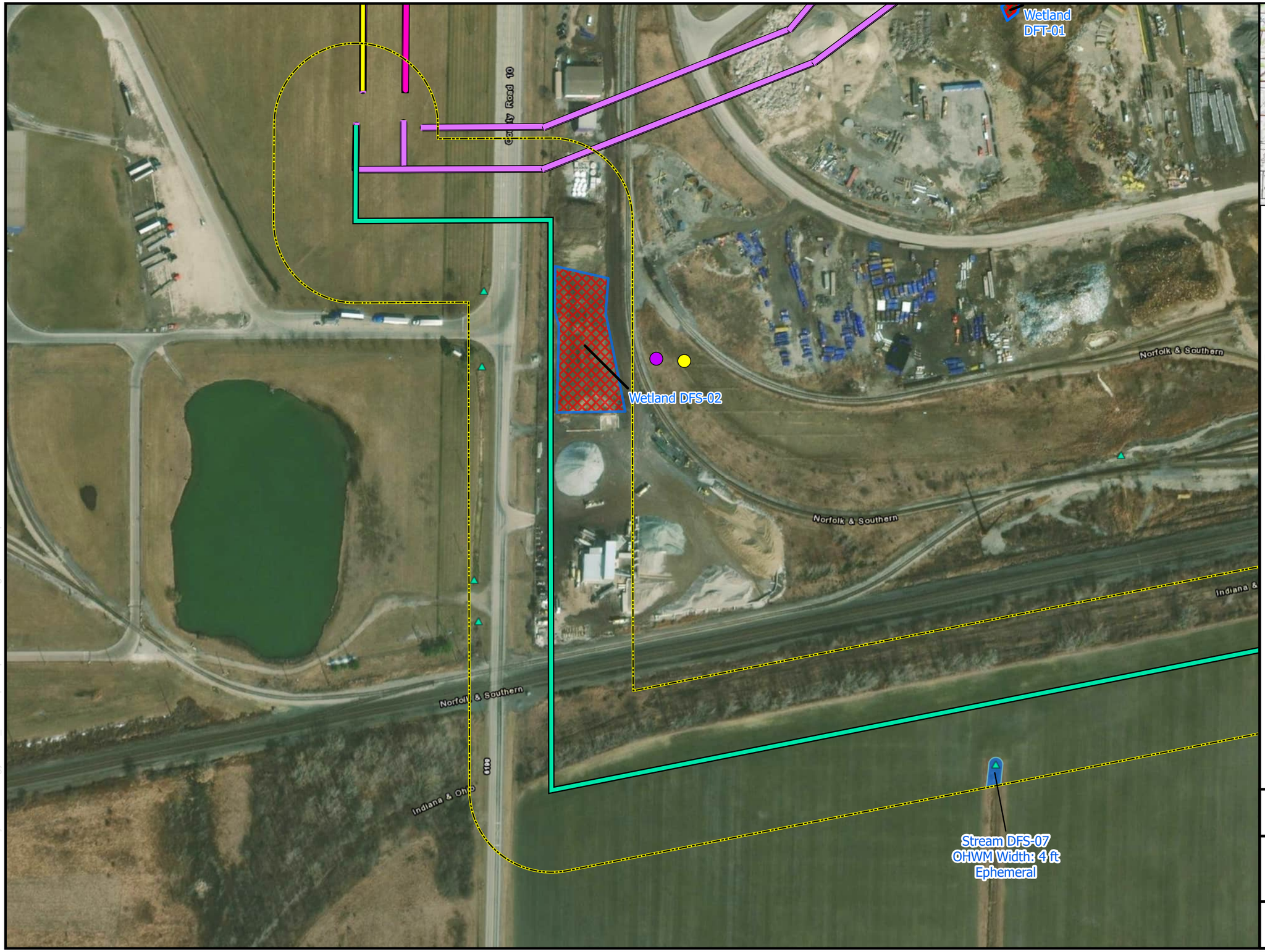
Dowling-Fulton 345 kV Transmission Line Tap to Melbourne Substation Project

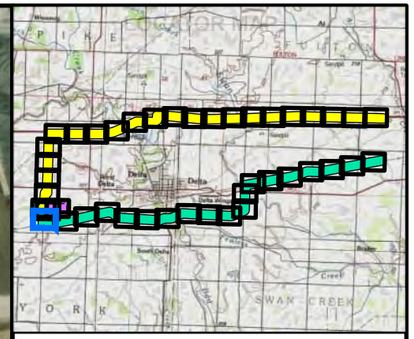
ALTERNATE ROUTE
FIGURE 3-18
DELINEATED FEATURES MAP

DATE: 2/23/2023

Jacobs

\\dc1vs01\GISProj\FirstEnergyNorth_StarMaps\Report\WDR\WDRFiguresNew.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

N

BASE MAP SOURCE:
Esri World Imagery

0 200 400
FEET

ATSI American Transmission Systems, Inc.

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

ALTERNATE ROUTE
FIGURE 3-19
DELINEATED FEATURES MAP

DATE: 2/23/2023

Jacobs

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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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFS-01

Remarks: (Explain alternative procedures here or in a separate report.)

PFO wetland in low area between railroad tracks

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	20	Yes	FACW
2. Acer rubrum	15	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Acer rubrum	15	No	FAC
2. Cornus amomum	55	Yes	FACW
3. Salix nigra	30	Yes	OBL
4.			
5.			
6.			
7.			
	100	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Eupatorium perfoliatum	5	No	FACW
2. Carex crinita	55	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1. Vitis riparia	10	Yes	FAC
2.			
3.			
4.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85.0
FACW species	80	x 2 =	160.0
FAC species	10	x 3 =	30.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	175 (A)		275.0 (B)

Prevalence Index = B/A = 1.57

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 3/2	97	7.5YR 4/6	3	C	M	Silty loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFS-01

Soil

E

S

W

General Site Photos Wetland DFS-01

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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFS-01

Remarks: (Explain alternative procedures here or in a separate report.)

Upland point adjacent to railroad

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Acer negundo	10	Yes	FAC
2. Sambucus nigra	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Equisetum hyemale	45	Yes	FAC
2. Setaria faberi	30	Yes	FACU
3. Cirsium vulgare	5	No	FACU
4. Alliaria petiolata	20	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	20	x 2 =	40
FAC species	65	x 3 =	195
FACU species	55	x 4 =	220
UPL species		x 5 =	
Column Totals:	140 (A)		455 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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 Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 3/3	100					Sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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:

General Site Photos Upland DFS-01

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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFS-02

Remarks: (Explain alternative procedures here or in a separate report.)

Lowland area between railroad tracks. Mulitple wetland areas connected via culverts under the RR tracks. Western portion of wetland disturbed by active earthwork

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	
Water Table Present?	Yes _____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	11

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

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 precipatation.

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DFS-02

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Typha X glauca	50	Yes	OBL
2. Echinochloa crus-galli	30	Yes	FAC
3. Phragmites australis	20	No	FACW
4. Juncus torreyi	15	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50.0
FACW species	35	x 2 =	70.0
FAC species	30	x 3 =	90.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	115 (A)		210.0 (B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

hydrophytic vegetation present as dominance test is greather 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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 4/2	80	10YR 4/6	20	C	M	Sandy clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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

General Site Photos Wetland DFS-02

N

E

S

W

General Site Photos Wetland DFS-02

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 7N R 7E

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 X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFS-02

Remarks: (Explain alternative procedures here or in a separate report.)

Hillside upland by RR tracks

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Solidago altissima	45	Yes	FACU
2. Dipsacus laciniatus	45	Yes	FACU
3. Eupatorium perfoliatum	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	10	x 2 =	20.0
FAC species	0	x 3 =	0.0
FACU species	90	x 4 =	360.0
UPL species	0	x 5 =	0.0
Column Totals:	100 (A)		380.0 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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 Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 17	10YR 3/3	99	10YR 4/4	1	C	M	Sandy loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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

General Site Photos Upland DFS-02

N

W

S

Soil

Appendix C
OEPA ORAM Data Forms

Site: Wetland DFS-01	**Rater(s):** MJA	**Date:** 12/20/2022

3.0 | 3.0 Metric 1. Wetland Area (size).

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)
- [x] 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 | 5.0 Metric 2. Upland buffers and surrounding land use.

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)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

6.5 | 11.5 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

11.0 | 22.5 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

- [ ] None or none apparent (4)
- [x] 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)
- [x] Poor to fair (2)
- [ ] Poor (1)

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

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

Check all disturbances observed

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

22.5

subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFS-01	**Rater(s):** MJA	**Date:** 12/20/2022

22.5
subtotal first page

Metric 5. Special Wetlands.

0.0 (max 10 pts.) | 22.5 (subtotal)

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)

Metric 6. Plant communities, interspersion, microtopography.

5.0 (max 20 pts.) | 27.5 (subtotal)

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

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

- [0] Vegetated hummucks/tussucks
- [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)**

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

Site: Wetland DFS-02	**Rater(s):** JBL	**Date:**

3.0 / 3.0 Metric 1. Wetland Area (size).

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)
- [x] 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)

1.0 / 4.0 Metric 2. Upland buffers and surrounding land use.

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)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

8.0 / 12.0 Metric 3. Hydrology.

max 30 pts. subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

4.5 / 16.5 Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

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

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

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

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

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

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

Check all disturbances observed

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

16.5
subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFS-02	**Rater(s):** JBL	**Date:**

16.5
subtotal first page

Metric 5. Special Wetlands.

0.0 (max 10 pts.) | 16.5 (subtotal)

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)

Metric 6. Plant communities, interspersion, microtopography.

-1.0 (max 20 pts.) | 15.5 (subtotal)

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)
- [x] 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

- [x] 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 hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

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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

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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)**

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

Appendix D
QHEI Stream Data Forms

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 55.5

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.:** (NAD 83 - decimal °) 41.56370 / -83.94712 **Office verified location** [x]

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
[ ] [ ] BLDR /SLABS [10]			[ ] [ ] HARDPAN [4]		
[ ] [ ] BOULDER [9]			[ ] [ ] DETRITUS [3]		
[ ] [ ] COBBLE [8]	5	10	[ ] [ ] MUCK [2]		
[x] [ ] GRAVEL [7]	10	50	[ ] [ ] SILT [2]	40	10
[ ] [x] SAND [6]	45	30	[ ] [ ] ARTIFICIAL [0]		
[ ] [ ] BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

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

Check ONE (*Or 2 & average*)

ORIGIN
- [ ] LIMESTONE [1]
- [x] TILLS [1]
- [ ] WETLANDS [0]
- [ ] HARDPAN [0]
- [ ] SANDSTONE [0]
- [ ] RIP/RAP [0]
- [ ] LACUSTURINE [0]
- [ ] SHALE [-1]
- [ ] COAL FINES [-2]

QUALITY

SILT
- [ ] HEAVY [-2]
- [x] MODERATE [-1]
- [x] NORMAL [0]
- [ ] FREE [1]

EMBEDDEDNESS
- [ ] EXTENSIVE [-2]
- [x] MODERATE [-1]
- [x] NORMAL [0]
- [ ] NONE [1]

Comments

Substrate 13 *Maximum 20*

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.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
2	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	1	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)
- [ ] EXTENSIVE >75% [11]
- [x] MODERATE 25-75% [7]
- [x] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Comments

Cover 8 *Maximum 20*

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
- [ ] HIGH [4]
- [ ] MODERATE [3]
- [x] LOW [2]
- [ ] NONE [1]

DEVELOPMENT
- [ ] EXCELLENT [7]
- [ ] GOOD [5]
- [x] FAIR [3]
- [ ] POOR [1]

CHANNELIZATION
- [ ] NONE [6]
- [ ] RECOVERED [4]
- [x] RECOVERING [3]
- [ ] RECENT OR NO RECOVERY [1]

STABILITY
- [ ] HIGH [3]
- [x] MODERATE [2]
- [x] LOW [1]

Comments

Channel 10 *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 L	EROSION R	
[ ]	[ ]	NONE / LITTLE [3]
[x]	[x]	MODERATE [2]
[x]	[x]	HEAVY / SEVERE [1]

RIPARIAN WIDTH L	RIPARIAN WIDTH R	
[ ]	[ ]	WIDE > 50m [4]
[ ]	[ ]	MODERATE 10-50m [3]
[ ]	[ ]	NARROW 5-10m [2]
[x]	[x]	VERY NARROW < 5m [1]
[ ]	[ ]	NONE [0]

FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R	
[ ]	[ ]	FOREST, SWAMP [3]
[ ]	[ ]	SHRUB OR OLD FIELD [2]
[ ]	[ ]	RESIDENTIAL, PARK, NEW FIELD [1]
[ ]	[ ]	FENCED PASTURE [1]
[x]	[x]	OPEN PASTURE, ROWCROP [0]

[ ]	[ ]	CONSERVATION TILLAGE [1]
[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	MINING / CONSTRUCTION [0]

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

Comments

Riparian 10 *Maximum 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]
- [x] < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- [x] POOL WIDTH > RIFFLE WIDTH [2]
- [ ] POOL WIDTH = RIFFLE WIDTH [1]
- [ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- [ ] TORRENTIAL [-1]
- [ ] VERY FAST [1]
- [ ] FAST [1]
- [ ] MODERATE [1]
- [x] SLOW [1]
- [ ] INTERSTITIAL [-1]
- [ ] INTERMITTENT [-2]
- [ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back) x

Comments

Pool / Current 3 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH
- [ ] BEST AREAS > 10cm [2]
- [ ] BEST AREAS 5-10cm [1]
- [x] BEST AREAS < 5cm [metric=0]

RUN DEPTH
- [ ] MAXIMUM > 50cm [2]
- [x] MAXIMUM < 50cm [1]

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

RIFFLE / RUN EMBEDDEDNESS
- [ ] NONE [2]
- [ ] LOW [1]
- [x] MODERATE [0]
- [ ] EXTENSIVE [-1]

Comments

Riffle / Run 1.5 *Maximum 8*

6] GRADIENT

(8.61 ft/mi)

DRAINAGE AREA

(11.1 mi²)

- [ ] VERY LOW - LOW [2-4]
- [x] MODERATE [6-10]
- [ ] HIGH - VERY HIGH [10-6]

%POOL: 50 **%GLIDE:** 35 **%RUN:** 10 **%RIFFLE:** 5

Gradient 10 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

METHOD

- [ ] BOAT
- [x] 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
- [x] OTHER

100 meters

CLARITY

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

CANOPY

- [ ] > 85%- OPEN
- [x] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass _____ cm

2nd _____ cm

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

multiple reaches of the stream present throughout the survey areas. Each reach was determined to have the same flow regime and similar stream characteristics as the other reaches.

B] AESTHETICS

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

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

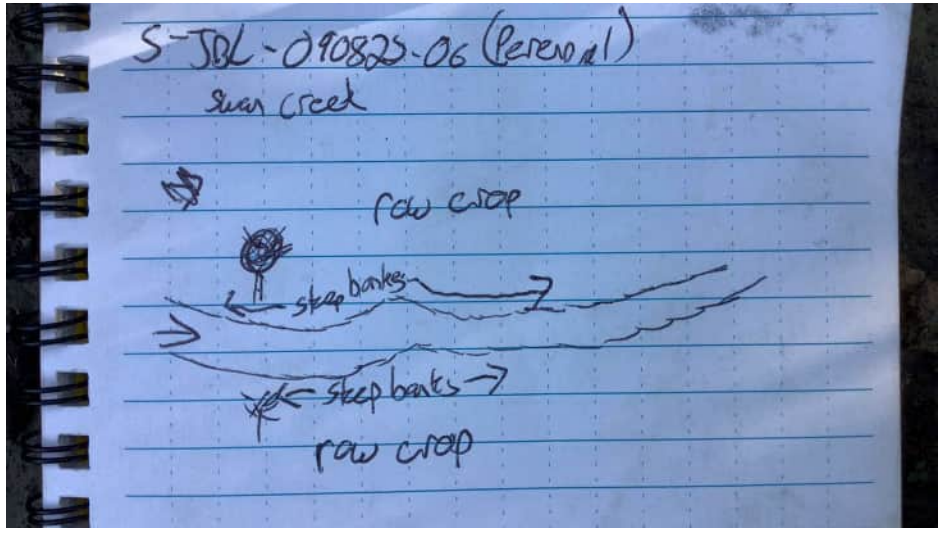
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / 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 DFS-03



Upstream

Downstream

Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 46.5

Stream & Location: Stream DFS-05 **RM:** **Date:** 16626528000000

S-JBL-090822-05 **Scorers Full Name & Affiliation:** JBL Jacobs

River Code: **STORET #:** **Lat./ Long.:** (NAD 83 - decimal °) 41.55693847933 / -83.95310956549 ☐ Office verified location

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☐ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]	5		☐ ☒ SILT [2]	65	
☒ ☐ SAND [6]	30		☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

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

ORIGIN	SILT / EMBEDDEDNESS	QUALITY
☐ LIMESTONE [1]		☐ HEAVY [-2]
☒ TILLS [1]		☒ MODERATE [-1]
☐ WETLANDS [0]		☐ NORMAL [0]
☐ HARDPAN [0]		☐ FREE [1]
☐ SANDSTONE [0]		☐ EXTENSIVE [-2]
☐ RIP/RAP [0]		☒ MODERATE [-1]
☐ LACUSTURINE [0]		☒ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Substrate 7.5 *Maximum 20*

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.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
2	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
1	ROOTMATS [1]				

AMOUNT Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☒ MODERATE 25-75% [7]
☒ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover *Maximum 20* 8

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☒ MODERATE [2]
☒ LOW [2]	☒ FAIR [3]	☒ RECOVERING [3]	☒ LOW [1]
☐ NONE [1]	☒ POOR [1]	☐ 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 & average*)

River right looking downstream

L	R	EROSION
☐	☐	NONE / LITTLE [3]
☒	☒	MODERATE [2]
☒	☒	HEAVY / SEVERE [1]

L	R	RIPARIAN WIDTH
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☒	☒	VERY NARROW < 5m [1]
☐	☐	NONE [0]

L	R	FLOOD PLAIN QUALITY
☐	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☒	☒	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

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

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 & 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)

Comments

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 & average*).

☐ NO RIFFLE [metric=0]

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

Comments

Riffle / Run *Maximum 8* 0

6] GRADIENT

(12.4 ft/mi)

DRAINAGE AREA

(4.15 mi²)

☐ VERY LOW - LOW [2-4]
☒ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 20 %GLIDE: 80
%RUN: %RIFFLE:

Gradient *Maximum 10* 8

A] SAMPLED REACH

Check ALL that apply

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE

1st -sample pass-	2nd
[ ] HIGH	[ ]
[ ] UP	[ ]
[x] NORMAL	[ ]
[ ] LOW	[ ]
[ ] DRY	[ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

100 meters

CLARITY

1st --sample pass--	2nd
[x] < 20 cm	[ ]
[ ] 20-<40 cm	[ ]
[ ] 40-70 cm	[ ]
[ ] > 70 cm/ CTB	[ ]
[ ] SECCHI DEPTH	[ ]

CANOPY

- [ ] > 85%- OPEN
- [x] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass _____ cm

2nd _____ cm

B] AESTHETICS

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

C] RECREATION

POOL: AREA [ ] >100ft² DEPTH [ ] >3ft

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

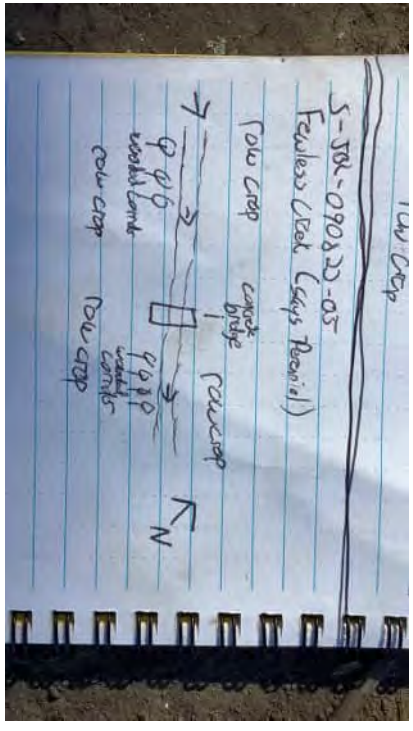
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] 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^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing: Stream DFS-05



Upstream

Downstream

Substrate

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 47.5

Stream & Location: Stream DFS-06 **RM:** 13.6 **Date:** 9/8/22

S-JBL-090822-04 **Scorers Full Name & Affiliation:** JBL Jacobs

River Code: 04100009 03 02 **STORET #:** _____ **Lat./ Long.:** (NAD 83 - decimal °) 41.55176 / -83.98877 **Office verified location** [x]

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
[ ] [ ] BLDR /SLABS [10]			[ ] [ ] HARDPAN [4]		
[ ] [ ] BOULDER [9]			[ ] [ ] DETRITUS [3]		
[x] [ ] COBBLE [8]	10	70	[ ] [ ] MUCK [2]		
[ ] [ ] GRAVEL [7]	0	10	[ ] [x] SILT [2]	80	10
[ ] [ ] SAND [6]	10	10	[ ] [ ] ARTIFICIAL [0]		
[ ] [ ] BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

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

Check ONE (*Or 2 & average*)

ORIGIN
- [ ] LIMESTONE [1]
- [x] TILLS [1]
- [ ] WETLANDS [0]
- [ ] HARDPAN [0]
- [ ] SANDSTONE [0]
- [ ] RIP/RAP [0]
- [ ] LACUSTURINE [0]
- [ ] SHALE [-1]
- [ ] COAL FINES [-2]

QUALITY

SILT
- [ ] HEAVY [-2]
- [x] MODERATE [-1]
- [ ] NORMAL [0]
- [ ] FREE [1]

EMBEDDEDNESS
- [ ] EXTENSIVE [-2]
- [x] MODERATE [-1]
- [ ] NORMAL [0]
- [ ] NONE [1]

Substrate 9 *Maximum 20*

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.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	1	ROOTWADS [1]	1	AQUATIC MACROPHYTES [1]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)
- [ ] EXTENSIVE >75% [11]
- [x] MODERATE 25-75% [7]
- [x] SPARSE 5-<25% [3]
- [ ] NEARLY ABSENT <5% [1]

Comments

Cover *Maximum 20* 9

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
- [ ] HIGH [4]
- [ ] MODERATE [3]
- [x] LOW [2]
- [ ] NONE [1]

DEVELOPMENT
- [ ] EXCELLENT [7]
- [ ] GOOD [5]
- [x] FAIR [3]
- [ ] POOR [1]

CHANNELIZATION
- [ ] NONE [6]
- [ ] RECOVERED [4]
- [x] RECOVERING [3]
- [ ] RECENT OR NO RECOVERY [1]

STABILITY
- [ ] HIGH [3]
- [x] MODERATE [2]
- [ ] LOW [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 & average*)

River right looking downstream

EROSION L	EROSION R	
[ ]	[ ]	NONE / LITTLE [3]
[x]	[x]	MODERATE [2]
[ ]	[ ]	HEAVY / SEVERE [1]

RIPARIAN WIDTH L	RIPARIAN WIDTH R	
[ ]	[ ]	WIDE > 50m [4]
[ ]	[ ]	MODERATE 10-50m [3]
[ ]	[ ]	NARROW 5-10m [2]
[x]	[x]	VERY NARROW < 5m [1]
[ ]	[ ]	NONE [0]

FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R	
[ ]	[ ]	FOREST, SWAMP [3]
[ ]	[ ]	SHRUB OR OLD FIELD [2]
[ ]	[ ]	RESIDENTIAL, PARK, NEW FIELD [1]
[ ]	[ ]	FENCED PASTURE [1]
[x]	[x]	OPEN PASTURE, ROWCROP [0]

L	R	
[ ]	[ ]	CONSERVATION TILLAGE [1]
[ ]	[ ]	URBAN OR INDUSTRIAL [0]
[ ]	[ ]	MINING / CONSTRUCTION [0]

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

Comments

Riparian *Maximum 10* 3

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)
- [ ] > 1m [6]
- [ ] 0.7-<1m [4]
- [x] 0.4-<0.7m [2]
- [ ] 0.2-<0.4m [1]
- [ ] < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- [x] POOL WIDTH > RIFFLE WIDTH [2]
- [ ] POOL WIDTH = RIFFLE WIDTH [1]
- [ ] POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- [ ] TORRENTIAL [-1]
- [ ] VERY FAST [1]
- [ ] FAST [1]
- [x] MODERATE [1]
- [x] SLOW [1]
- [ ] INTERSTITIAL [-1]
- [ ] INTERMITTENT [-2]
- [ ] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back) x

Comments

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 & average*). [ ] NO RIFFLE [metric=0]

RIFFLE DEPTH
- [ ] BEST AREAS > 10cm [2]
- [ ] BEST AREAS 5-10cm [1]
- [x] BEST AREAS < 5cm [metric=0]

RUN DEPTH
- [ ] MAXIMUM > 50cm [2]
- [x] MAXIMUM < 50cm [1]

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

RIFFLE / RUN EMBEDDEDNESS
- [ ] NONE [2]
- [ ] LOW [1]
- [x] MODERATE [0]
- [ ] EXTENSIVE [-1]

Comments

Riffle / Run *Maximum 8* 2

6] GRADIENT

DRAINAGE AREA (42.8 mi²)

(5.3 ft/mi)
- [ ] VERY LOW - LOW [2-4]
- [x] MODERATE [6-10]
- [ ] HIGH - VERY HIGH [10-6]

%POOL: 40 %GLIDE: 40 %RUN: 10 %RIFFLE: 10

Gradient *Maximum 10* 8

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

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

CLARITY

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

CANOPY

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

1st pass _____ cm

2nd _____ cm

B] AESTHETICS

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

C] RECREATION

POOL:	AREA	DEPTH
	☐ NC >100ft²	☐ NC >3ft

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

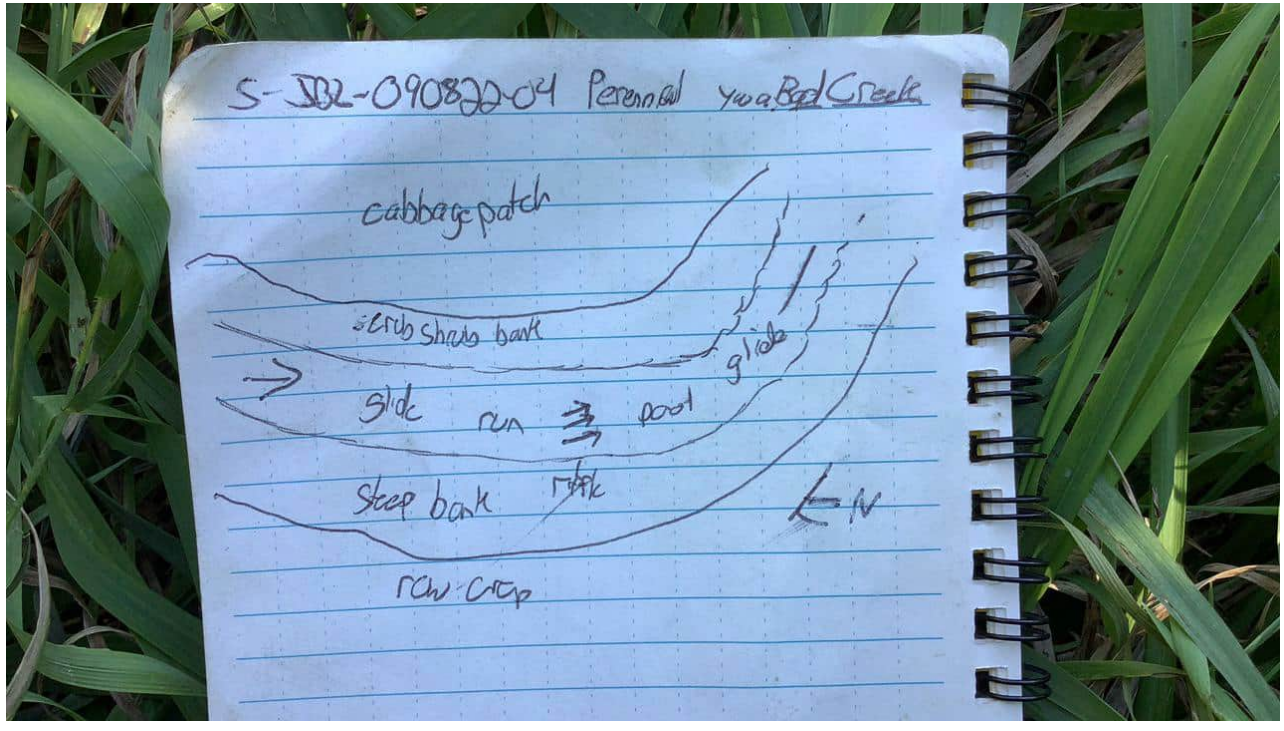
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs - CONSTRUCTION - SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H20 / TILE / H20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / 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 DFS-06



Upstream

Downstream

Substrate

Appendix E
HHEI Stream Data Forms

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 (mi²) 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
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☒	SILT **[3 pt]**	75
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**	5	☐ ☐	ARTIFICIAL **[3 pts]**	10

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☒	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 3

Pool Depth Max = 30

15

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 5

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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☒	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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): 95

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): _____

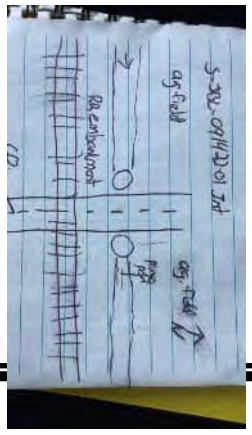
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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



Site Photos	Stream DFS-01

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 (mi²) 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

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
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	60
☐	BOULDER (>256 mm) **[16 pts]**		☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	40
☐	BEDROCK **[16 pts]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☐	CLAY or HARDPAN **[0 pt]**	
☐	GRAVEL (2-64 mm) **[9 pts]**		☐	MUCK **[0 pts]**	
☐	SAND (<2 mm) **[6 pts]**		☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

8

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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☒	< 5 cm **[5pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 1

Pool Depth Max = 30

5

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 7

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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R	
☐	☐	Mature Forest, Wetland
☐	☐	Immature Forest, Shrub or Old Field
☐	☐	Residential, Park, New Field
☐	☐	Fenced Pasture

L	R	
☐	☐	Conservation Tillage
☐	☐	Urban or Industrial
☒	☒	Open Pasture, Row Crop
☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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 0.83 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): 100

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): _____

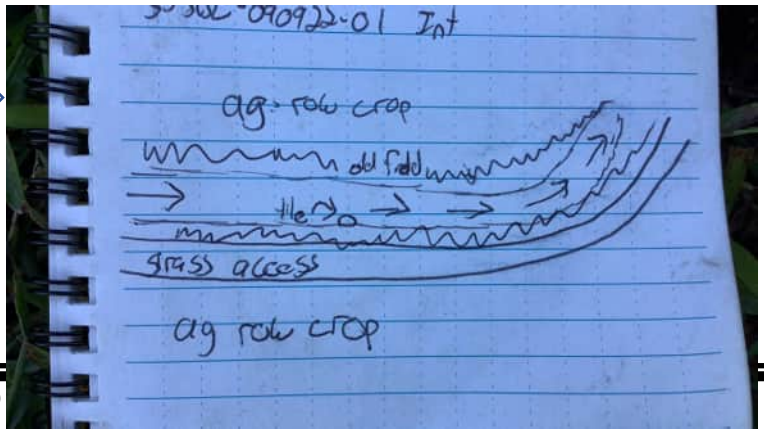
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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



Site Photos	Stream DFS-02

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 (mi²) 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

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
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**	10	☐ ☐	ARTIFICIAL **[3 pts]**	10

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 4

Pool Depth Max = 30

25

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 7

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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS intermittent

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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: 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): 100

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)

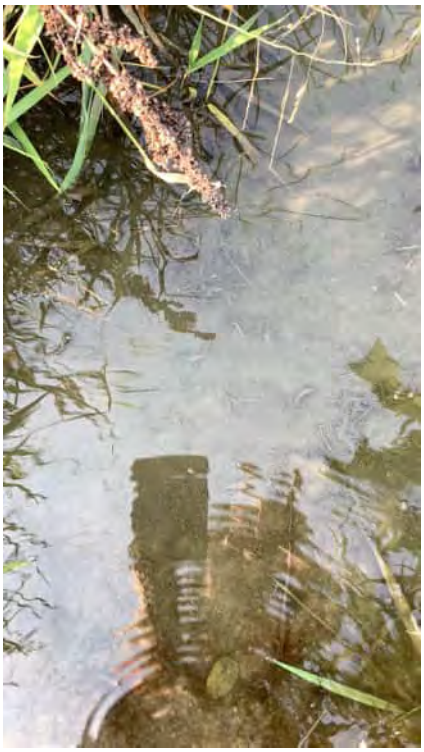
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW

Site Photos	Stream DFS-04

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 (mi²) 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

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
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☒	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	10
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

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

(A) **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6

(B) **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 4

Pool Depth Max = 30

25

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

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 4

Bankfull Width Max=30

15

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)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☒	☒	Narrow <5m
☐	☐	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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: 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): _____

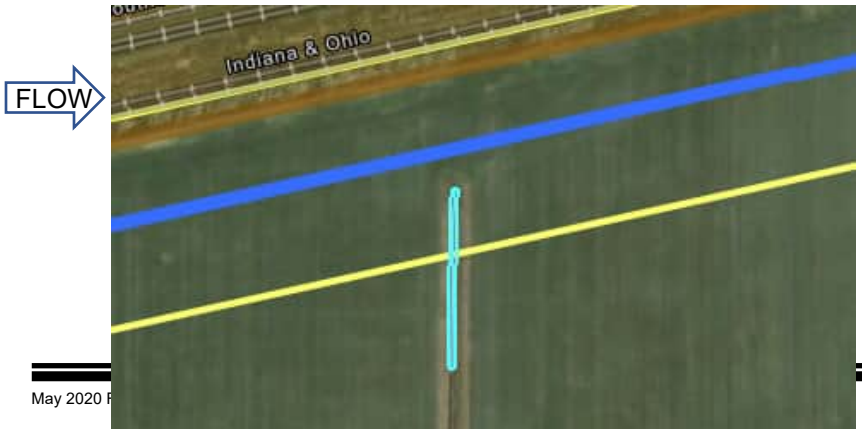
Salamanders Observed? (Y/N) _____ Species observed (if known): _____

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



Site Photos	Stream DFS-07

Upstream

Downstream

Substrate

Appendix F
Jacobs Open Water / Pond Data Forms

Jacobs

P-JBL-091422-02

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

Site Photos Pond DFS-01

S

W

SW

Substrate

Jacobs

P-JBL-090622-02

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

Site Photos	Pond DFS-02

N

Jacobs

P-JBL-090622-01

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

Site Photos	Pond DFS-03

Appendix 8-3C
Wetland and Waterbody Delineation Report for the Proposed Melbourne Substation and 345 kV Tie Lines (Melbourne Substation to Sydney Substation)

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

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

February 2023

Jacobs

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

Contents

1 Introduction 1-1

2 Background Information 2-1
2.1 Annual Precipitation 2-1
2.2 Drainage Basins 2-1
2.3 Traditional Navigable Waters 2-1

3 Wetland and Waterbody Delineation 3-1
3.1 Desktop Review 3-1
3.2 Field Survey Methodology 3-1
3.2.1 Wetland Delineation 3-2
3.2.2 Stream Assessment 3-3

4 Field Survey Results 4-1
4.1 Wetlands 4-1
4.1.1 Wetland ORAM Results 4-1
4.2 Streams 4-2
4.3 Ponds/Open Water 4-2

5 Conclusion 5-1

6 References 6-1

Tables

2-1 Recent Precipitation Data
3-1 Soil Map Units
4-1 Delineated Wetland Table
4.1.1 Wetland ORAM Summary Table
4-2 Delineated Stream Table
4-3 Wetland Summary Table

Appendices

A Figures
1 Overview Map
2-1 to 2-2 Soils, NHD, NWI, FEMA Map
3-1 to 3-2 Delineated Features Map
B USACE Wetland Determination Field Data Forms
C OEPA ORAM Data Forms
D HHEI Stream Data Forms

Acronyms and Abbreviations

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

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 Substationas 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

Precipiation 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[1,3]	3.22	5.82	1.51	1.10	2.21	1.95	15.81
Normal Precipitation[2,3]	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

[1]Monthly weather summary from weather station WAUSEON WATER PLANT, OH
[2]USDA WETS Station Climate Data 1971-2000 (USDA 2022)
[3]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[1]	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**	

[1]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[1]	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
		Total Stream Length (ft)		**1,607**				

[1]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

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^2).

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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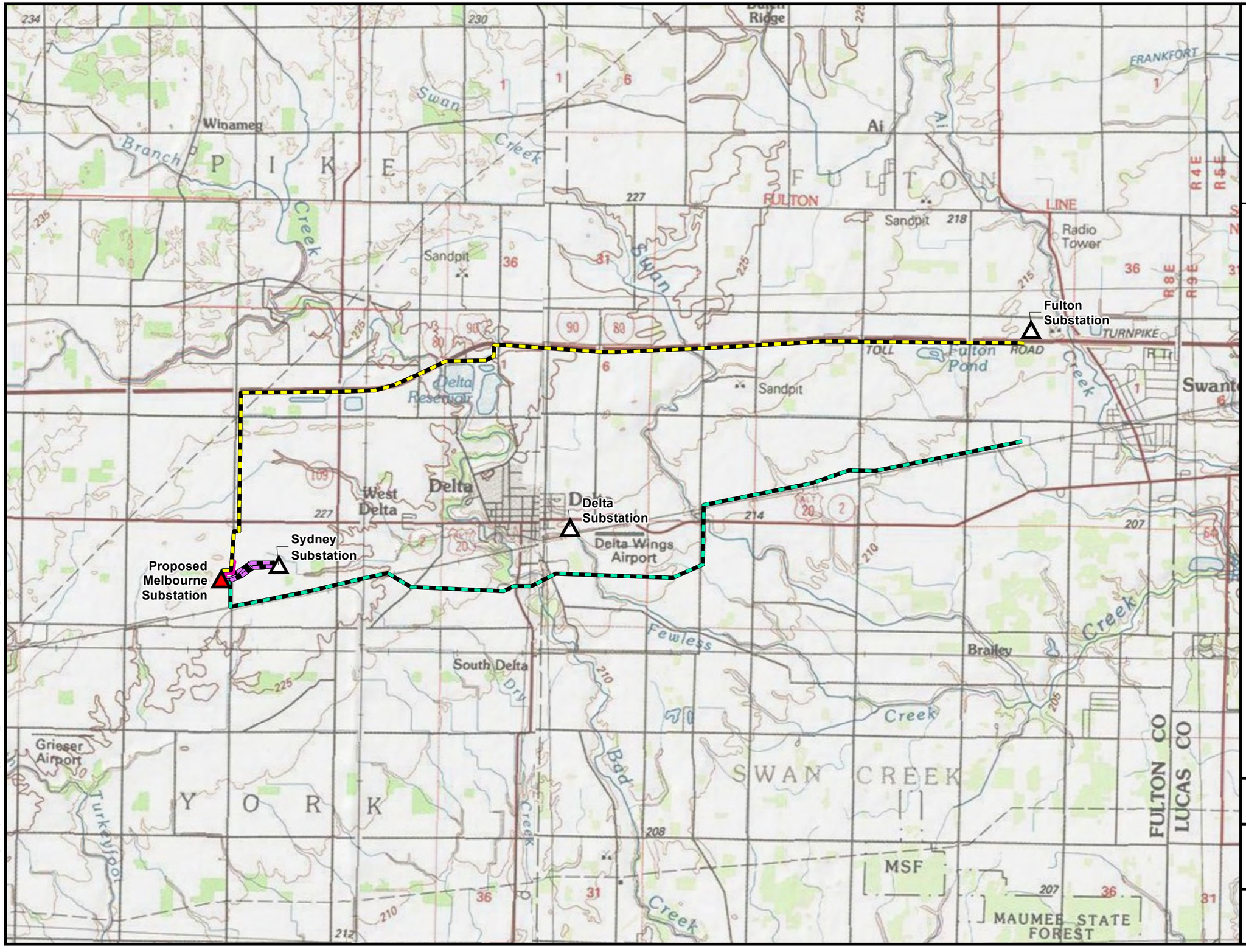
Appendix A
Figures



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
Topograch Quadrangles:
Delta and Swanton

Coordinate System: State Plane
Ohio North FIPS 3401 Feet
Datum: NAD 1983
Scale: 1:24,000

2/6/2023

N

ATSI
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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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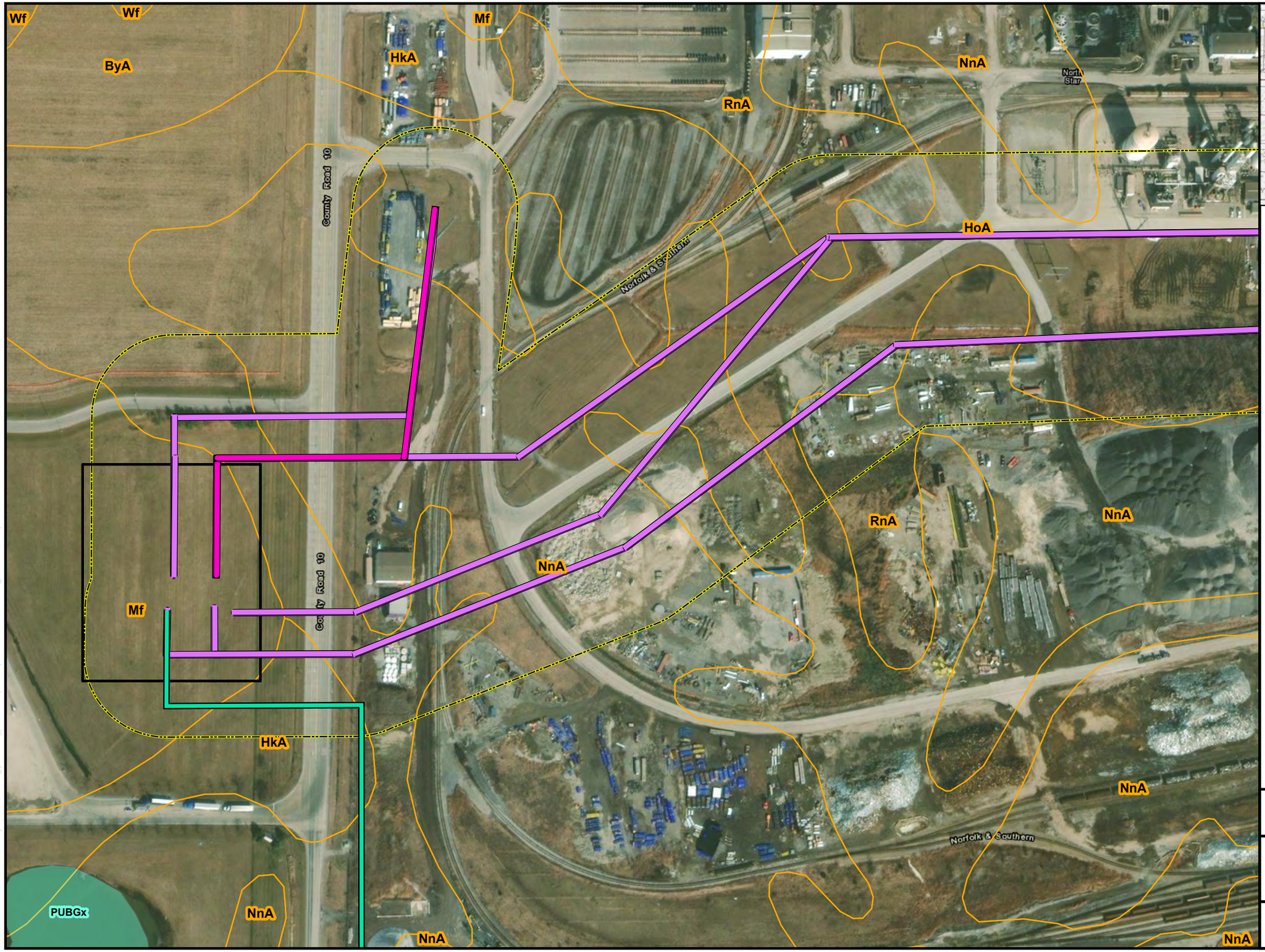

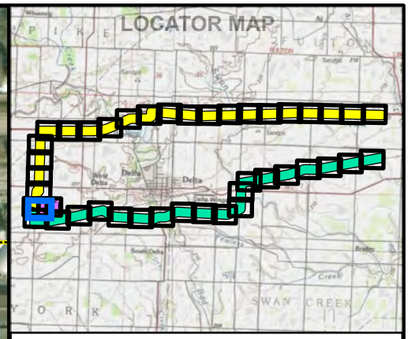

LEGEND:

- 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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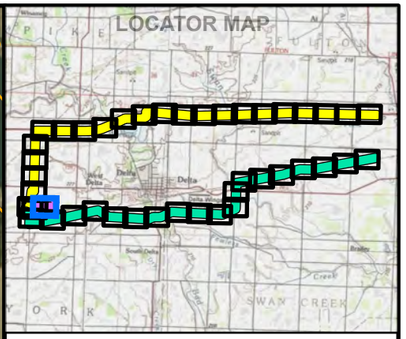

LEGEND:

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

N

BASE MAP SOURCE:
Esri World Imagery

0 200 400
FEET

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

TIE LINE ROUTE
FIGURE 2-2
SOILS, NHD, NWI, FEMA MAP

DATE: 2/23/2023

Jacobs

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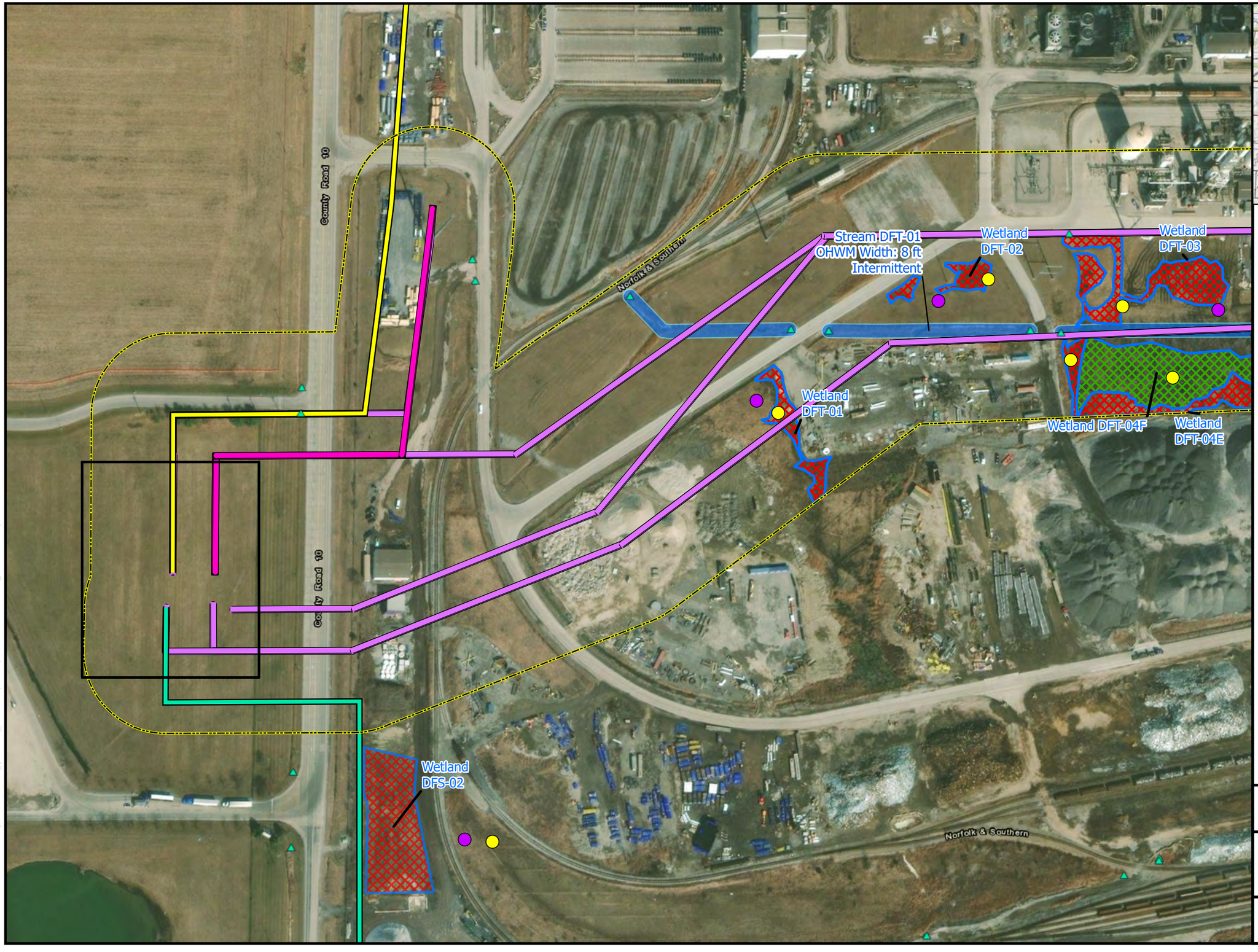

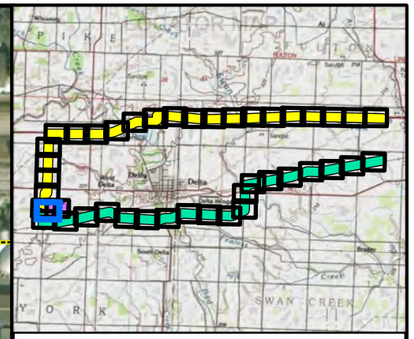

LEGEND:

- 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

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 3-1
DELINEATED FEATURES MAP

DATE: 2/23/2023

Jacobs

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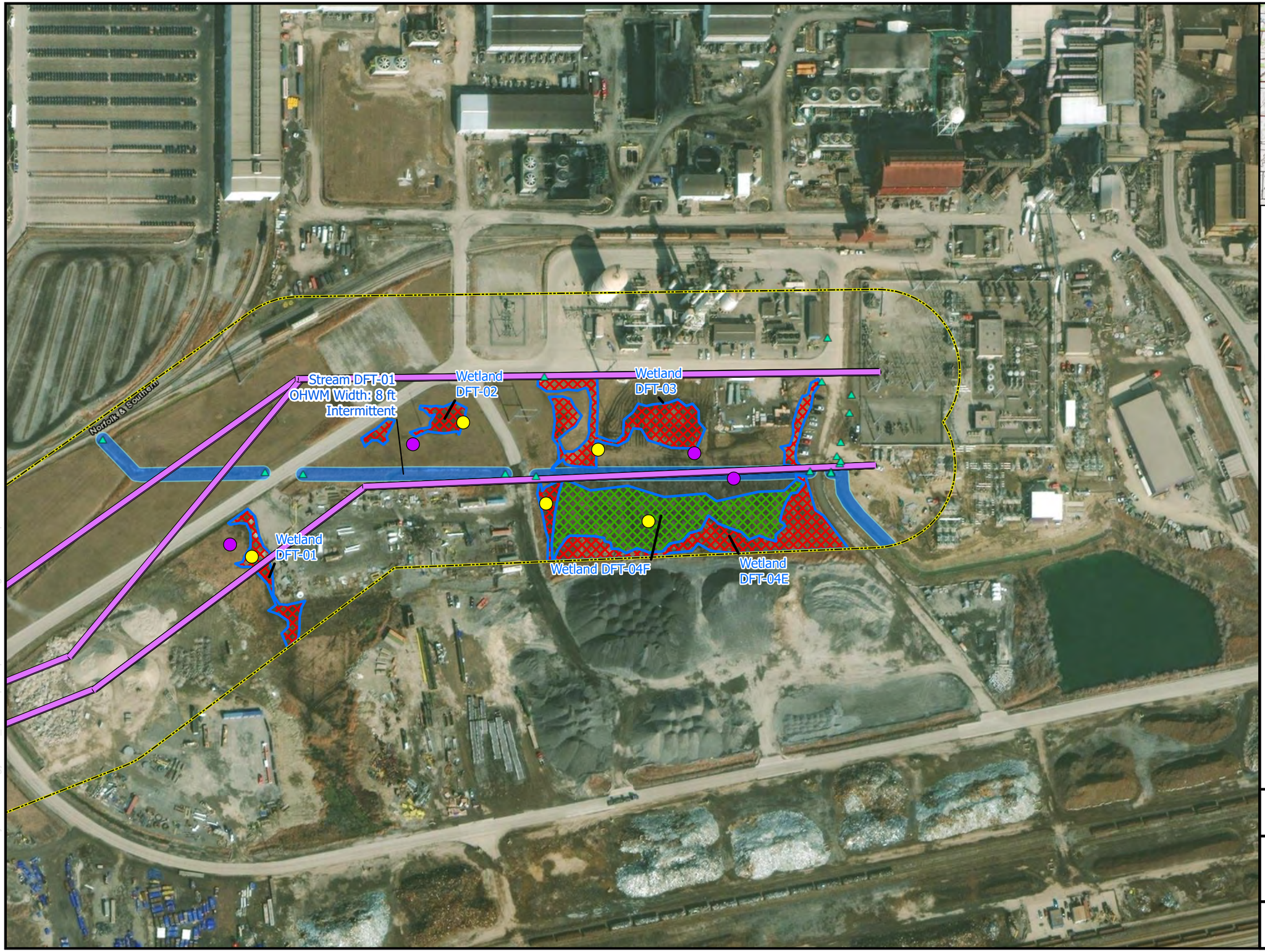

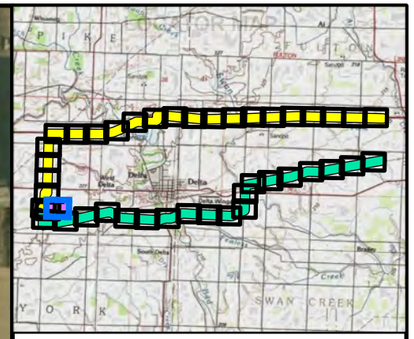

LEGEND:

- 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

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

TIE LINE ROUTE
FIGURE 3-2
DELINEATED FEATURES MAP

DATE: 2/23/2023

Jacobs

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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: 01/09/2023

Applicant/Owner: FirstEnergy | State: OH | Sampling Point: Wetland DFT-01

Investigator(s): JBL | Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Lowland | Local relief (concave, convex, none): Concave | Slope (%): 2

Subregion (LRR or MLRA): LRR K | Lat: 41.56604 | Long: -84.05333 | Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) | 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFT-01

Remarks: (Explain alternative procedures here or in a separate report.)

Low area between gravel pads. PEM wetland 4

HYDROLOGY

Wetland Hydrology Indicators:

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

- x Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- x Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- x FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches):	3
Water Table Present?	Yes X	No _____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	0

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DFT-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	70	Yes	FACW
2. Carex vulpinoidea	10	No	OBL
3. Setaria pumila	5	No	FAC
4. Juncus effusus	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	70	x 2 =	140
FAC species	5	x 3 =	15
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	90 (A)		170 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

SOIL

Sampling Point: Wetland DFT-01

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 4/2	95	10YR 5/4	5	C	M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFT-01

N

E

S

W

General Site Photos Wetland DFT-01

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: 01/09/2023

Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFT-01

Investigator(s): JBL Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Flat Slope (%): 3

Subregion (LRR or MLRA): LRR K Lat: 41.56611 Long: -84.05350 Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) 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 _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFT-01

Remarks: (Explain alternative procedures here or in a separate report.)

Upland 04

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	
Water Table Present?	Yes _____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	15

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DFT-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Solidago canadensis	60	Yes	FACU
2. Dipsacus fullonum	15	No	FACU
3. Schedonorus arundinaceus	10	No	FACU
4. Juncus tenuis	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	0	x 2 =	0.0
FAC species	0	x 3 =	0.0
FACU species	85	x 4 =	340.0
UPL species	0	x 5 =	0.0
Column Totals:	85 (A)		340.0 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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

SOIL

Sampling Point: Upland DFT-01

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
-	10YR 3/2	100					Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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:

General Site Photos Upland DFT-01

E

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: 01/09/2023

Applicant/Owner: FirstEnergy State: OH Sampling Point: Wetland DFT-02

Investigator(s): JBL Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.56685 Long: -84.05170 Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFT-02

Remarks: (Explain alternative procedures here or in a separate report.)

PEM wetland 03. Upland drainage along road connects wetland to stream 01

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 2
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DFT-02

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Typha X glauca	80	Yes	OBL
2. Panicum capillare	10	No	FAC
3. Schedonorus pratensis	5	No	FACU
4. Juncus effusus	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species		x 2 =	
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species		x 5 =	
Column Totals:	100 (A)		135 (B)

Prevalence Index = B/A = 1.35

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

SOIL

Sampling Point: Wetland DFT-02

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 4/1	95	10YR 4/4	5	C	M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFT-02

N

E

S

W

General Site Photos	Wetland DFT-02

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: 01/09/2023

Applicant/Owner: FirstEnergy | State: OH | Sampling Point: Upland DFT-02

Investigator(s): JBL | Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): Flat | Slope (%): 1

Subregion (LRR or MLRA): LRR K | Lat: 41.56672 | Long: -84.05209 | Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) | 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 _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFT-02

Remarks: (Explain alternative procedures here or in a separate report.)

Upland 03

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	
Water Table Present?	Yes _____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	16

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DFT-02

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Schedonorus pratensis	70	Yes	FACU
2. Dipsacus fullonum	20	Yes	FACU
3. Juncus tenuis	5	No	FAC
4. Asclepias incarnata	2	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	97 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species		x 2 =	
FAC species	5	x 3 =	15
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	97 (A)		377 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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

SOIL

Sampling Point: Upland DFT-02

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 17	10YR 3/2	99	10YR 4/4	1	C	M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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:

General Site Photos Upland DFT-02

E

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: 01/09/2023

Applicant/Owner: FirstEnergy | State: OH | Sampling Point: Wetland DFT-03

Investigator(s): JBL | Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Undulating | Local relief (concave, convex, none): Undulating | Slope (%): 1

Subregion (LRR or MLRA): LRR K | Lat: 41.56671 | Long: -84.05064 | Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) | 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFT-03

Remarks: (Explain alternative procedures here or in a separate report.)

Maintained ROW with rutting. PEM wetland W-JBL-010923-02

HYDROLOGY

Wetland Hydrology Indicators:

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

- x Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- x Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DFT-03

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	80	Yes	FACW
2. Setaria pumila	10	No	FAC
3. Carex annectens	5	No	FACW
4. Schedonorus arundinaceus	5	No	FACU
5. Panicum capillare	5	No	FAC
6. Juncus tenuis	3	No	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	108 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	85	x 2 =	170
FAC species	18	x 3 =	54
FACU species	5	x 4 =	20
UPL species		x 5 =	
Column Totals:	108 (A)		244 (B)

Prevalence Index = B/A = 2.26

Hydrophytic Vegetation Indicators:

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

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

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** X **No**

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

SOIL

Sampling Point: Wetland DFT-03

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 17	10R 4/2	95	10YR 4/4	5	C	PL,M	Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFT-03

N

E

S

W

General Site Photos	Wetland DFT-03

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: 01/09/2023

Applicant/Owner: FirstEnergy State: OH Sampling Point: Upland DFT-03

Investigator(s): JBL Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Undulating Slope (%): 1

Subregion (LRR or MLRA): LRR K Lat: 41.56670 Long: -84.04989 Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) 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 _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFT-03

Remarks: (Explain alternative procedures here or in a separate report.)

Upland 01

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	
Water Table Present?	Yes _____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	15

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DFT-03

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Schedonorus arundinaceus	70	Yes	FACU
2. Phragmites australis	15	No	FACW
3. Dipsacus fullonum	10	No	FACU
4. Setaria faberi	5	No	FACU
5. Setaria pumila	5	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	16	x 2 =	32.0
FAC species	0	x 3 =	0.0
FACU species	85	x 4 =	340.0
UPL species	0	x 5 =	0.0
Column Totals:	101 (A)		372.0 (B)

Prevalence Index = B/A = 3.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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

SOIL

Sampling Point: Upland DFT-03

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 11	10YR 4/3	97	10YR 4/4	3	C	M	Clay loam	
11 - 18	10YR 4/2	95	10YR 5/4	5	C	M		
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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:

General Site Photos Upland DFT-03

W

E

S

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: 01/09/2023

Applicant/Owner: FirstEnergy | State: OH | Sampling Point: Wetland DFT-04E

Investigator(s): JBL | Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Lowland | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR or MLRA): LRR K | Lat: 41.56639 | Long: -84.05104 | Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) | 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFT-04E

Remarks: (Explain alternative procedures here or in a separate report.)

PEM portion of PEM/PFO wetland W-JBL-010923-01 in low area near access road

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	
Water Table Present?	Yes X	No _____	Depth (inches):	12
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches):	6

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DFT-04E

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	100	Yes	FACW
2. Dipsacus fullonum	2	No	FACU
3. Cyperus esculentus	2	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	104 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0.0
FACW species	2	x 2 =	4.0
FAC species	0	x 3 =	0.0
FACU species	0	x 4 =	0.0
UPL species	0	x 5 =	0.0
Column Totals:	2 (A)		4.0 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

SOIL

Sampling Point: Wetland DFT-04E

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 17	10YR 4/1	95	10R 5/4	5	C	M,PL	Clay	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFT-04E

N

E

S

General Site Photos	Wetland DFT-04E

S

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: 01/09/2023

Applicant/Owner: FirstEnergy | State: OH | Sampling Point: Wetland DFT-04F

Investigator(s): JBL | Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Lowland | Local relief (concave, convex, none): Undulating | Slope (%): 1

Subregion (LRR or MLRA): LRR K | Lat: 41.56629 | Long: -84.05024 | Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) | 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: Wetland DFT-04F

Remarks: (Explain alternative procedures here or in a separate report.)

PFO portion of wetland
W-JBL-010923-01. In wooded area between stream 01 and access roads

HYDROLOGY

Wetland Hydrology Indicators:

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

- x Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 1
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland DFT-04F

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharinum	50	Yes	FACW
2. Populus deltoides	15	No	FAC
3. Ulmus americana	15	No	FACW
4. Quercus palustris	5	No	FACW
5.			
6.			
7.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus pennsylvanica	40	Yes	FACW
2. Quercus palustris	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Symphyotrichum lateriflorum	30	Yes	FAC
2. Leersia virginica	10	Yes	FACW
3. Carex blanda	10	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	130	x 2 =	260
FAC species	55	x 3 =	165
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	185 (A)		425 (B)

Prevalence Index = B/A = 2.30

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X **No**

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

SOIL

Sampling Point: Wetland DFT-04F

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10R 4/2	97	10YR 4/6	3	C	PL,M	Clay loam	
6 - 20	10YR 4/2	80	10YR 4/6	20	C	M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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:

General Site Photos Wetland DFT-04F

N

E

S

W

General Site Photos	Wetland DFT-04F

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: 01/09/2023

Applicant/Owner: FirstEnergy | State: OH | Sampling Point: Upland DFT-04

Investigator(s): JBL | Section, Township, Range: S 15 T 7N R 7E

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Undulating | Slope (%): 2

Subregion (LRR or MLRA): LRR K | Lat: 41.56655 | Long: -84.04958 | Datum: NAD 83

Soil Map Unit Name: Nappanee-Hoytville (s6028) | 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 _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: Upland DFT-04

Remarks: (Explain alternative procedures here or in a separate report.)

Upland between pem / pfo wetand and stream

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 16

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Upland DFT-04

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	40	Yes	FAC
2. Acer saccharum	30	Yes	FACU
3. Tilia americana	20	Yes	FACU
4.			
5.			
6.			
7.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Ulmus americana	20	Yes	FACW
2. Carya ovata	15	Yes	FACU
3. Juniperus virginiana	5	No	FACU
4.			
5.			
6.			
7.			
	40	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Apocynum cannabinum	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	20	x 2 =	40
FAC species	50	x 3 =	150
FACU species	70	x 4 =	280
UPL species		x 5 =	
Column Totals:	140 (A)		130.0 (B)

Prevalence Index = B/A = 3.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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** X

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

SOIL

Sampling Point: Upland DFT-04

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 13	10YR 3/2	100					Clay loam	
13 - 17	10YR 4/2	99	10YR 4/4	1	C	M	Clay loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]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[3]:

- ___ 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)

[3]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:

General Site Photos Upland DFT-04

N

E

S

W

General Site Photos	Upland DFT-04

Soil

Appendix C
OEPA ORAM Data Forms

Site: Wetland DFT-01	**Rater(s):** JBL	**Date:** 1/9/23

1.0 / 1.0 Metric 1. Wetland Area (size).

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)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

2.0 / 3.0 Metric 2. Upland buffers and surrounding land use.

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)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

7.0 / 10.0 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

5.5 / 15.5 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [x] 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)
- [x] Poor to fair (2)
- [ ] Poor (1)

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

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

Check all disturbances observed

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

15.5
subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFT-01	**Rater(s):** JBL	**Date:** 1/9/23

15.5
subtotal first page

0.0 | 15.5 **Metric 5. Special Wetlands.**

max 10 pts. subtotal

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 **Metric 6. Plant communities, interspersion, microtopography.**

max 20 pts. subtotal

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 hummucks/tussucks
- [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)**

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

Site: Wetland DFT-02	**Rater(s):** JBL	**Date:** 1/9/23

Metric 1. Wetland Area (size).

1 (max 6 pts.) | 1 (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)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

4 (max 14 pts.) | 5 (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)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

Metric 3. Hydrology.

6.5 (max 30 pts.) | 11.5 (subtotal)

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

Metric 4. Habitat Alteration and Development.

7 (max 20 pts.) | 18.5 (subtotal)

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

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

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

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] 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)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

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

18.5
subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFT-02	**Rater(s):** JBL	**Date:** 1/9/23

18.5
subtotal first page

Metric 5. Special Wetlands.

0 (max 10 pts.) | 18.5 (subtotal)

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)

Metric 6. Plant communities, interspersion, microtopography.

3 (max 20 pts.) | 21.5 (subtotal)

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

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

- [1] Vegetated hummucks/tussucks
- [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)**

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

Site: Wetland DFT-03	**Rater(s):** JBL	**Date:** 1/9/23

2 / 2 Metric 1. Wetland Area (size).

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)
- [x] 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)

1 / 3 Metric 2. Upland buffers and surrounding land use.

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)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

8 / 11 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

5 / 16 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [x] 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)
- [x] Poor to fair (2)
- [ ] Poor (1)

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

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

Check all disturbances observed

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

16

subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFT-03	**Rater(s):** JBL	**Date:** 1/9/23

16
subtotal first page

0 (max 10 pts.) | 16 (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 (max 20 pts.) | 17 (subtotal)

Metric 6. Plant communities, interspersion, 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 hummucks/tussucks
- [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)**

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

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFT-04	**Rater(s):** JBL	**Date:** 1/9/23

2 / 2 Metric 1. Wetland Area (size).

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)
- [x] 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)

1 / 3 Metric 2. Upland buffers and surrounding land use.

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)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

12 / 15 Metric 3. Hydrology.

max 30 pts. | subtotal

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

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

3b. Connectivity. Score all that apply.

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

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

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

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

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

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

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

Check all disturbances observed

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

7 / 22 Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal

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

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

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

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] 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)
- [x] Recovering (3)
- [x] Recent or no recovery (1)

Check all disturbances observed

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

22

subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland DFT-04	**Rater(s):** JBL	**Date:** 1/9/23

22
subtotal first page

0 (max 10 pts.) | 22 (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 (max 20 pts.) | 28 (subtotal)

Metric 6. Plant communities, interspersion, 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)
- [X] 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)
- [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.

- [0] Vegetated hummucks/tussucks
- [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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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

28 **GRAND TOTAL (max 100 pts)**

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

Appendix D
HHEI Stream Data Forms

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 (mi²) _____

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

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
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pts]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	10

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate 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):

☐	> 30 centimeters **[20 pts]**	☐	5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (inches):** 5

Pool Depth Max = 30

25

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7"- 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☒	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (feet):** 8

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 (Per Bank)

L	R	
☐	☐	Wide >10m
☐	☐	Moderate 5-10m
☐	☐	Narrow <5m
☒	☒	None

FLOODPLAIN QUALITY (Most Predominant per Bank)

L	R		L	R	
☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Immature Forest, Shrub or Old Field	☒	☒	Urban or Industrial
☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (intermittent)
☐	Subsurface flow with isolated pools (interstitial)	☐	Dry channel, no water (ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>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: _____ 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): _____

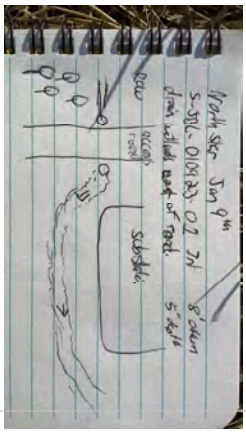
Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

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

FLOW



Site Photos Stream DFT-01

Upstream

Downstream

Substrate