Amendment to the Certificate of Environmental Compatibility and Public Need for the

WEST MILTON-ELDEAN 138 kV TRANSMISSION LINE PROJECT

OPSB CASE NO. 21-0897-EL-BTA

Submitted pursuant to O.A.C. 4906-5

AES Ohio

October 2021

BEFORE THE OHIO POWER SITING BOARD

Application for Amendment to the West Milton-Eldean 138 kV Transmission Line Project

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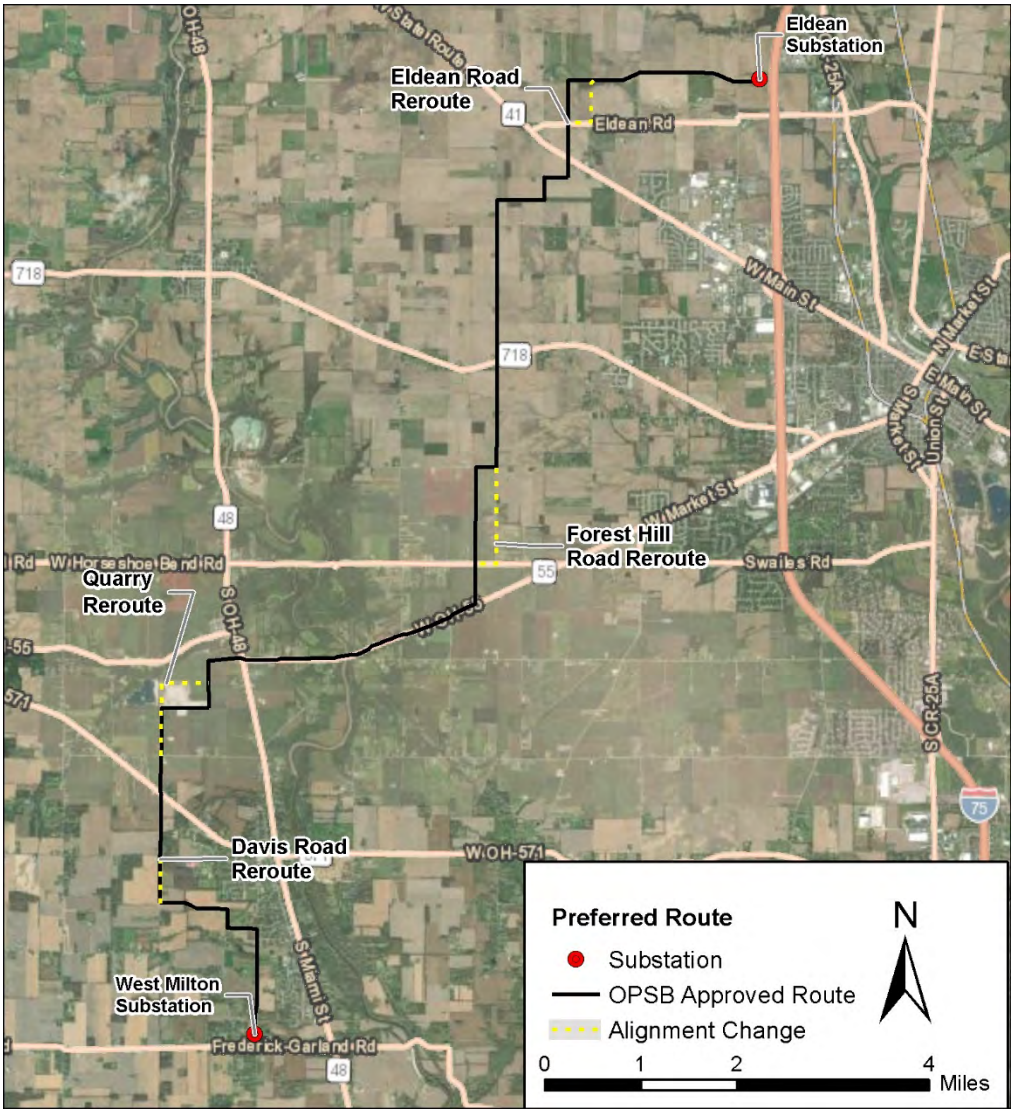
AMENDMENT CHANGE SUMMARY

The Dayton Power and Light Company d/b/a AES Ohio submitted a Certificate Application to the Ohio Power Siting Board ("OPSB") on February 1, 2019 for the West Milton-Eldean 138 kilovolt Transmission Line Project ("Project") in Case No. 18-1259-EL-BTX. On May 10, 2019, AES Ohio submitted supplemental information. On January 16, 2020, the OPSB issued its Certificate of Environmental Compatibility and Public Need ("Certificate") for the Preferred Route.

As easement acquisition to construct and operate the Project progressed, four reroutes were necessary along the OPSB approved Preferred Route. Each situation necessitating the need for a reroute is outlined in this filing. The purpose of this amendment is to document changes to the Preferred Route since the OPSB's approval, and to seek approval of the rerouted areas. This amendment does not provide updated information for the Alternate Route because the purpose is to document changes to the Preferred Route following OPSB approval. However, the Davis Road and Forest Hill reroutes are changes in the Common Route that could change metrics for the Alternate Route. AES Ohio believes these changes to the Alternate Route alignment (via Common Route changes) are nominal, but appropriate Alternate Route metrics have been updated in the amendment. Figures included in the amendment reflect the current Alternate Route. Changes to the accepted Application are presented in this amendment as strikethrough text and underlined additions to the respective sections that resulted in modification due to rerouted sections.

Changes to the Preferred Route and the resulting impacts are discussed below for the four reroutes. See Exhibit 1 for the overview of the Preferred Route reroutes.

Exhibit 1: Overview of Preferred Route Reroutes



Davis Road Reroute

This reroute would move the Preferred Route from the west to the east side of Davis Road (see Exhibit 2 below). This change was necessitated by AES Ohio and the landowner unable to reach an easement agreement.

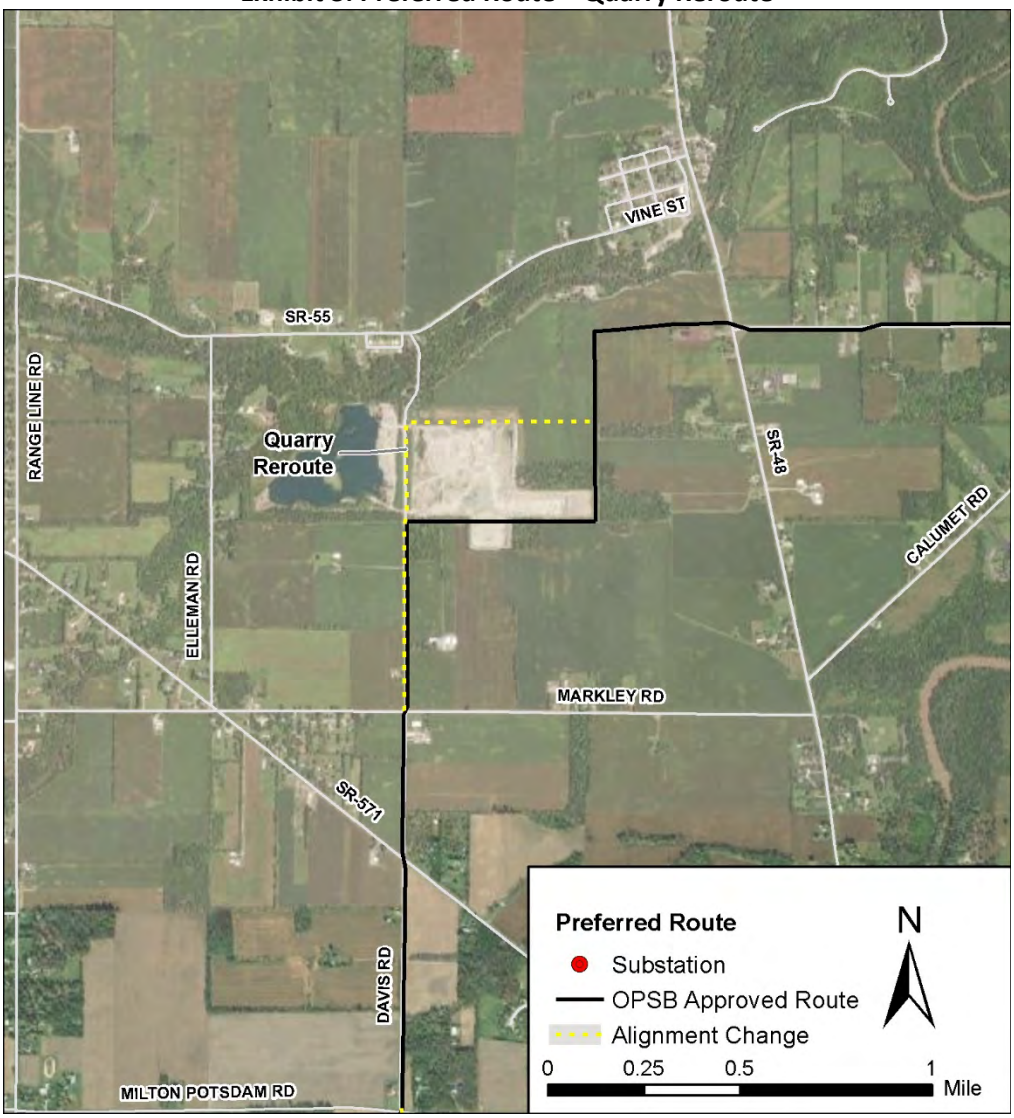
On the east side of Davis Road, AES Ohio was able to obtain private easement from two of the three landowners. For the crossing of the third landowner, the line would be placed in public road right-of-way ("ROW") adjacent to the property; therefore, private easement from the third landowner is not necessary, and instead, a county ROW permit is required, and acquisition of this permit is in progress. One new property owner would be affected by this reroute. Impacts to natural and cultural resources are not anticipated from the reroute based on environmental and cultural field review, desktop assessment, and agency correspondence.

Exhibit 2. Preferred Route – Davis Road Reroute

Quarry Reroute

This reroute would move the Preferred Route from the south and east sides of the quarry to the west and north sides. This reroute would also include moving the line from the east to the west side of Davis Road between the intersection of Markley Road and the southeast corner of quarry. This reroute is shown below in Exhibit 3. This change was necessitated by the landowner's development plan for the property and finding a mutually agreeable option with AES Ohio. AES Ohio has obtained an easement from the landowner for this reroute. No new property owners would be affected by this reroute. Impacts to natural and cultural resources are not anticipated from the reroute based on environmental and cultural field review, desktop assessment, and agency correspondence

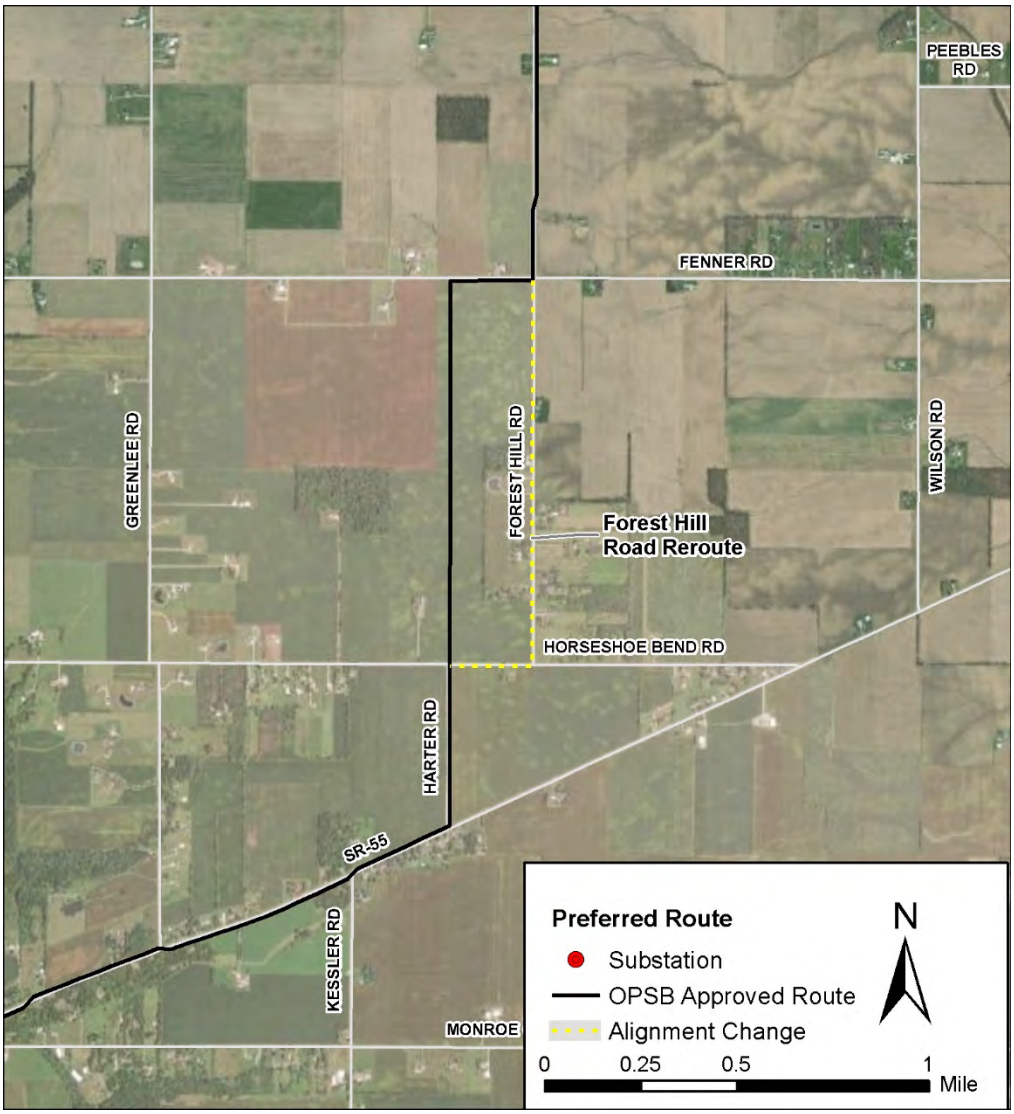
Exhibit 3. Preferred Route – Quarry Reroute



Forest Hill Road Reroute

This reroute would move the Preferred Route about 1,150 feet east and from agricultural fields to paralleling the west side of Forest Hill Road. This reroute would also include about 1,150 feet of line paralleling the south side of Horseshoe Bend Road. This reroute is shown below in Exhibit 4. This change was necessitated by AES Ohio and the landowner unable to reach an easement agreement. This reroute will affect five new landowners. AES Ohio has obtained an easement from all five landowners for this reroute. Impacts to natural and cultural resources are not anticipated from the reroute based on environmental and cultural field review, desktop assessment, and agency correspondence.

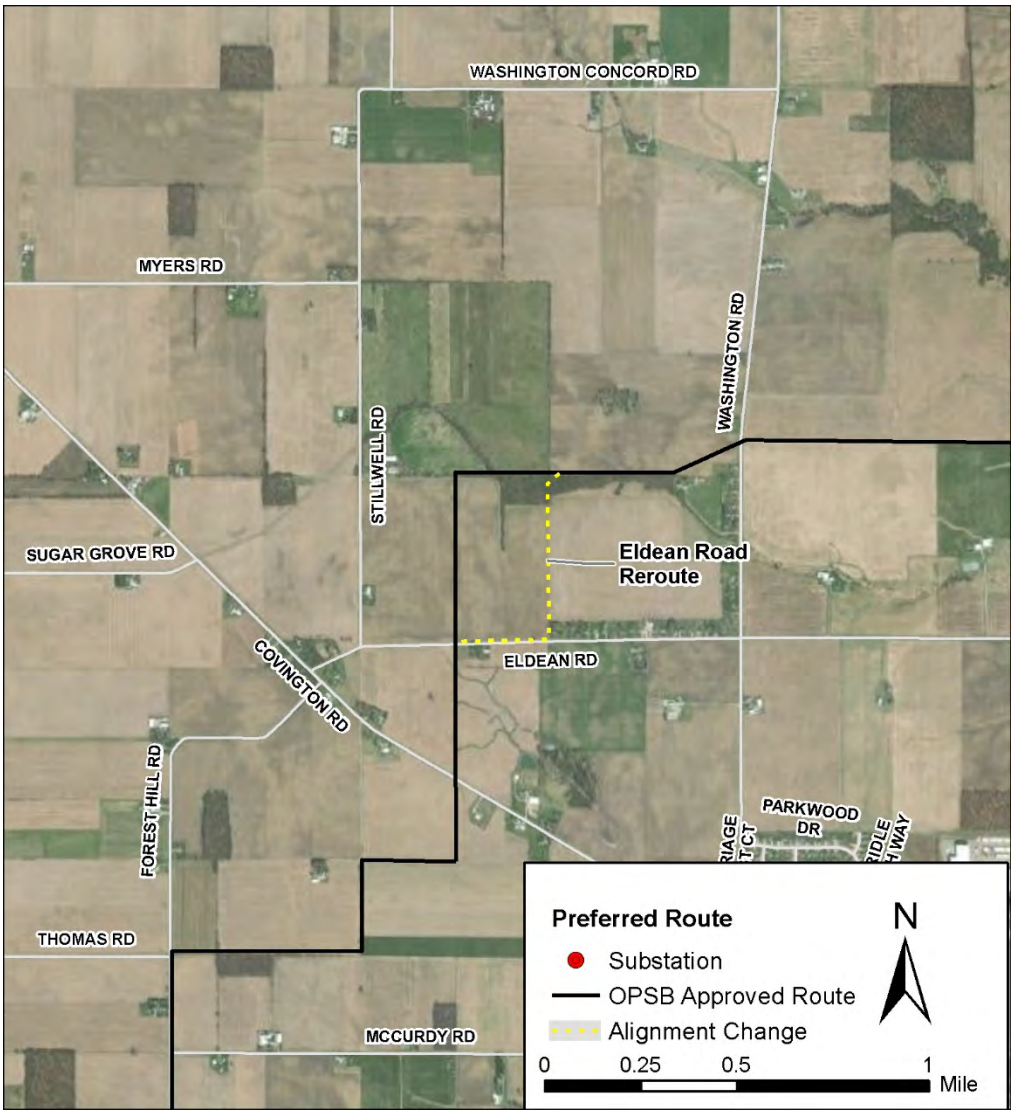
Exhibit 4. Preferred Route – Forest Hill Road Reroute



Eldean Road Reroute

This reroute would move the Preferred Route about 1,270 feet east to parallel a property line. This reroute would also include about 1,270 feet of line paralleling the north side of Eldean Road. This reroute is shown below in Exhibit 5. This change was necessitated by AES Ohio and the landowner unable to reach an easement agreement. This reroute would affect two new landowners. AES Ohio has obtained an easement from the two new landowners for this reroute. This reroute would cross the same stream as the OPSB approved Preferred Route, but at a segment further downstream. No additional stream impacts from what the approved Preferred Route result from this reroute. No physical access crossing is proposed at this stream. Impacts to natural and cultural resources are not anticipated from the reroute based on environmental and cultural field review, desktop assessment, and agency correspondence.

Exhibit 5. Preferred Route – Eldean Road Reroute



4906-5-02 PROJECT SUMMARY AND APPLICANT INFORMATION

(A) PROJECT SUMMARY

~~The Dayton Power and Light Company ("DP&L" or "Company"), a wholly owned indirect subsidiary of AES Corporation ("AES"),~~ AES Ohio is proposing the West Milton-Eldean 138 kilovolt ("kV") Transmission Line Project ("Project") located in Miami County, Ohio. The scope of the proposed Project involves the construction of a single circuit 138 kV transmission line. ~~DP&L~~ AES Ohio will construct, maintain, operate, and own the transmission line. The proposed Preferred and Alternate Routes for the Project, both of which are 16.7 miles in length, are described in this application for a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board ("OPSB" or "Board").

(1) General Purpose of the Facility

Text provided in the May 2019 Application filing remains unchanged.

(2) General Location, Size, and Operating Characteristics

The Project will originate at the existing West Milton Substation located just south of the Village of West Milton, in Union Township, Miami County, Ohio. The transmission line would extend along the west side of the Village of West Milton to a point south of the Village of Ludlow Falls, then head east adjacent to State Route 55, leave Union Township and enter Concord Township, north near Forest Hill Road, and then across agricultural land toward the northeast until the route reaches the existing Eldean Substation located on Experiment Farm Road. Both the Preferred and Alternate Routes are 16.7 miles in length.

The Project is located partially within the Village of West Milton and City of Troy, and unincorporated Union and Concord Townships, Miami County, Ohio. The Project will require a 75-foot-wide permanent ROW, but where parallel to the road only a 30-foot-wide permanent ROW will be required. The typical height of transmission structures will be approximately 70 feet with an anticipated maximum of 90 feet. Figure 2-1, Project Overview, shows the Project end points and the Preferred and Alternate Routes, and common routes, identified by AES Ohio ~~DP&L~~.

Some portions of the proposed transmission line will have a 12.47 kV electric distribution line underbuild where the proposed route is co-located with an existing overhead electric distribution line (primarily along public road ROW).

(3) Suitability of Preferred and Alternate Routes

GAI Consultants, Inc. ("GAI") was contracted by AES Ohio ~~DP&L~~ to conduct the Route Selection Study ("RSS") to identify generally broad route corridors, specify route alternatives within the general corridors, and define and quantify the physical attributes (land use, ecological, cultural, and engineering), systematically score and rank the route alternatives, and select a Preferred and

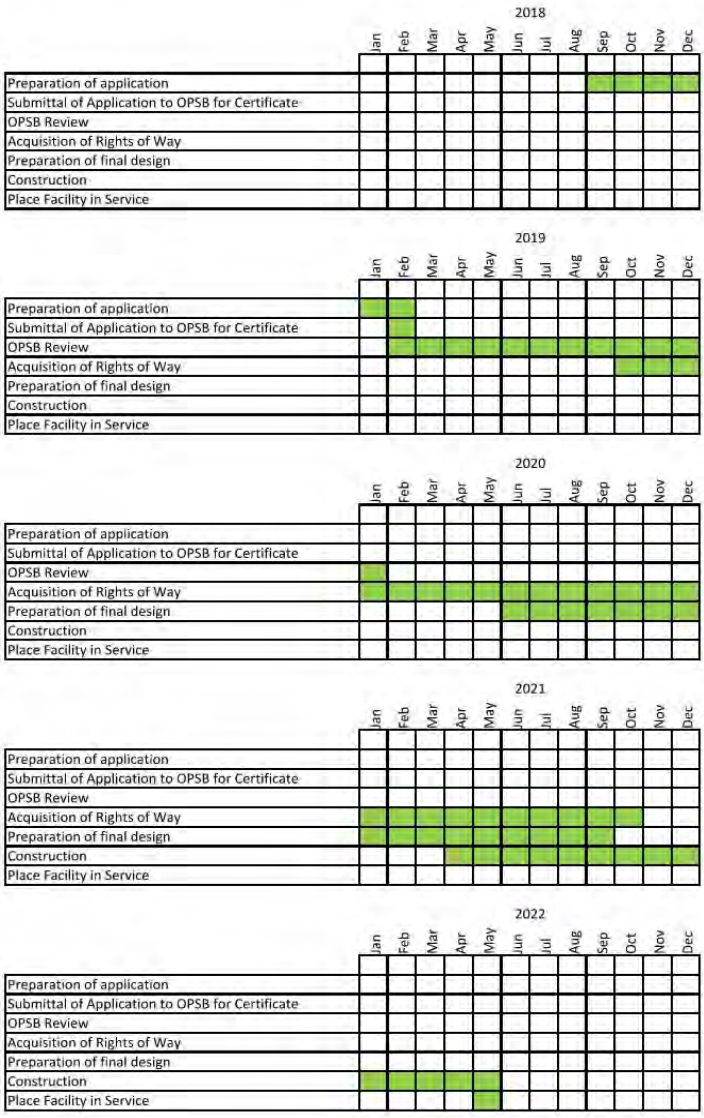
Alternate Route. The objective of the RSS was to identify and evaluate potential route alternatives between the two existing substations and ultimately select the alternative route having the least impact on the overall human environment and sensitive ecological resources while being cost effective and technically feasible to construct and operate. AES Ohio ~~DP&L~~ and GAI incorporated public input received during and after three public informational meetings and meetings with individual landowners which further optimized the routes. The Preferred and Alternate Routes are both constructible and were selected by AES Ohio ~~DP&L~~ for consideration by the OPSB in this application.

The location of the Preferred and Alternate Route is shown on Figure 2-1. The RSS is included as Appendix 4-1 and documents the selection process of the routes and is discussed in detail in Section 4906-5-04 of this application. The RSS Addendum is included as Appendix 4-2.

Per Ohio Administrative Code ("OAC") 4906-3-05, the Preferred Route and the Alternate Route cannot be more than 20 percent in common to be considered as alternatives. On September 20, 2018, the Administrative Law Judge ordered that AES Ohio's ~~DP&L's~~ waiver to meet this requirement be granted. The Preferred and Alternate Routes are approximately 43 ~~37~~ percent in common.

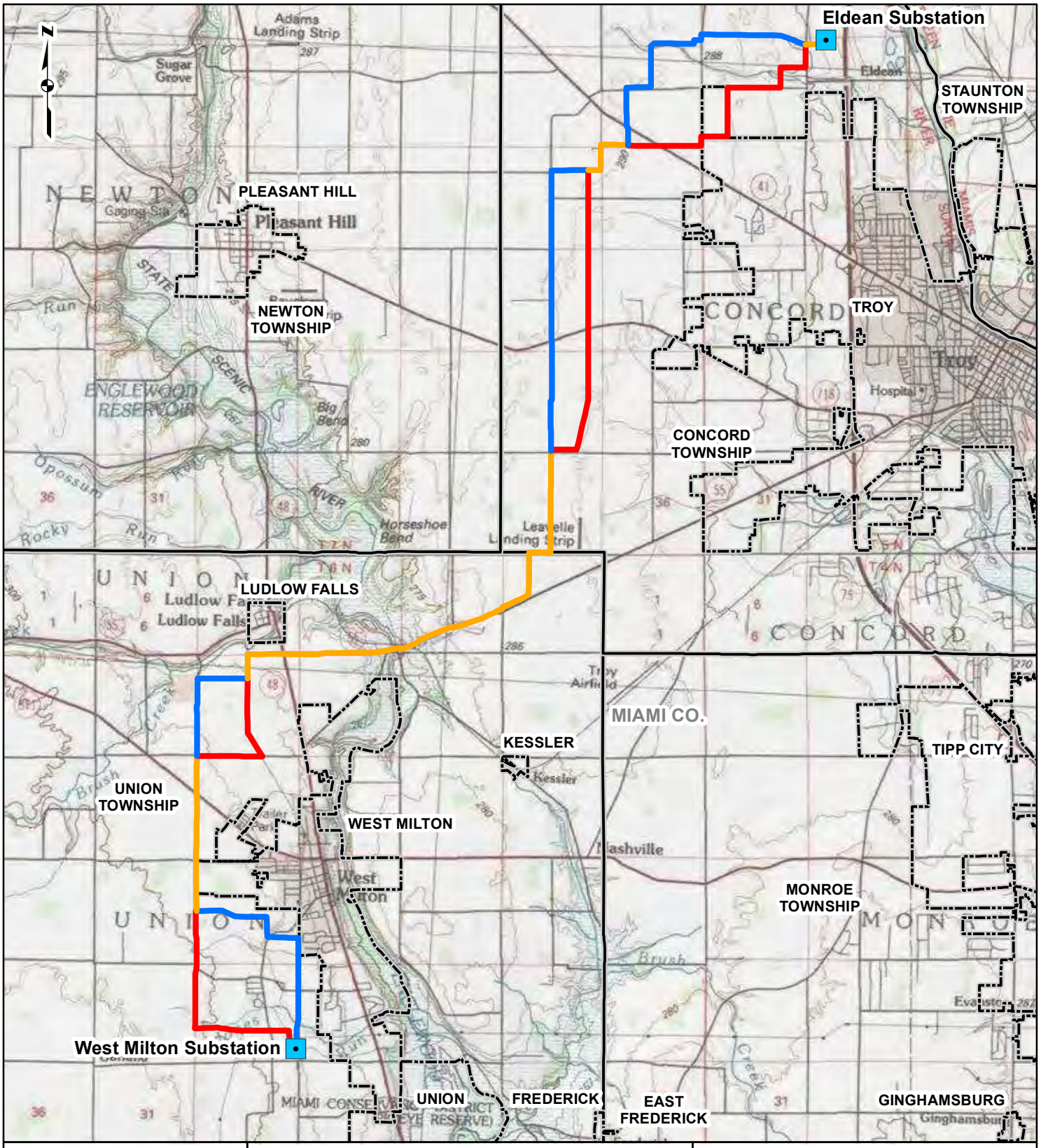
(4) Project Schedule

The current Project schedule is illustrated in the diagram below.



(B) APPLICANT INFORMATION

Text provided in the May 2019 Application filing remains unchanged.



PROJECT LOCATION

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Municipal Boundary
Township Boundary
County Boundary

0 3,500 7,000 14,000 Feet

FIGURE 2-1

PROJECT OVERVIEW

WEST MILTON - ELDEAN 138 kV

AES OHIO

DRAWN BY: TDB DATE: 8/19/2021

CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 30' X 60' TOPOGRAPHIC QUADRANGLES: PIQUA (1986) DAYTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/19/2021. MIAMI COUNTY, 2021; ODOT, 2018.

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4906-5-03 REVIEW OF NEED AND SCHEDULE

(A) NEED FOR PROPOSED FACILITY

Text provided in the May 2019 Application filing remains unchanged.

(B) REGIONAL EXPANSION PLANS

Text provided in the May 2019 Application filing remains unchanged.

(C) SYSTEM ECONOMY AND RELIABILITY

Text provided in the May 2019 Application filing remains unchanged.

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

Text provided in the May 2019 Application filing remains unchanged.

(E) FACILITY SELECTION RATIONALE

Text provided in the May 2019 Application filing remains unchanged.

(F) PROJECT SCHEDULE

Text provided in the May 2019 Application filing remains unchanged.

4906-5-04 ROUTE ALTERNATIVES ANALYSIS

(A) ROUTE SELECTION STUDY

Text provided in the May 2019 Application filing remains unchanged.

(1) Study Area Description and Rationale

The Project is located in the southwest-central portion of Miami County, OH, running south to north. Review of the U.S. Geological Survey ("USGS") 7.5-minute topographic maps of the area indicates that Stillwater River and Great Miami River are the prominent drainage features associated with the Project area. The Project area is characterized by nearly level terrain with greater topographic relief near large bodies of water. The Project area supports perennial, intermittent, and ephemeral waterways. Large bodies of water are generally absent from the Project area. Elevation in the Project area ranges from approximately 920 to 990 feet above mean sea level.

The Project area is largely cultivated agricultural row crops, with minor amounts of developed land, pasture/hay, forest, and grassland/herbaceous open areas. There are no commercial lands within the Project area, however, a section of the Preferred and Alternate Routes abuts ~~and crosses~~ an open and active surface mine. ~~A section of the common route also abuts the surface mine.~~ Additional information can be found in the RSS Report provided in Appendix 4-1.

The first step in the siting process involved the identification of a study area encompassing the existing West Milton and Eldean Substations, the fixed endpoints, and intervening areas. The 53-square-mile study area, measuring 10.7 miles (north-south) by 7.3 miles (east-west) based on the longest sides of the study area, generally encompasses the Village of West Milton, a portion of the Stillwater River watershed, sparsely populated communities to the south, and largely rural land to the north. Based on the fixed endpoints, this study area covered a sufficient amount of area for which route alternatives were considered.

(2) Study Area Map

Text provided in the May 2019 Application filing remains unchanged.

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

Figure 4-2 illustrates the Study Area, Preferred Route, and Alternate Route, as well as Route Segments evaluated.

(4) Siting Criteria

Text provided in the May 2019 Application filing remains unchanged.

(5) Siting Process for Preferred and Alternate Route

Text provided in the May 2019 Application filing remains unchanged.

(6) Route Descriptions and Rationale for Selection

The Project proposes a Preferred and an Alternate Route, both of which are 16.7 miles in length and traverse mostly agricultural fields either adjacent to rural county roads or across fields (following property lines where feasible). Each route is briefly described below, originating from the West Milton Substation and ending at the Eldean Substation.

Preferred Route

The Preferred Route parallels ~~10.3~~ 12.1 miles of either existing transmission line ROW (~~2.3~~ 2.5 miles) or public road ROW (~~8.0~~ 9.6 miles). The remainder of the route (~~6.4~~ 4.6 miles) primarily consists of open agricultural fields. The Preferred Route will also convert the existing single circuit West Milton-Greenville 138 kV transmission line to double circuit with new structures for approximately 2.3 miles from the West Milton Substation to Davis Road. Prior to the second public meeting, the Preferred Route was the third highest scoring route overall. The higher ranked routes were not selected as the Preferred Route because they unfavorably bisect several agricultural field parcels or paralleled Greenlee Road. As described below, when initially proposed in Docket No. 14-0469-EL-BTX, siting along Greenlee Road generated substantial public opposition. At the second public meeting the Preferred Route received comments of support, however, at the third public meeting comments were received in favor of and against. Following the third public open house, approximately three miles of the Alternate Route were swapped with the Preferred Route based on landowner comments.

Alternate Route

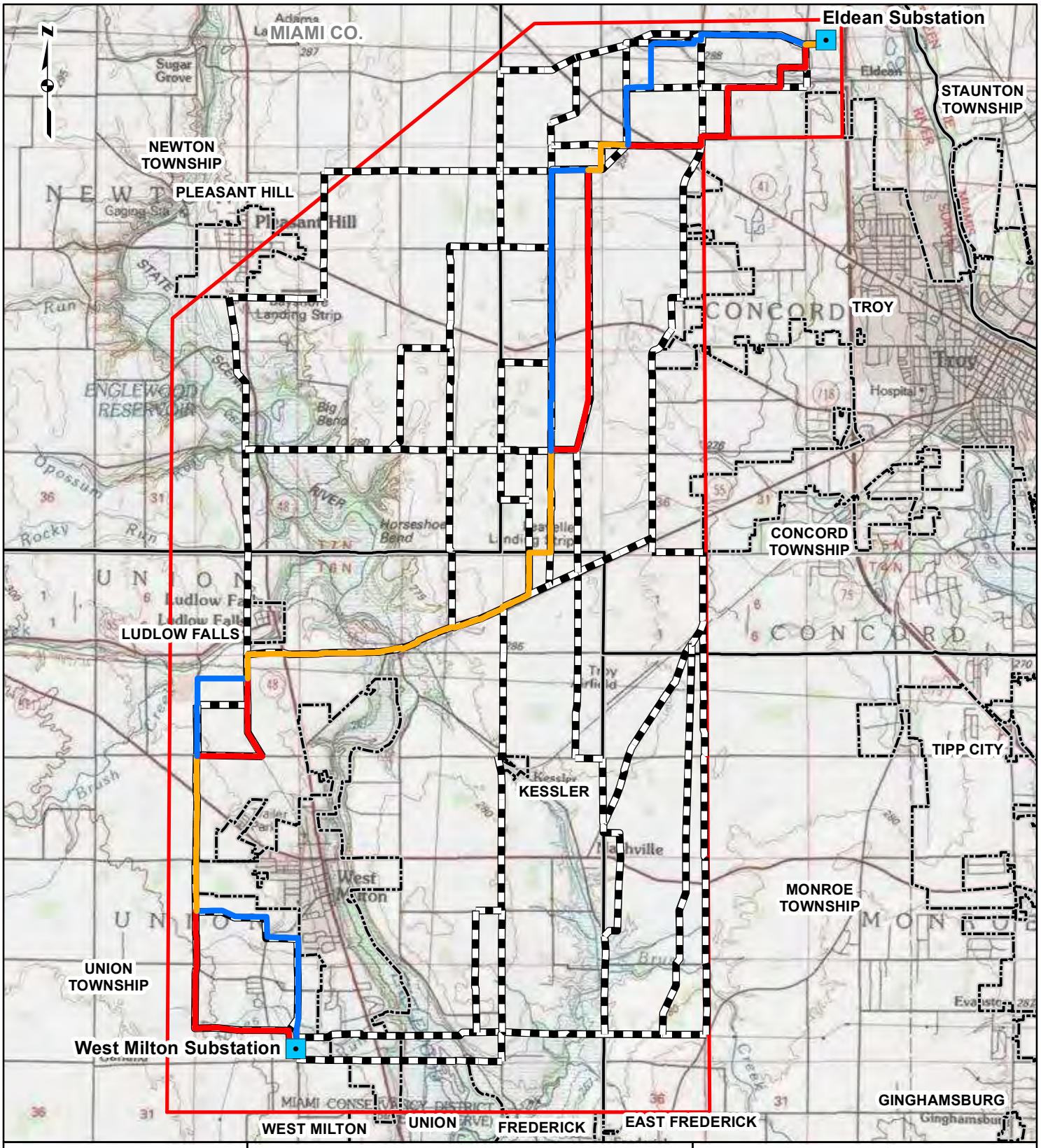
The Alternate Route parallels 8.0 miles of public road ROW~~; the Alternate Route does not parallel any and~~ The Alternate Route parallels 1.1 mile of existing transmission line ROW. The remainder of the route (8.7 miles) primarily consists of open agricultural fields. The initial selection of the Alternate Route was selected primarily on the route being the highest ranking but the least in common with the Preferred Route. Initially the Alternate Route was 28 percent in common with the Preferred Route, which was the highest-ranking route with the least in common, but after addressing comments received at public open houses and optimizations, the Alternate Route is 43 ~~37~~ percent in common with the Preferred Route. On September 20, 2018, AES Ohio ~~DP&L~~ received a waiver of the 20 percent in common requirement under OAC 4906-3-05 for the Project.

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

Text provided in the May 2019 Application filing remains unchanged.

(C) PUBLIC INVOLVEMENT

Text provided in the May 2019 Application filing remains unchanged.



PROJECT LOCATION

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Proposed Route Alternative
Study Area
Municipal Boundary
Township Boundary
County Boundary

0 3,500 7,000 14,000 Feet

FIGURE 4-2

STUDY AREA AND ROUTES

WEST MILTON - ELDEAN 138 kV

AES OHIO

DRAWN BY: TDB DATE: 8/19/2021

CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 30' X 60' TOPOGRAPHIC QUADRANGLES: PIQUA (1986) DAYTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/19/2021. MIAMI COUNTY, 2021; ODOT, 2018.

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4906-5-05 PROJECT DESCRIPTION

(A) PROJECT AREA DESCRIPTION

(1) Project Area Map

Figure 5-1 at a 1:12,000-scale, shows the Preferred and Alternate Routes for the Project, including a 1,000-foot buffer on each side of the proposed transmission centerlines (hereafter referred to as the 2,000-foot corridor). These maps depict the proposed transmission line, roads and railroads, parks or other publicly owned recreational area, existing gas pipeline (Vectren Energy Delivery of Ohio) and electric transmission (AES Ohio ~~DP&L~~, Duke Energy, and unknown) routes, waterways and waterbodies, and population centers and legal boundaries of cities, villages, townships, and counties.

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

The Project will require a 75-foot-wide permanent ROW, but where parallel to road ROW only a 30-foot-wide permanent ROW will be required. Table 5-1 provides information about the Preferred and Alternate Route ROW acreage, length, and properties crossed based on the proposed centerline.

Table 5-1. Right-of-way Area, Length, and Number of Properties Crossed

	Route Alternatives	
	Preferred	**Alternate**
Proposed ROW area (in acres)[1]	~~107.6~~ 101.9	~~109.9~~ 108.3
Length (in miles)	16.7	16.7
Number of Properties Crossed (by ROW)[2]	~~111~~ 131	~~94~~ 122

Note:

1 Excludes acreage of off-ROW access roads, which are temporary and only to be used during construction.

2 This value represents the number of parcels crossed, not the number of landowners crossed, which may own one or more parcels.

(B) ROUTE OR SITE ALTERNATIVE FACILITY LAYOUT AND INSTALLATION

(1) Site Clearing, Construction Methods, and Reclamation Operations

Text provided in the May 2019 Application filing remains unchanged.

(a) Surveying and Soil Testing

Text provided in the May 2019 Application filing remains unchanged.

(b) Grading and Excavation

No significant grading is anticipated to construct the transmission line on either route. The existing terrain within the Preferred and Alternate Routes is fairly level, and much of the route distance is adjacent to road ROW (~~8.0~~ 9.6 miles and 8.0 miles of the Preferred and Alternate Route, respectively), which is anticipated to provide a mostly suitable surface for some construction vehicle operations (e.g., from roadway and road shoulder).

Each wood and/or steel pole (structure) installation requires a machine-excavated hole for placement of the structure. The excavation for these structures will average three feet in diameter and nine to 12 feet deep. A portion of the excavated soil will be used for backfill. The excess material will be placed around the structure or hauled off-site.

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

Text provided in the May 2019 Application filing remains unchanged.

(d) Stringing of Cable

Text provided in the May 2019 Application filing remains unchanged.

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

Text provided in the May 2019 Application filing remains unchanged.

(f) Post-Construction Reclamation

Text provided in the May 2019 Application filing remains unchanged.

(2) Facility Layout

(a) Facilities Layout Map

No new associated facilities such as substations or switch stations are proposed for the Project. Figure 5-2 is a 1:12,000-scale map of the Preferred and Alternate Routes. This map illustrates the data required by OAC 4906-5-05(B)(2)(a) (for example, pole structure locations and temporary versus permanent access roads) but is preliminary and will not be finalized until a final route is approved by the OPSB and the final engineering design is complete. No permanent access roads are proposed, only temporary access roads. AES Ohio ~~DP&L~~ is currently identifying staging areas and laydown areas for the Project, however, the layout of the limits of disturbance along the ROW is shown on Figure 5-2. To date, no staging or laydown yards have been identified within the Project area. After sites are identified, AES Ohio ~~DP&L~~ will provide final locations that support this Project. No fenced-in or secured areas are planned for the transmission line Project.

(b) Proposed Layout Rationale

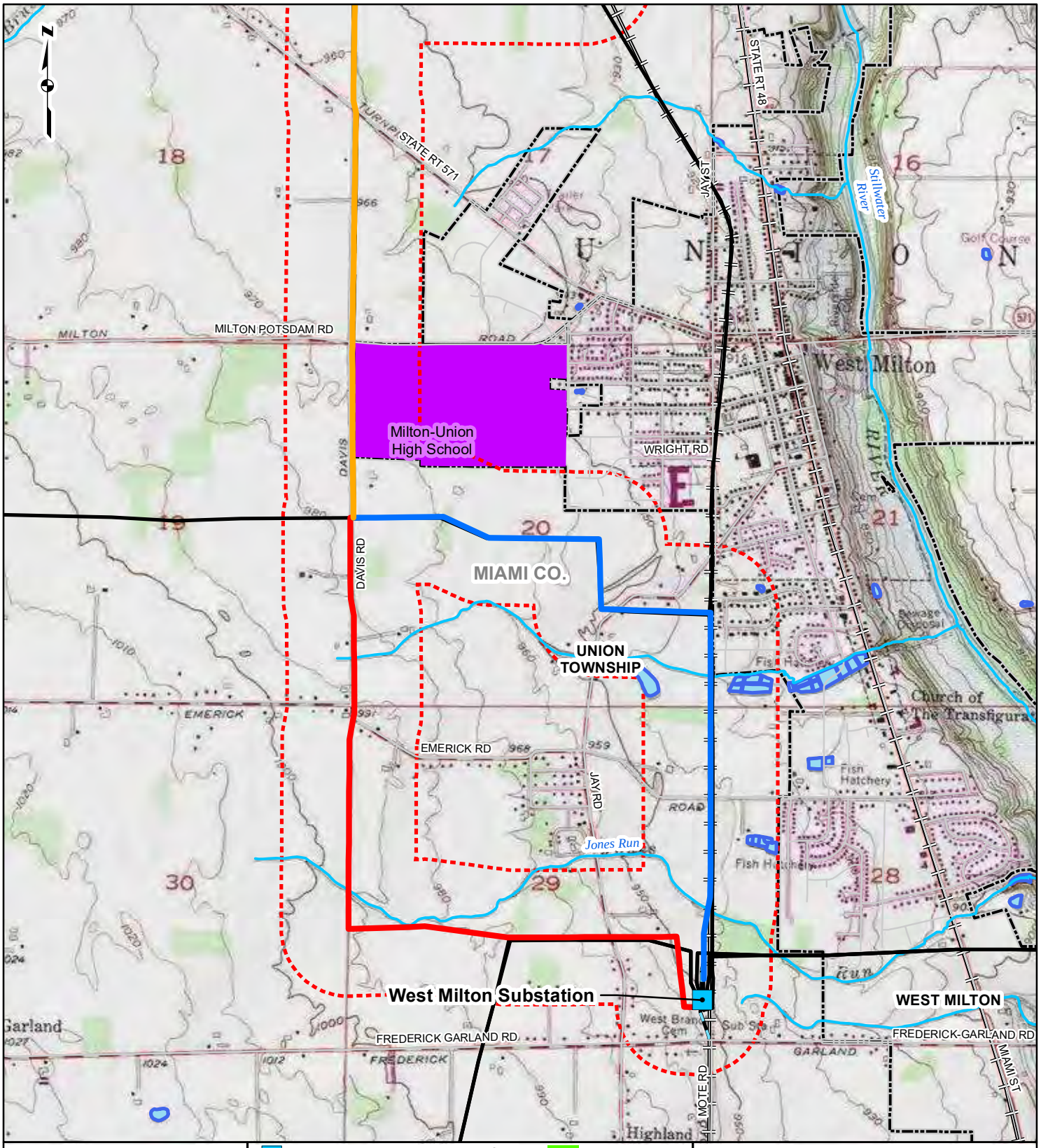
Text provided in the May 2019 Application filing remains unchanged.

(c) Plans for Future Modifications

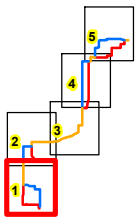
Text provided in the May 2019 Application filing remains unchanged.

(C) DESCRIPTION OF PROPOSED TRANSMISSION LINES

Text provided in the May 2019 Application filing remains unchanged.



PROJECT LOCATION



MIAMI COUNTY, OHIO

- Substation
- Preferred Route
- Common Route
- Alternate Route
- Proposed Access Road
- Existing Transmission Line
- Existing Gas Pipeline
- NHD Waterway
- Road Centerline
- Railroad
- NHD Waterbody
- 2000-Foot Corridor
- Institutional
- Recreation
- Municipal Boundary
- Township Boundary
- County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-1
PROJECT DESCRIPTION
SHEET 1 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

AES OHIO

aes Ohio

DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: PLEASANT HILL (1984), TROY (1982), WEST MILTON (1983), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/19/2021. USGS NHD, 2020; MIAMI COUNTY 2021; ODOT, 2018.

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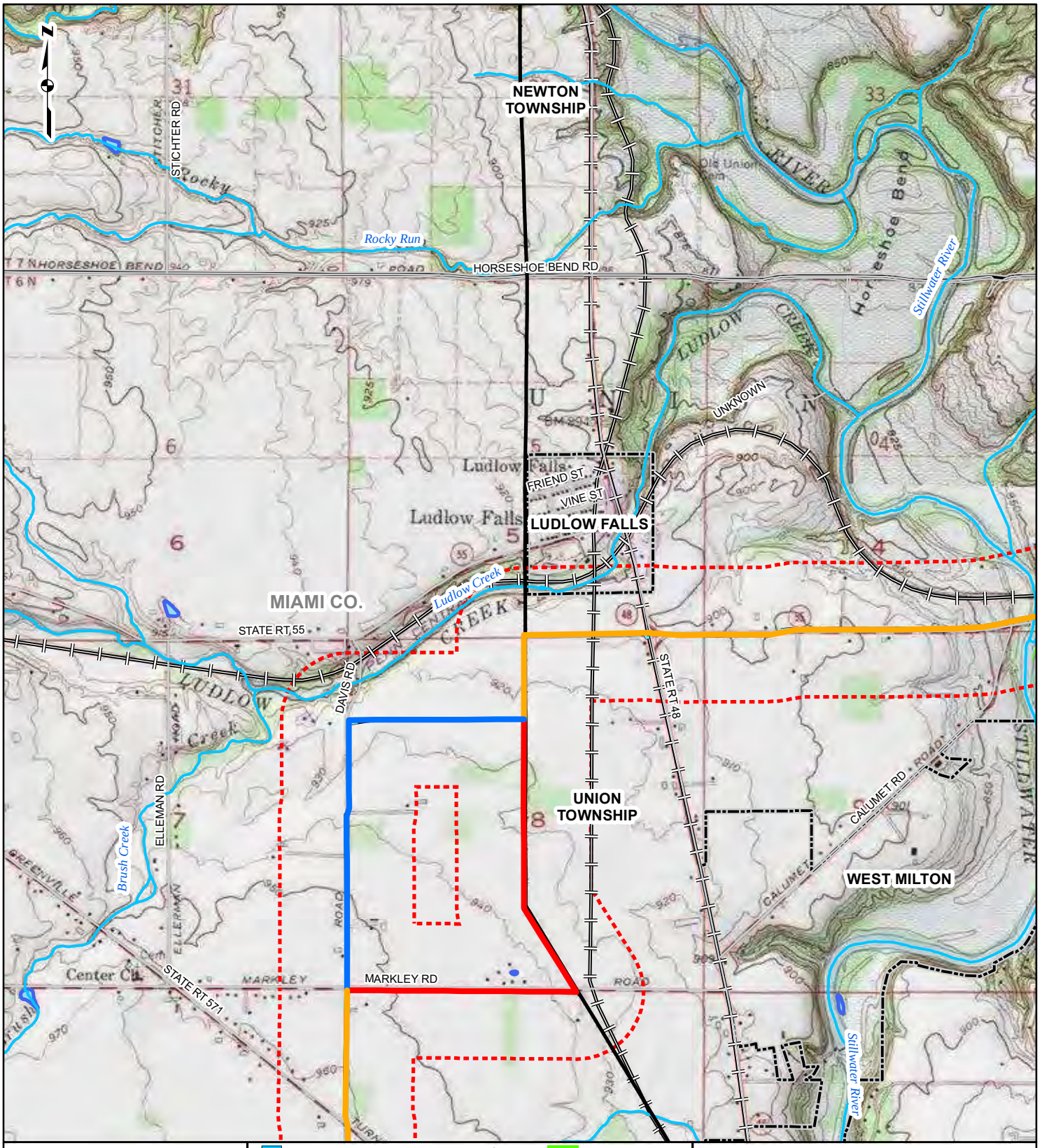
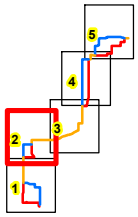


PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Existing Transmission Line
Existing Gas Pipeline
NHD Waterway
Road Centerline
Railroad
NHD Waterbody
2000-Foot Corridor
Institutional
Recreation
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-1
PROJECT DESCRIPTION
SHEET 2 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

AES OHIO

aes Ohio

DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: PLEASANT HILL (1984), TROY (1982), WEST MILTON (1983), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/19/2021. USGS NHD, 2020; MIAMI COUNTY 2021; ODOT, 2018.

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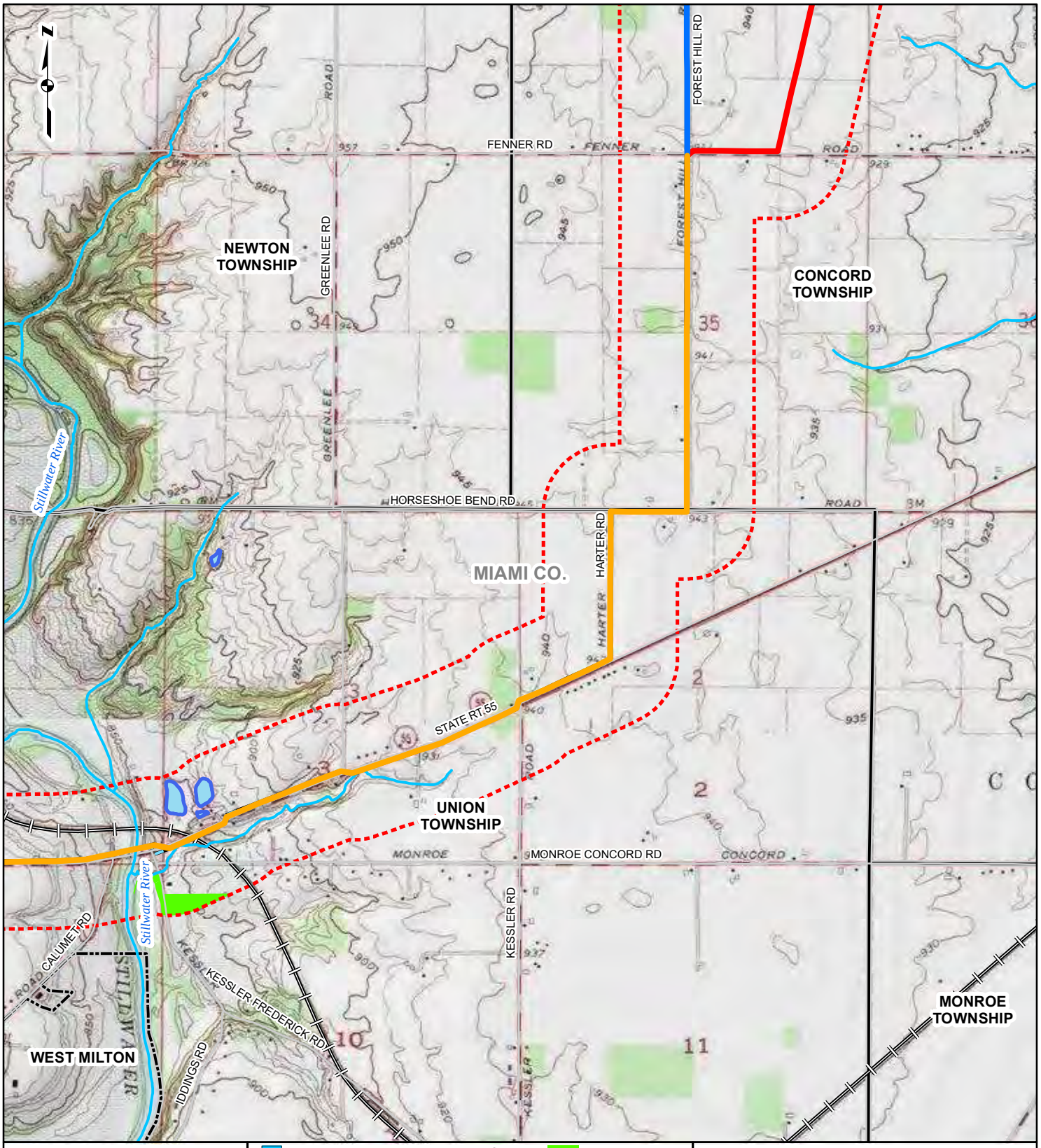
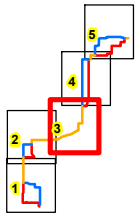


PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Existing Transmission Line
Existing Gas Pipeline
NHD Waterway
Road Centerline
Railroad
NHD Waterbody
2000-Foot Corridor
Institutional
Recreation
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-1
PROJECT DESCRIPTION
SHEET 3 OF 5

WEST MILTON - ELDEAN 138 kV

AES OHIO

DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: PLEASANT HILL (1984), TROY (1982), WEST MILTON (1983), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/19/2021. USGS NHD, 2020; MIAMI COUNTY 2021; ODOT, 2018.

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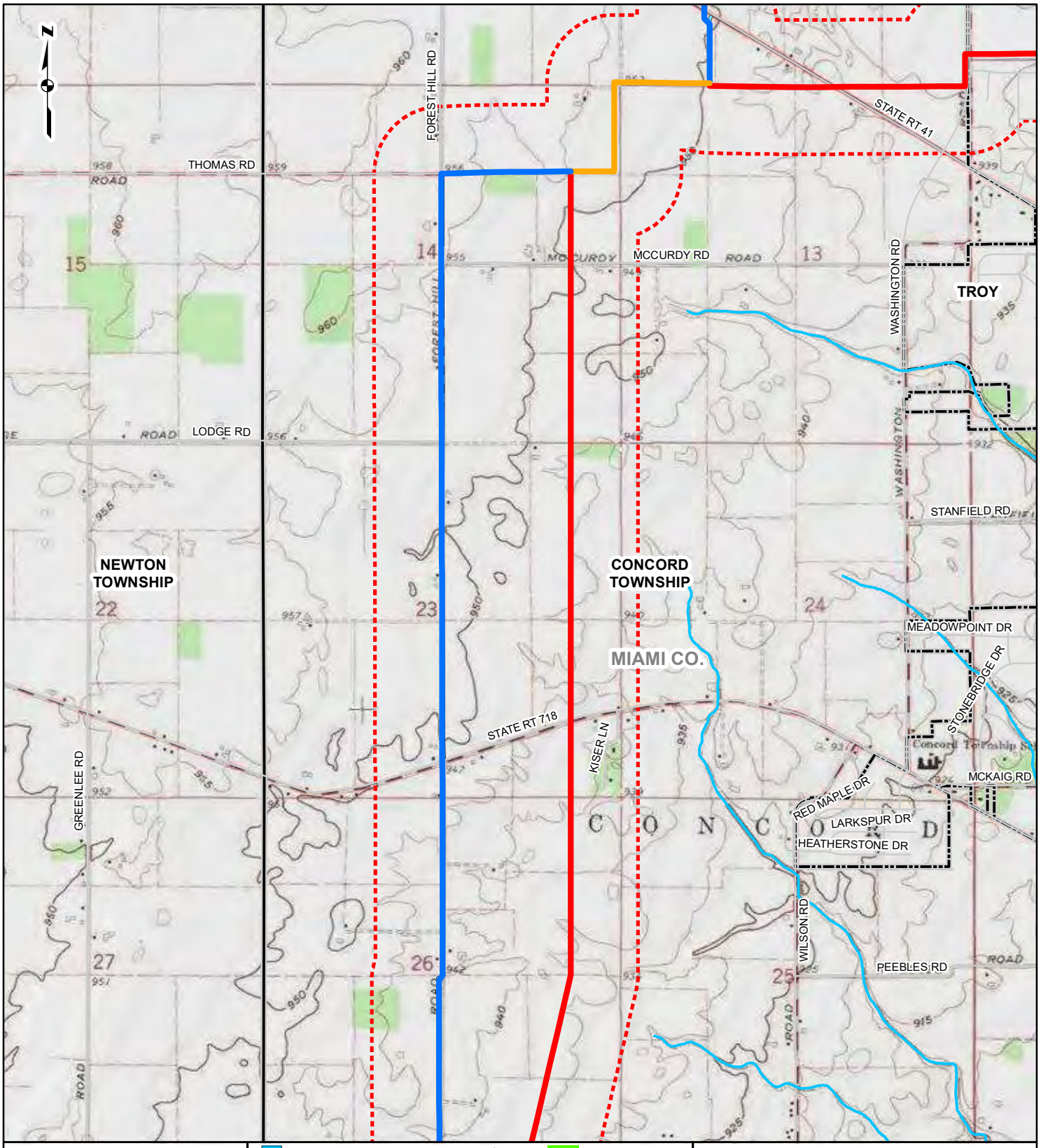
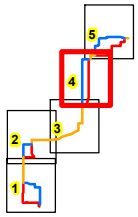


PROJECT LOCATION



MIAMI COUNTY, OHIO

- Substation
- Preferred Route
- Common Route
- Alternate Route
- Proposed Access Road
- Existing Transmission Line
- Existing Gas Pipeline
- NHD Waterway
- Road Centerline
- Railroad
- NHD Waterbody
- 2000-Foot Corridor
- Institutional
- Recreation
- Municipal Boundary
- Township Boundary
- County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-1
PROJECT DESCRIPTION
SHEET 4 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

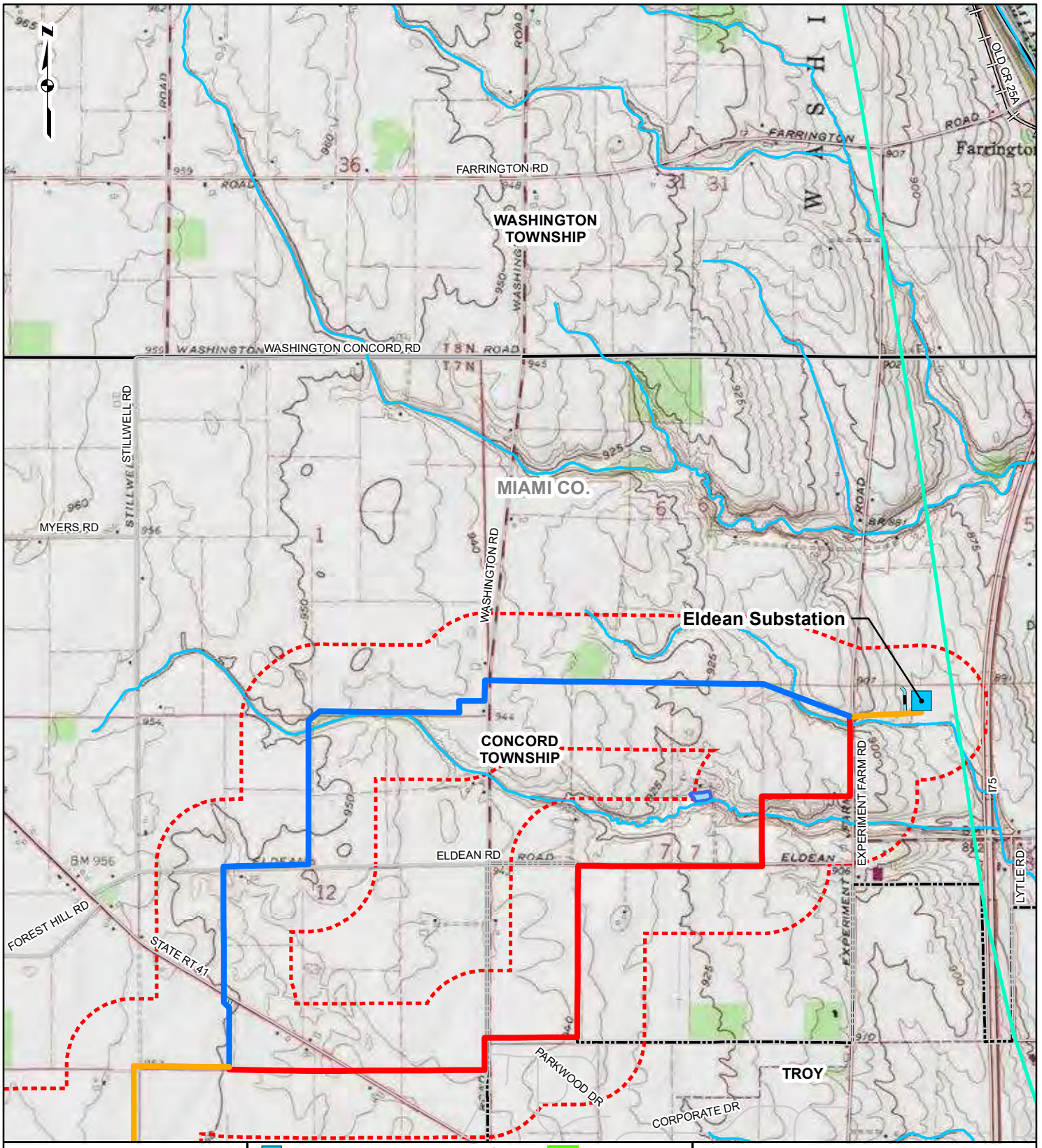
AES OHIO

aes Ohio

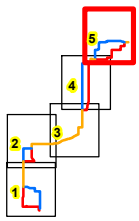
DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: PLEASANT HILL (1984), TROY (1982), WEST MILTON (1983), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/19/2021. USGS NHD, 2020; MIAMI COUNTY 2021; ODOT, 2018.

G:\R200144.04 - GIS\MXD\OPSB\R200414_04_AES_West_Milton_Elden_Project_Description_Fig_5_1_2021_08_19.mxd



PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Existing Transmission Line
Existing Gas Pipeline
NHD Waterway
Road Centerline
Railroad
NHD Waterbody
2000-Foot Corridor
Institutional
Recreation
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-1
PROJECT DESCRIPTION
SHEET 5 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

AES OHIO

aes Ohio

DRAWN BY: TDB DATE: 8/19/2021
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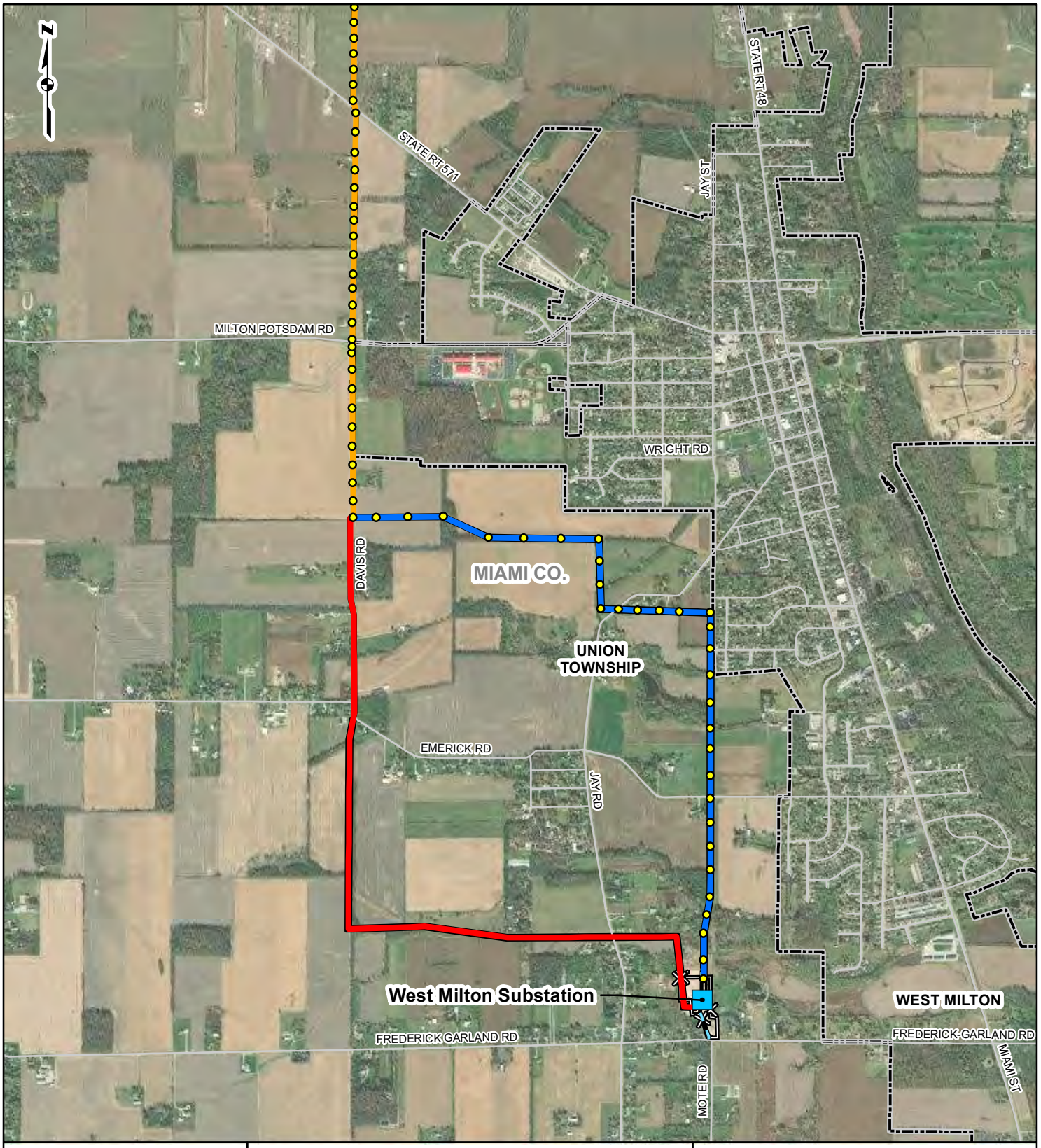
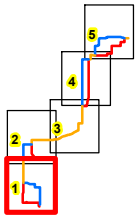


PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Proposed Structure
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Fence Boundary
Road Centerline
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-2
FACILITIES LAYOUT
SHEET 1 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

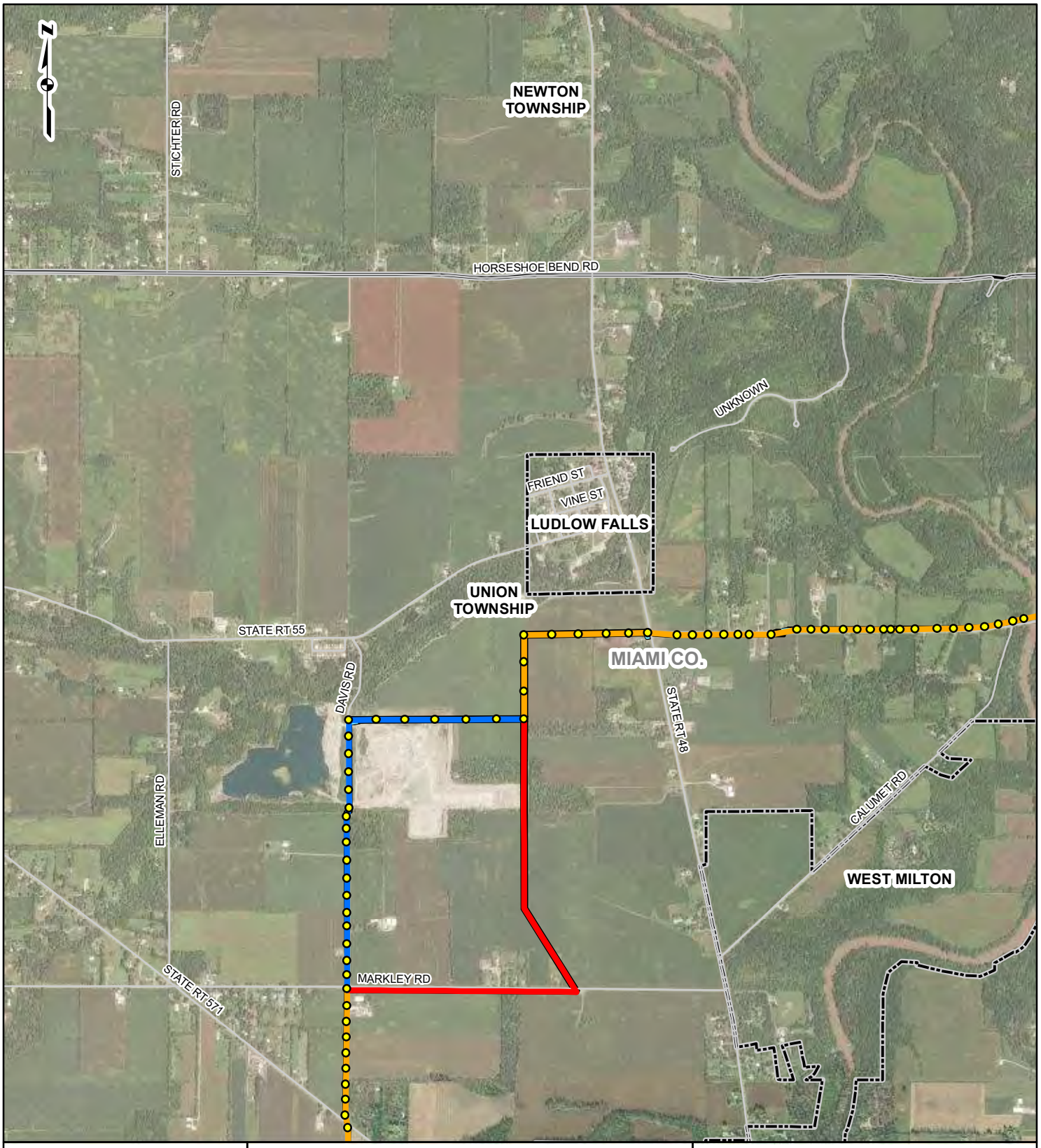
AES OHIO

aes Ohio

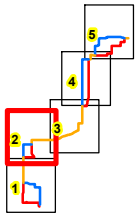
DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE:ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, 8/19/2021 ; MIAMI COUNTY, 2021; ODOT, 2018.

G:\R200144.04 - GIS\MXD\OPSB\R200414_04_AES_West_Milton_Elden_Faclities_Layout_Fig_5_2_2021_08_19.mxd



PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Proposed Structure
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Fence Boundary
Road Centerline
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-2
FACILITIES LAYOUT
SHEET 2 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

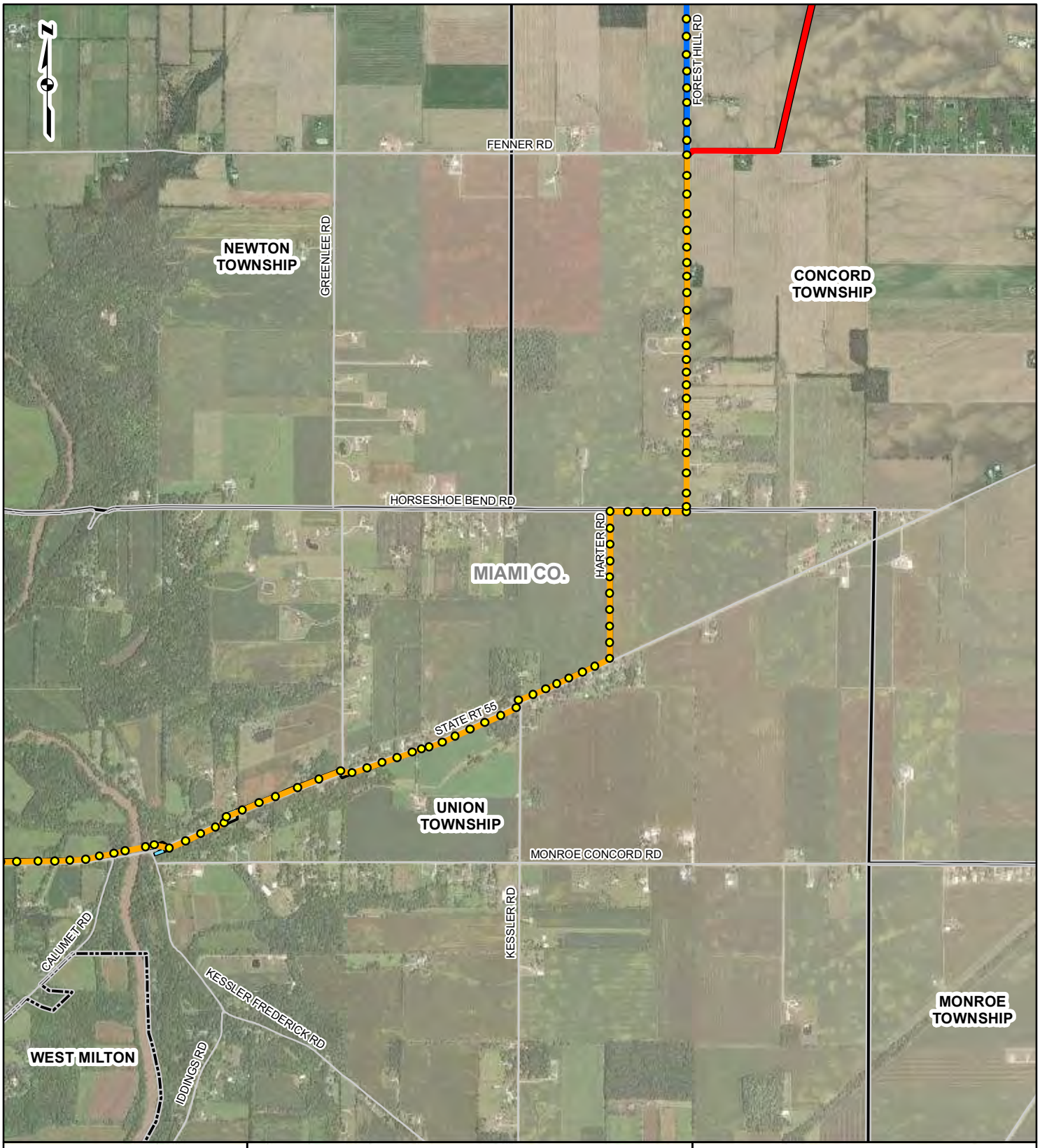
AES OHIO

aes Ohio

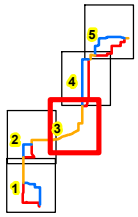
DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE:ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, 8/19/2021 ; MIAMI COUNTY, 2021; ODOT, 2018.

G:\R200144.04 - GIS\MXD\OPSB\R200414_04_AES_West_Milton_Elden_Faclities_Layout_Fig_5_2_2021_08_19.mxd



PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Proposed Structure
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Fence Boundary
Road Centerline
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-2
FACILITIES LAYOUT
SHEET 3 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

AES OHIO

aes Ohio

DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE:ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, 8/19/2021 ; MIAMI COUNTY, 2021; ODOT, 2018.

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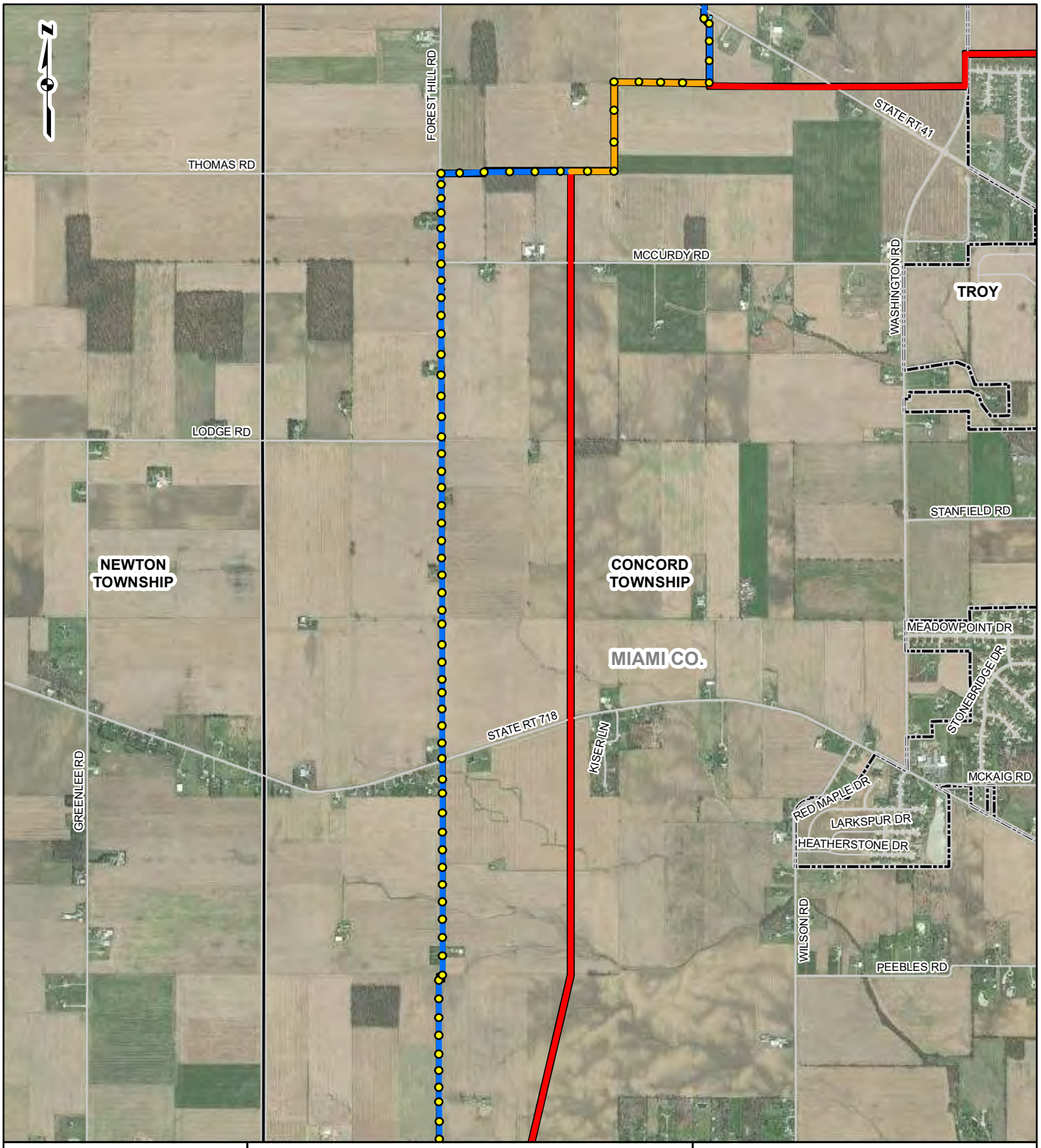
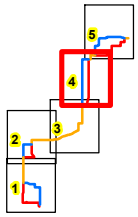


PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Proposed Structure
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Fence Boundary
Road Centerline
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-2
FACILITIES LAYOUT
SHEET 4 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

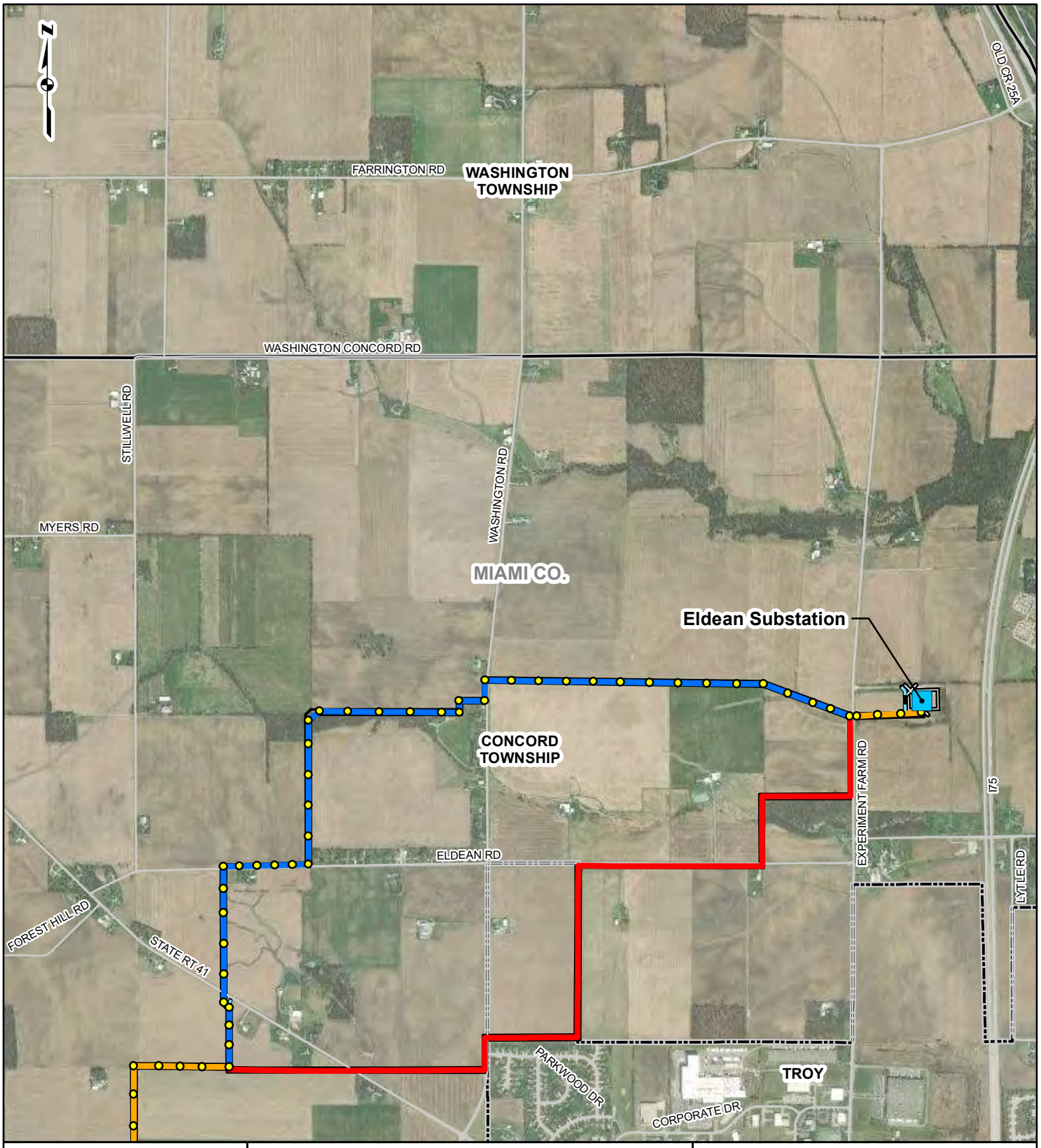
AES OHIO

aes Ohio

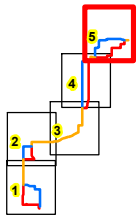
DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE:ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, 8/19/2021 ; MIAMI COUNTY, 2021; ODOT, 2018.

G:\R200144.04 - GIS\MXD\OPSB\R200414_04_AES_West_Milton_Elden_Faclities_Layout_Fig_5_2_2021_08_19.mxd



PROJECT LOCATION



MIAMI COUNTY, OHIO

Substation
Proposed Structure
Preferred Route
Common Route
Alternate Route
Proposed Access Road
Fence Boundary
Road Centerline
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 5-2
FACILITIES LAYOUT
SHEET 5 OF 5

WEST MILTON - ELDEAN 138 kV

gai consultants

AES OHIO

aes Ohio

DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE:ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, 8/19/2021 ; MIAMI COUNTY, 2021; ODOT, 2018.

G:\R200144.04 - GIS\MXD\OPSB\R200414_04_AES_West_Milton_Elden_Faclities_Layout_Fig_5_2_2021_08_19.mxd

4906-5-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP OF PROPOSED FACILITY

~~DP&L~~ AES Ohio will construct, own, operate, and maintain the proposed West Milton-Eldean 138 kV transmission line. Both the Preferred Route and the Alternate Route are 16.7 miles long and will connect the existing West Milton Substation with the existing Eldean Substation.

Both routes would consist of new construction in mostly new ROW or easement corridors. Where the transmission line would be co-located with an existing AES Ohio ~~DP&L~~ transmission line, existing easements would be negotiated with landowners for additional width where needed. AES Ohio ~~DP&L~~ would negotiate for easements for new ROW with landowners for the transmission line route that is selected.

The Preferred and Alternate Routes are aligned adjacent to road ROW for approximately ~~8.0~~ 9.6 miles and 8.0 miles, respectively, out of the total route length of 16.7 miles. Where the proposed transmission line coincides with overhead electric distribution lines (~~DP&L~~ AES Ohio and others) and communication cables, ~~DP&L~~ AES Ohio plans to transfer the electric distribution lines owned and operated by ~~DP&L~~ AES Ohio onto the new pole structures being installed for the proposed transmission line where reasonable. For distribution circuit lines and communication cables owned and operated by others, ~~DP&L~~ AES Ohio will negotiate with those entities concerning transfer of these utilities to the new transmission poles, where necessary and feasible.

It is possible that some landowners may not agree to easements for ROW after negotiation attempts by ~~DP&L~~ AES Ohio. As necessary, where AES Ohio ~~DP&L~~ cannot reach an easement agreement with landowners located on the transmission line route approved by the OPSB, DP&L AES Ohio ~~DP&L~~ AES Ohio will evaluate the feasibility and potential for minor route adjustments with landowners in some cases. ~~DP&L~~ AES Ohio may also utilize appropriation to obtain the necessary ROW to construct the transmission line.

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

Text provided in the May 2019 Application filing remains unchanged.

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

Text provided in the May 2019 Application filing remains unchanged.

(D) PUBLIC INTERACTION AND ECONOMIC IMPACT

Text provided in the May 2019 Application filing remains unchanged.

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

Text provided in the May 2019 Application filing remains unchanged.

(2) Public Officials Contacted

~~DP&L~~ AES Ohio public outreach staff has contacted several local officials including the Village of West Milton Mayor, City of Troy Mayor, Miami County Board of Commissioners, and township trustees (Concord and Union) to inform them of the Project need and plans. Appendix 6-1 provides a list of the local public officials, including their office addresses and office telephone numbers, who received notification via a letter of the scheduled November 7, 2018 open house and pending application submission. Pursuant to 4906-3-07(A)(1) a copy of the accepted, complete application, will be served either electronically or by disk, on the chief executive office of each municipal corporation, county, township and the head of each public agency charged with the duty of protecting the environment or of planning land use in the area in which the project is located in lieu of all those identified in Appendix 6-1. Appendix 6-1a provides a list of the current local public officials who will be served either electronically or by disk a copy of the accepted complete application amendment.

(3) Planned Public Interaction

Text provided in the May 2019 Application filing remains unchanged.

(4) Liability Insurance or Compensation

Text provided in the May 2019 Application filing remains unchanged.

(5) Tax Revenues

Text provided in the May 2019 Application filing remains unchanged.

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

(A) HEALTH AND SAFETY

Text provided in the May 2019 Application filing remains unchanged.

(B) LAND USE

(1) Map of the Site and Route Alternatives

An applicant for a Certificate of Environmental Compatibility and Public Need for electric transmission facilities is required to evaluate both the Preferred and Alternate Route for the transmission line within the application. Maps at 1:12,000-scale, including the area 1,000 feet on either side of the centerline (also referred to as the 2,000-foot corridor), are presented as Figure 7-6 and include the following information:

- Centerline and 2,000-foot corridor for the Preferred and Alternate Route;
- AES Ohio ~~DP&L~~ facilities including existing substation, and interconnect locations;
- Land use types;
    - Land use categories were created using Miami County's ~~2018~~ April 2021 parcel data and their land type code in their ~~2018~~ April 2021 County Assessors data. This data was reviewed and adjusted accordingly where necessary. For instance, aerial imagery was reviewed and woodlots were identified based on current publicly available aerial imagery. Due to the limited amount of aquatic resources within the 2,000-foot corridor the aquatic resource land use category presented is a combination of National Wetland Inventory ("NWI") wetlands, National Heritage Database ("NHD") waterbodies and waterways, and aquatic resources delineated for the Project.
- Road names, residences, commercial centers or buildings, industrial buildings and installations, schools, hospitals, churches, civic buildings, and other occupied places; and
- Incorporated areas and population centers.

According to the Miami County Comprehensive Plan[1], the Project predominately crosses existing land use of general agricultural use and vacant land as well as residential. In addition, the Project crosses a section of industrial land use and abuts open space/recreational.

[1] Miami Valley Regional Planning Commission. 2006. Comprehensive Plan 2006 Update. Available at https://www.co.miami.oh.us/DocumentCenter/View/560/Comprehensive-Plan?bidId=

(2) Impact on Identified Land Uses

Comparisons of potential land use impacts for both routes are included in Table 7 4. The acreage estimates of each land use type was determined using GIS software calculations. The potential disturbance area during construction activities (e.g., vegetation clearing, pole installations, etc.) consists of the 75-foot-wide construction ROW where the route is cross-country, the 30-foot-wide construction ROW where the route is along road ROW, and the 15-foot-wide access roads. Operational impacts will be the same as construction impacts except for access road impacts which are only construction as they are temporary. The ROW will be restored through soil grading, seeding, and mulching, thus the permanent impact to the operational ROW is primarily limited to the removal of existing trees and other vegetation. Access roads will be restored similarly but would be allowed to fully revegetate. Property owners may continue to utilize most of the ROW area for general uses that will not affect the safe and reliable operation of the transmission line such as lawn maintenance, agricultural crop production, pasture, or use as a hayfield.

Table 7-4. Land Use Impacts During Construction and Operation

Land Use	Preferred Route [1]		Alternate Route [1]	
	Construction (Acreage)	Operation (Acreage)	Construction (Acreage)	Operation (Acreage)
Agricultural	~~94.2~~ 83.0	~~91.4~~ 82.5	~~98.3~~ 92.4	~~95.5~~ 92.0
Aquatic Resources[2]	~~1.7~~ 1.8	~~1.7~~ 1.8	~~0.6~~ 0.4	~~0.5~~ 0.4
Industrial/Commercial	~~5.1~~ 6.0	~~4.7~~ 5.5	~~3.4~~ 3.2	3.0
Institutional[3]	~~0.1~~ 1.5	~~0.1~~ 1.5	~~0.0~~ 1.2	~~0.0~~ 1.2
Open Land/Pasture	~~3.7~~ 3.6	~~3.4~~ 3.5	~~5.2~~ 5.5	~~4.9~~ 5.4
Residential	~~3.1~~ 4.5	~~2.7~~ 4.4	~~3.9~~ 4.5	~~3.5~~ 4.4
Woodlot	~~3.9~~ 2.8	~~3.8~~ 2.7	~~2.6~~ 2.0	~~2.4~~ 1.9
Total	**~~111.8~~ 103.2**	**~~107.6~~ 101.9**	**~~114.0~~ 109.2**	**~~109.9~~ 108.3**

Notes:

1 The permanent ROW is the same as the construction ROW and access roads are temporary and to be used during construction only. The difference between construction and operation acreages are due to off ROW access roads only to be used during construction and not operation.

2 Since wetland, open water, and streams make up a minor component of the land use, a combination of NHD waterbodies and waterways, NWI wetlands, and field delineated aquatic resources were used to define these values.

3 Institutional may include but is not limited to schools, hospitals, churches, government facilities, etc.

(3) Impact on Identified Structures

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

There are ~~64~~ 80 and 98 single-family residences within 200 feet of the ROW of the Preferred and Alternate Routes, respectively. For the Preferred Route, ~~three~~ seven residences are within 50 feet of the ROW, ~~15~~ 30 residences are between 51-100 feet of the ROW, ~~30~~ 35 residences within 101-150 feet of the ROW, and ~~16~~ eight residences within 151-200 feet of the ROW. For the Alternate Route, three residences are within 50 feet of the ROW, 20 residences are between 51-100 feet of the ROW, 39 residences within 101-150 feet of the ROW, and 36 residences within 151-200 feet of the ROW.

There are ~~three~~ one and two commercial buildings within 200 feet of the ROW of the Preferred and Alternate Routes, respectively. For the Preferred Route, ~~one commercial building is within 50 feet of the ROW,~~ one commercial building is between 101-150 feet of the ROW and one commercial building is between 151-200 feet of the ROW. For the Alternate Route, one commercial building is between 101-150 feet of the ROW, and one commercial building is between 151-200 feet of the ROW.

There are no industrial buildings and installations, schools, hospitals, churches, civic buildings, or other occupied places within 200 feet of the Preferred and Alternate Route ROW.

(b) Destroyed, Acquired, or Removed Buildings

Text provided in the May 2019 Application filing remains unchanged.

(c) Mitigation Procedures

Text provided in the May 2019 Application filing remains unchanged.

(C) AGRICULTURAL LAND IMPACTS

Text provided in the May 2019 Application filing remains unchanged.

(1) Agricultural Land Map

The various categories of agricultural land and agricultural districts are depicted on Figure 7-7 for both the Preferred and Alternate Routes. The Miami County Auditor – Real Estate Department was contacted to obtain information on current Agricultural District Land records; current data was received on ~~January 4, 2019~~ June 11, 2021.

(2) Impacts to Agricultural Lands and Agricultural Districts

(a) Acreage Impacted

Table 7-5 provides the acreage impacted for agricultural land uses and agricultural districts. The agricultural land use was based on aerial imagery. The Preferred Route crosses ~~16~~ 17 parcels (for a

total distance of ~~4.71~~ 5.3 miles) designated as Agricultural Districts and the Alternate Route crosses ~~18~~ 17 parcels (for a total of ~~4.00~~ 4.2 miles) designated as Agricultural Districts.

Table 7-5. Impacts to Agricultural Lands and Agricultural Districts

Agricultural Land Use	Preferred Route [1]		Alternate Route [1]	
	Construction (Acreage)	Operation (Acreage)	Construction (Acreage)	Operation (Acreage)
Cultivated Land	~~94.2~~ 83.0	~~91.4~~ 82.5	~~98.3~~ 92.0	~~95.6~~ 92.0
Pasture Land	~~3.3~~ 3.6	~~3.0~~ 3.5	~~4.0~~ 5.5	~~3.7~~ 5.4
Managed Woodlots	~~-~~	-	~~-~~	-
Orchards	~~-~~	-	~~-~~	-
Nurseries	~~-~~	-	~~-~~	-
Livestock and Poultry Confinement Areas	~~-~~	-	~~-~~	-
Other	-	-	-	-
Total	**~~97.5~~ 86.6**	**~~94.4~~ 86.0**	**~~102.3~~ 97.5**	**~~99.3~~ 97.4**
Agricultural District	~~31.4~~ 35.1	~~31.1~~ 35.1	~~29.9~~ 30.8	~~29.5~~ 30.8

Note:

[1] The permanent ROW is the same as the construction ROW and access roads are temporary and to be used during construction only.

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

Text provided in the May 2019 Application filing remains unchanged.

(i) Field Operations

Text provided in the May 2019 Application filing remains unchanged.

(ii) Irrigation

Text provided in the May 2019 Application filing remains unchanged.

(iii) Field Drainage Systems

Text provided in the May 2019 Application filing remains unchanged.

(iv) Structures Used for Agricultural Operations

There are ~~8~~ 7 and 13 agricultural barns within 200 feet of the ROW of the Preferred and Alternate Routes, respectively. For the Preferred Route, ~~one~~ three agricultural barns ~~is~~ are within 50 feet of the

ROW, two agricultural barns between 51-100 feet of the ROW, and ~~one~~ two agricultural barns between 101-150 feet of the ROW~~, and 6 agricultural barns between 151-200 feet of the ROW~~. For the Alternate Route, no agricultural barns are within 50 feet of the ROW, three agricultural barns between 50-100 feet of the ROW, one agricultural barn between 101-150 feet of the ROW, and nine agricultural barns between 151-200 feet of the ROW. Agricultural barns are not anticipated to be impacted by the Project.

(v) Agricultural Land Viability for Agricultural Districts

Text provided in the May 2019 Application filing remains unchanged.

(c) Mitigation Procedures

Text provided in the May 2019 Application filing remains unchanged.

(D) LAND USE PLANS AND REGIONAL DEVELOPMENT

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

(1) Impacts to Regional Development

Text provided in the May 2019 Application filing remains unchanged.

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

Text provided in the May 2019 Application filing remains unchanged.

(E) CULTURAL AND ARCHAEOLOGICAL RESOURCES

POWER Engineers, Inc. ("POWER") conducted a cultural resources records review in 2014 of online resources from the Ohio Historic Preservation Office ("OHPO") as well as a literature review. GAI reviewed the OHPO database in 2018 and confirmed that the initial review completed by POWER Engineers is still applicable. The results of the cultural resource literature review were submitted to the OHPO on June 5, 2015 requesting a review and comment of the literature review and a response as to the need for additional cultural resource field studies. The OHPO responded in a letter dated July 27, 2015 recommending that additional archaeological and architectural field work be conducted on the Preferred and Alternate Routes. ~~DP&L will apply this recommendation with respect to the modified Preferred and Alternate Routes presented in the current Docket. Upon completion of the additional archaeological and architectural field work as well as completion of additional correspondence with OHPO the OPSB will be provided the appropriate documentation~~. In December 2020, GAI completed both a Phase I archaeological survey and an architectural and historical resources survey of the Preferred Route (Appendices 7-3 and 7-4, respectively). The archaeological

survey resulted in the identification of five newly recorded isolated finds, five newly recorded sites, and one isolated find being added to an existing site. Access permission was not provided for approximately 2.23 hectares (5.52 acres) of the Project and those areas were excluded from the archaeological survey. In a report submitted to the OHPO, GAI noted the un-surveyed portions and recommended that the identified archaeological sites are not eligible for listing in the National Register of Historic Places ("NRHP") and the Project should be allowed to proceed as planned without further archaeological investigations in the surveyed areas. On May 7, 2021, the OHPO concurred with the archaeological recommendations and stated, "No further coordination for archaeological resources is required unless the project changes or additional archaeological remains are discovered during the course of the project." The architectural survey identified 123 resources; three were previously recorded and 120 were newly recorded as part of this Project. In a report submitted to the OHPO, two resources were recommended eligible for listing in the NRHP; however, the Project is not anticipated to impact those resources' NRHP-qualifying architectural characteristics. GAI further recommended the remaining 121 resources were not eligible for the NRHP and the Project should be allowed to proceed as planned without further historic architectural investigations. On May 7, 2021, the OHPO concurred with the historic architectural recommendations except for one resource; the OHPO requested additional data for one of the resources recommended eligible for the NRHP. On June 14, 2021, GAI provided the requested additional data for the architectural resource (Appendix 7-5). On July 15, 2021, the OHPO concurred with one of the two recommendations for architectural resources eligible for listing in the NRHP; however, the Project will not adversely affect the property.

Copies of OHPO correspondence are provided in Appendix 7-1. The Cultural Resource Management Literature Review Report prepared by POWER and the archaeological and architectural survey reports completed by GAI will be provided to OPSB under separate cover based on the inclusion of sensitive and confidential cultural resource information.

(1) Recreational and Cultural Resources Map

Text provided in the May 2019 Application filing remains unchanged.

(2) Cultural Resources in Study Corridor

Text provided in the May 2019 Application filing remains unchanged.

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

No direct impacts to above ground cultural resources (i.e., cemeteries or historic structures) are anticipated from Project construction. Indirect impacts may result from visual effects. These potential effects are described in Section 4906-5-07(E)(5)(c). Most of the Project Study Area lies within previously disturbed contexts including road ROW, existing utility ROW, and cultivated agricultural fields. ~~The proposed Project has the potential to impact unknown prehistoric archaeological sites and~~

~~correspondence with OHPO is ongoing.~~ Per coordination with the OHPO, impacts to archaeological and architectural resources are not anticipated.

(4) Mitigation Procedures

No archaeological or architectural resource mitigation is proposed.

~~Based on the results of the desktop review, no impacts to known historic properties are anticipated because of the Project; therefore, no mitigation is proposed at this time, however archaeological and architectural field work is to be completed and the results of that field work discussed with OHPO.~~

(5) Aesthetic Impact

Text provided in the May 2019 Application filing remains unchanged.

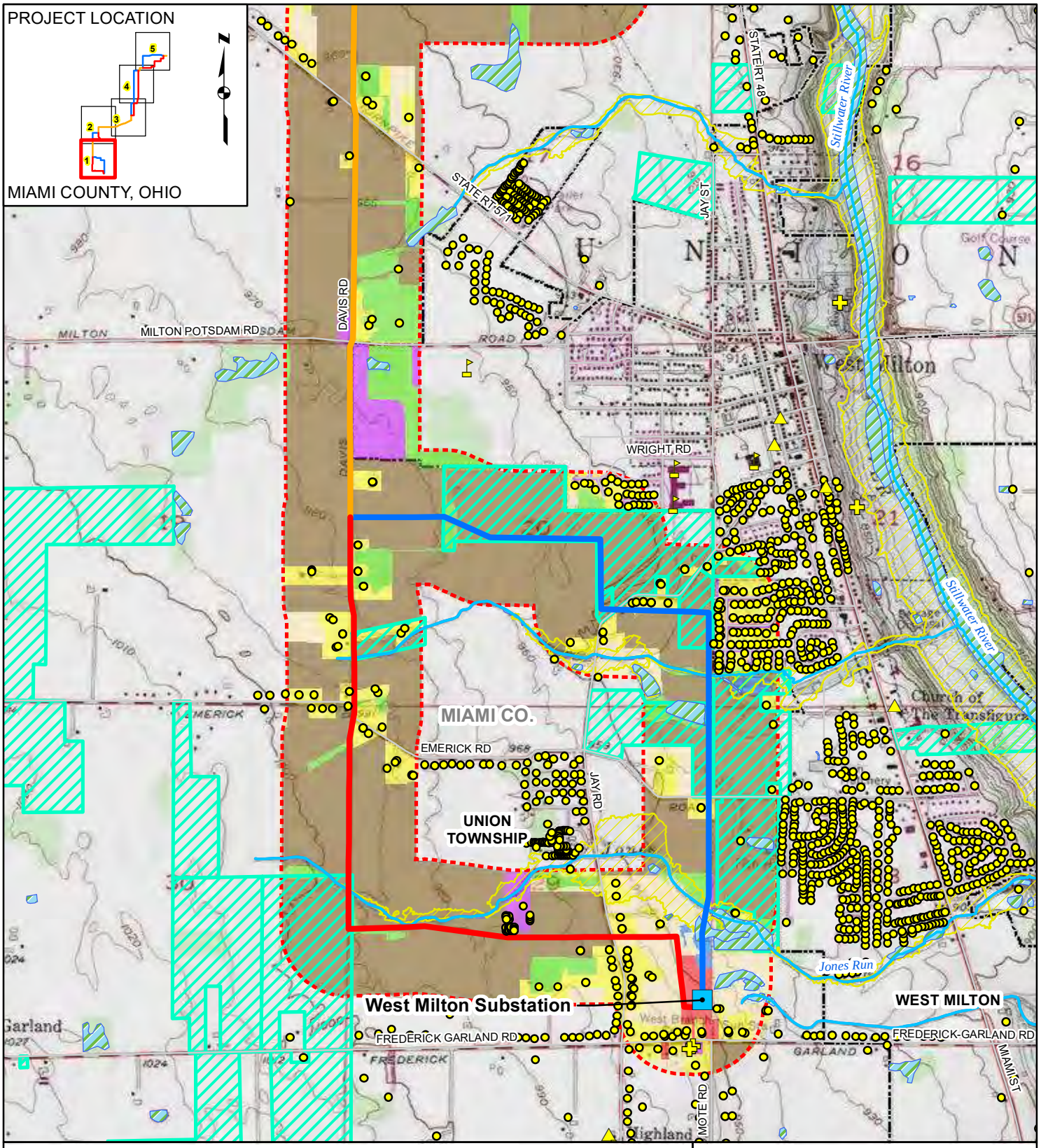


FIGURE 7-6
LAND USE AND CONSTRAINTS
SHEET 1 OF 5

WEST MILTON - ELDEAN 138 kV

AES OHIO

DRAWN BY: TDB DATE: 8/19/2021
CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: PLEASANT HILL (1984), TROY (1982), WEST MILTON (1983), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/2021. USGS NHD, 2020; MIAMI COUNTY, 2021; MIAMI COUNTY AG DISTRICTS 6/11/2021; ODOT, 2018.

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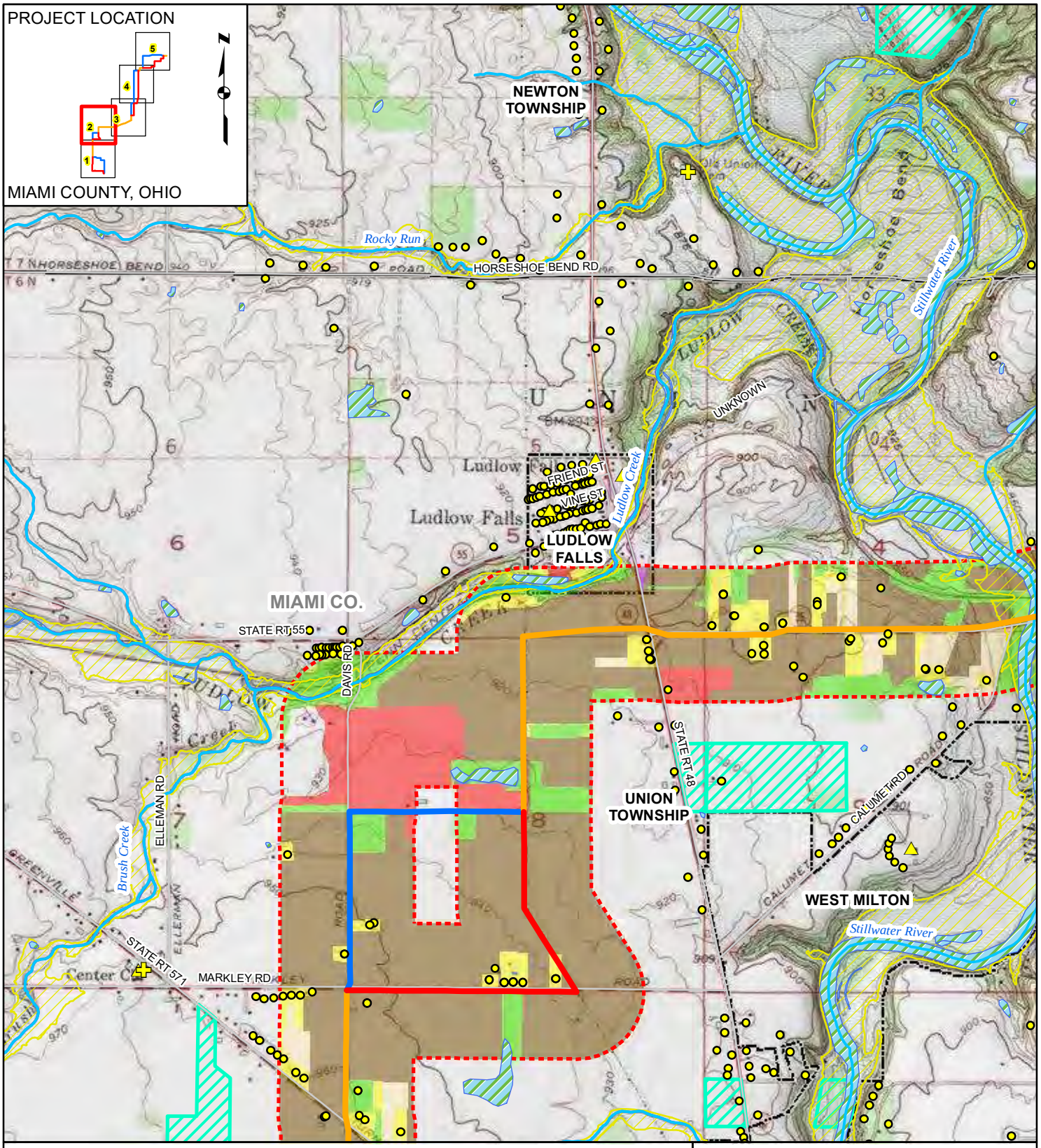

FIGURE 7-6
LAND USE AND CONSTRAINTS
SHEET 2 OF 5

WEST MILTON - ELDEAN 138 kV

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REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: PLEASANT HILL (1984), TROY (1982), WEST MILTON (1983), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 8/2021. USGS NHD, 2020; MIAMI COUNTY, 2021; MIAMI COUNTY AG DISTRICTS 6/11/2021; ODOT, 2018.

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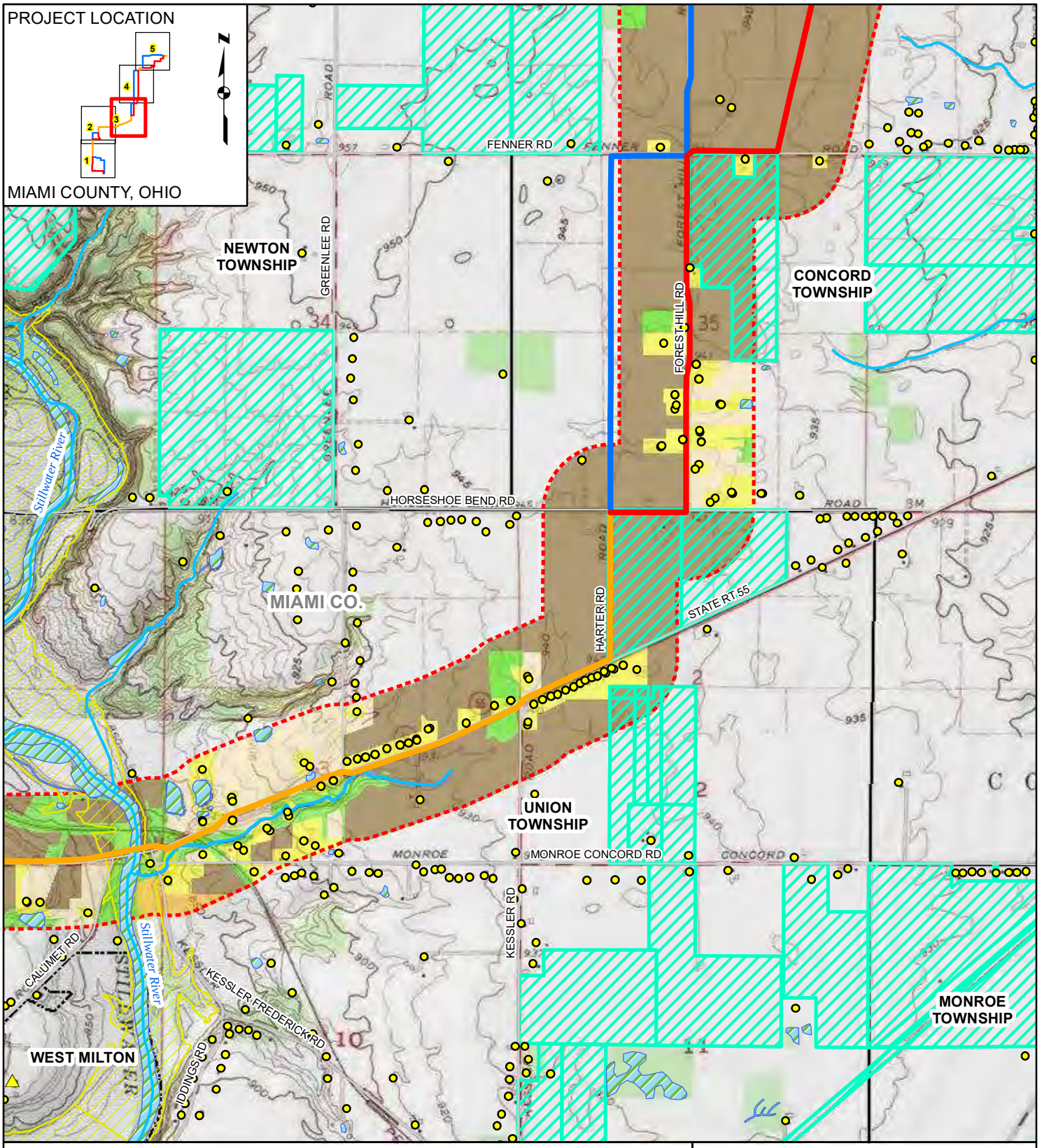

FIGURE 7-6
LAND USE AND CONSTRAINTS
SHEET 3 OF 5

WEST MILTON - ELDEAN 138 kV

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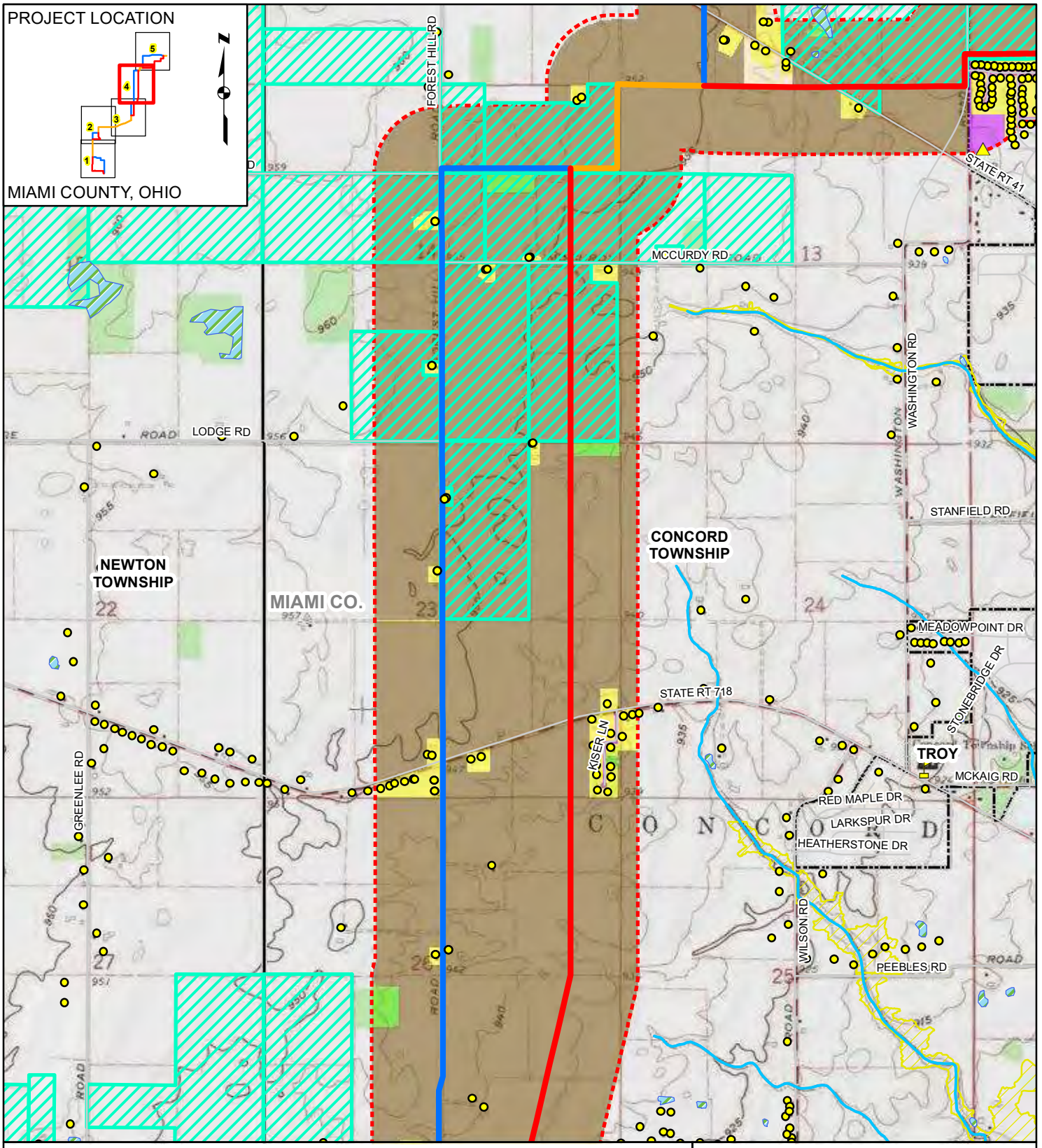

FIGURE 7-6
LAND USE AND CONSTRAINTS
SHEET 4 OF 5

WEST MILTON - ELDEAN 138 kV

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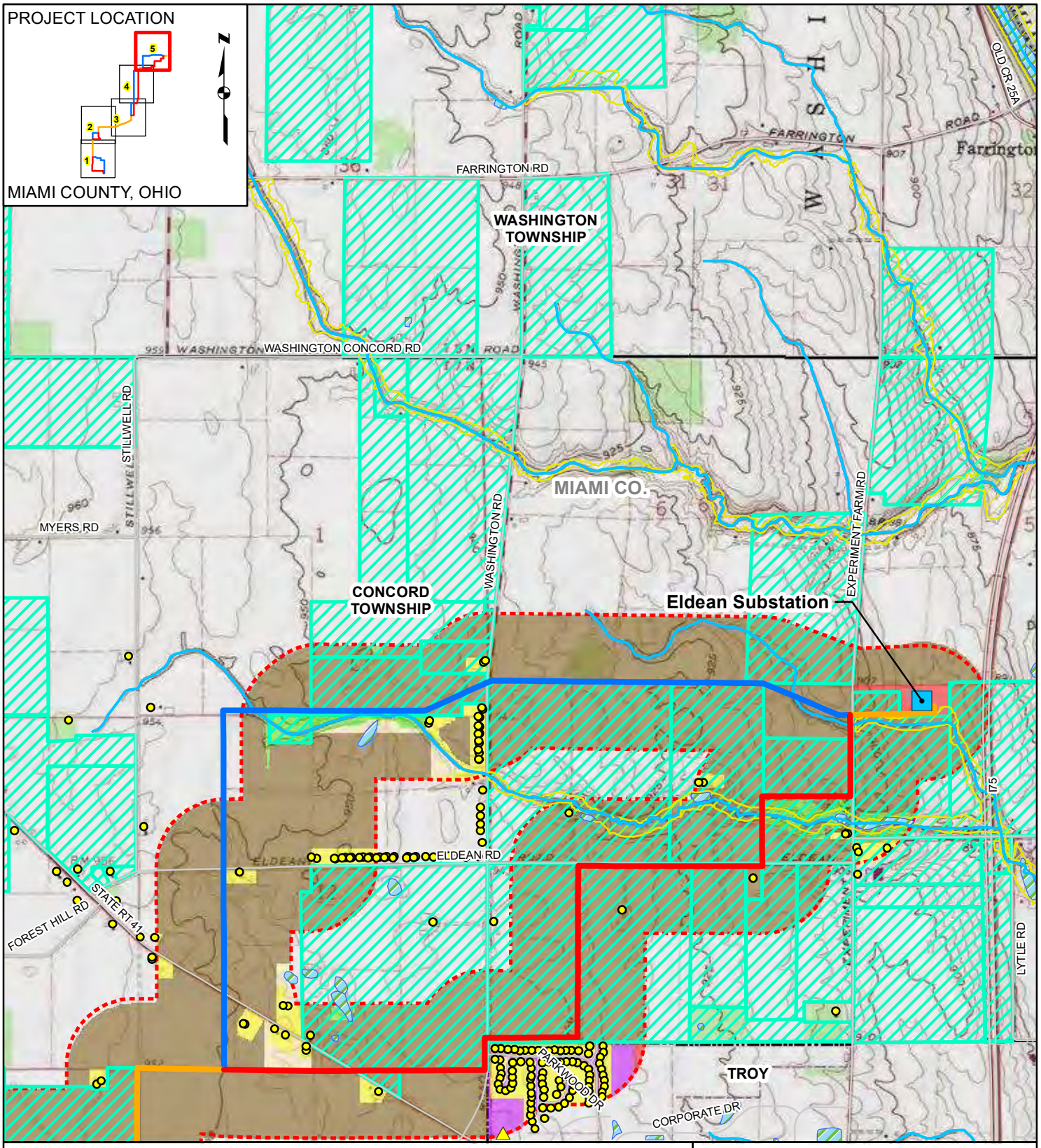

FIGURE 7-6
LAND USE AND CONSTRAINTS
SHEET 5 OF 5

WEST MILTON - ELDEAN 138 kV

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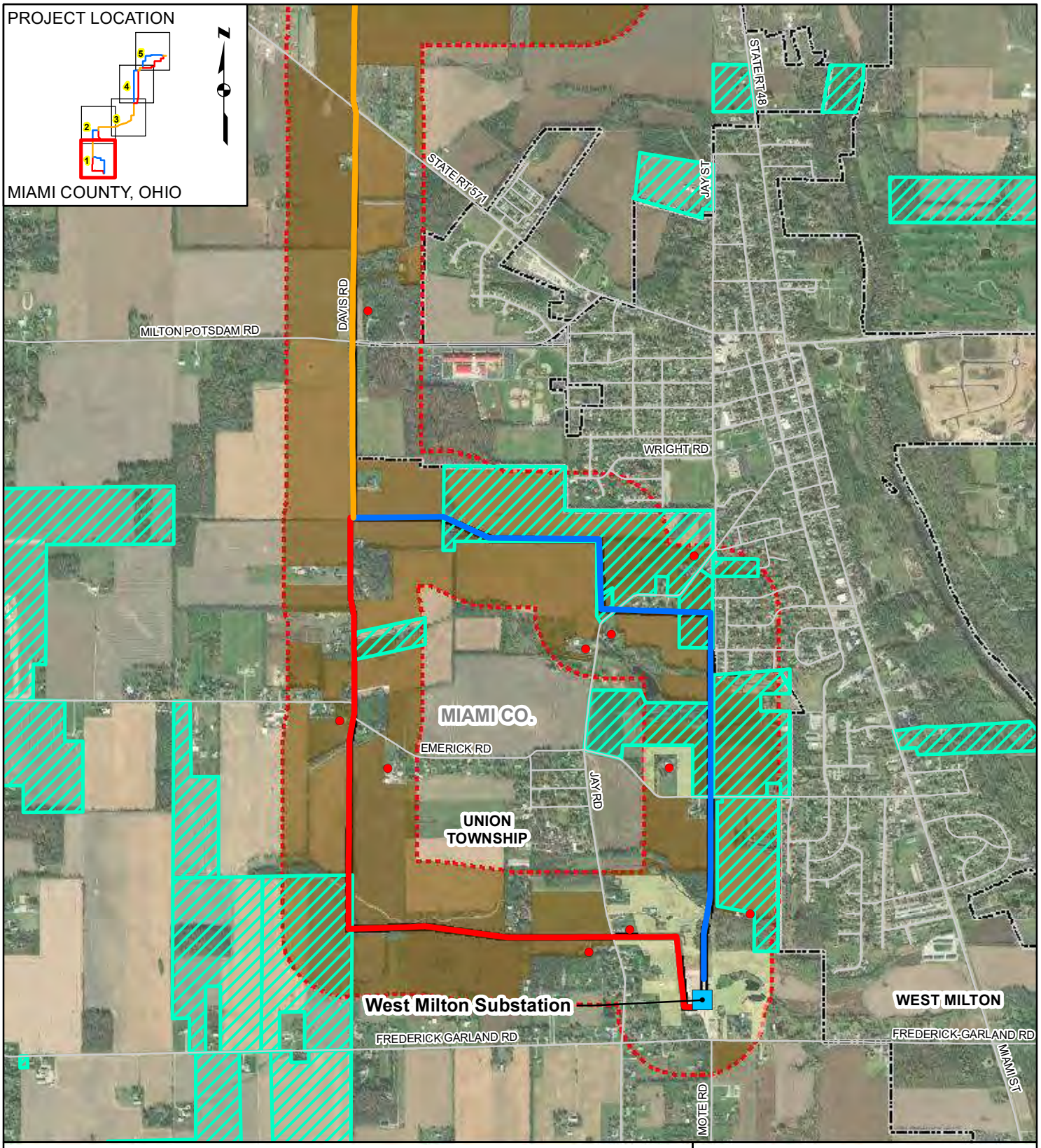

Substation
Preferred Route
Common Route
Alternate Route
Agricultural Structure
Agricultural
Pasture
Agricultural District
Road Centerline
2000-Foot Corridor
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 7-7
AGRICULTURAL LANDS
SHEET 1 OF 5

WEST MILTON - ELDEAN 138 kV

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REFERENCE: ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, 8/19/2021 ; MIAMI COUNTY ROADS, PARCELS, 2021; MIAMI COUNTY AG DISTRICTS 6/11/2021; ODOT, 2018.

G:\R200144.04 - GIS\MXD\OPSB\R200414_04_AES_West_Milton_Elden_Ag_Land_Fig_7_7_2021_08_19.mxd

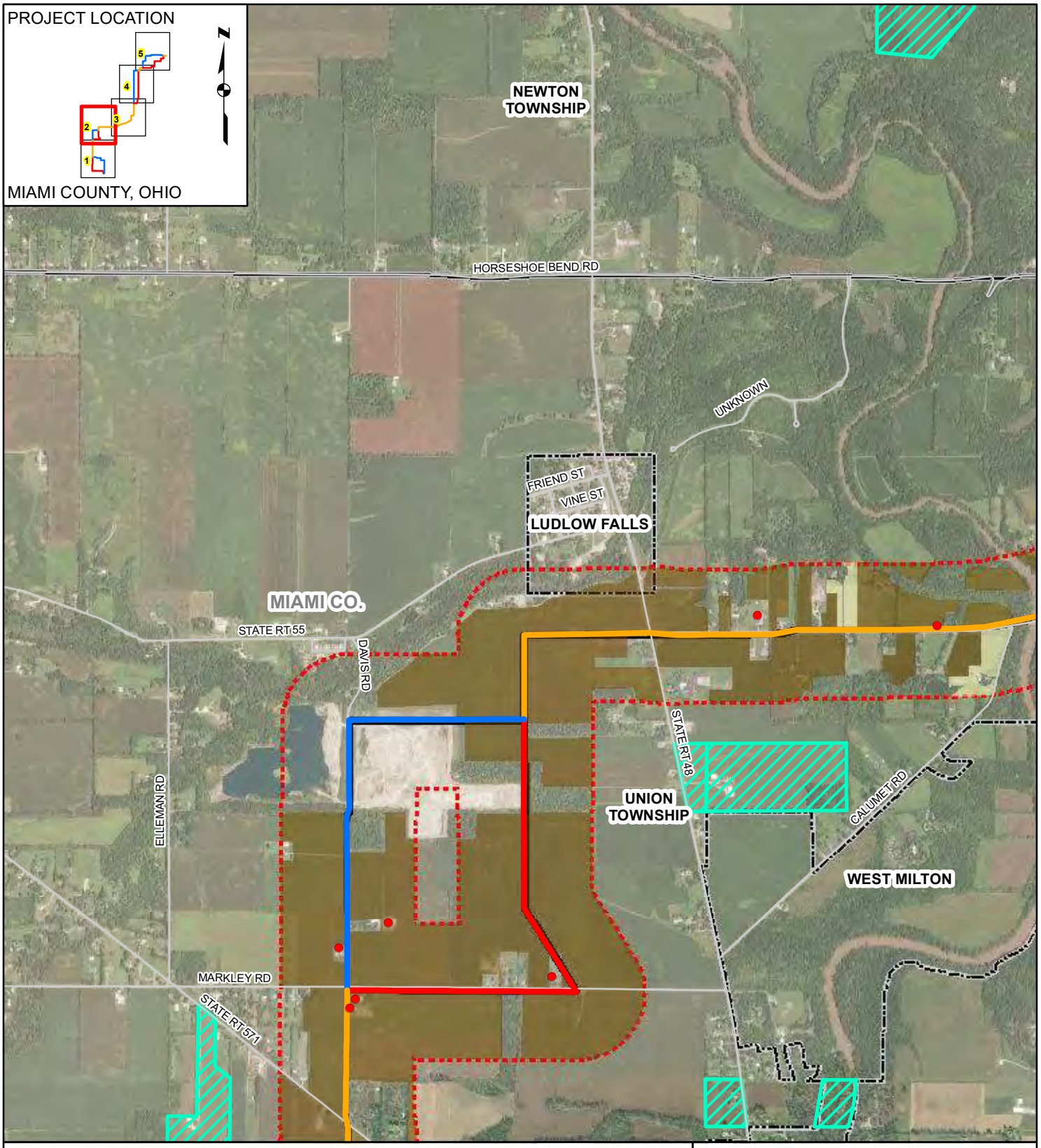

FIGURE 7-7
AGRICULTURAL LANDS
SHEET 2 OF 5

WEST MILTON - ELDEAN 138 kV

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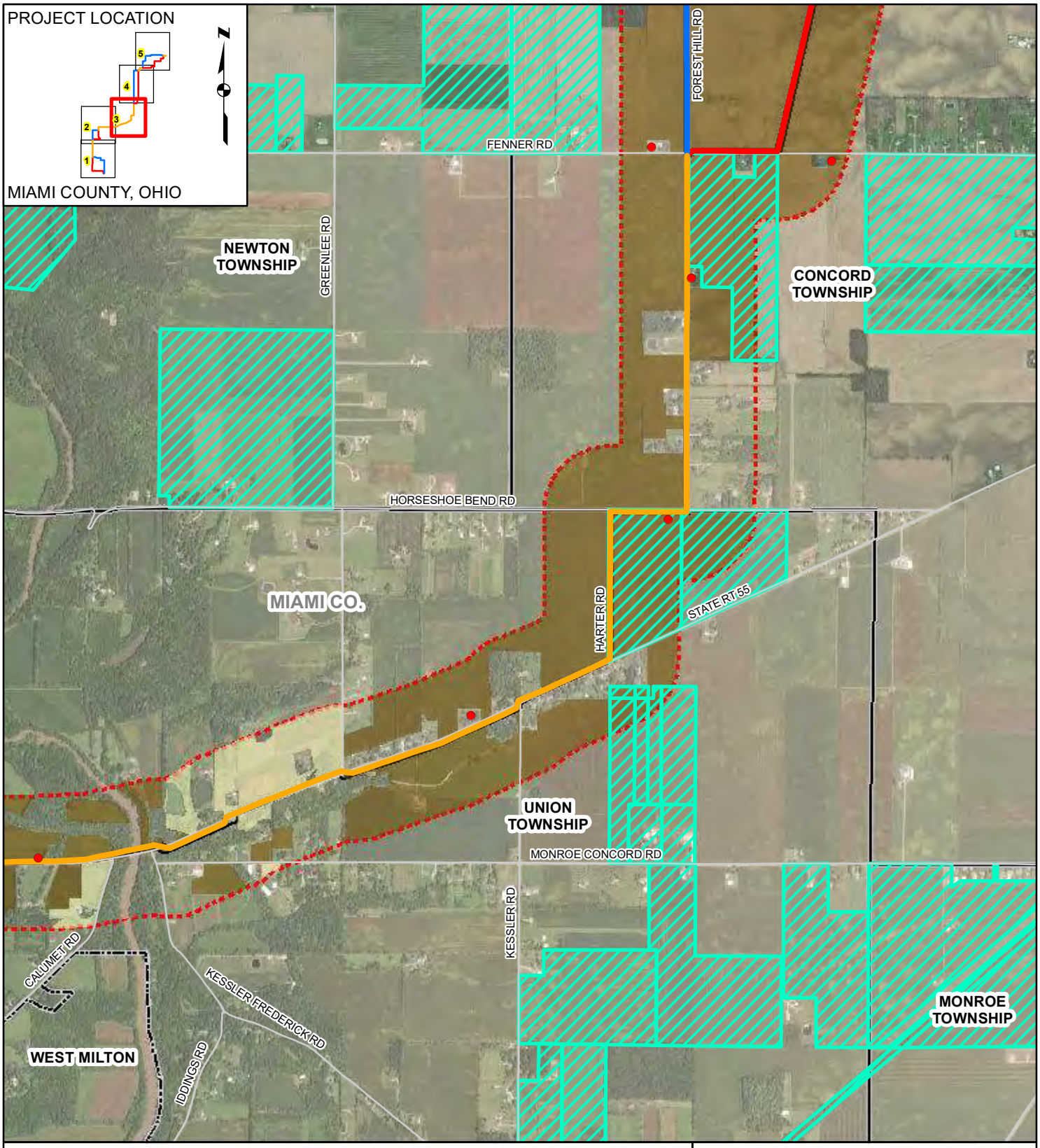

Substation
Preferred Route
Common Route
Alternate Route
Agricultural Structure
Agricultural
Pasture
Agricultural District
Road Centerline
2000-Foot Corridor
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 7-7
AGRICULTURAL LANDS
SHEET 3 OF 5

WEST MILTON - ELDEAN 138 kV

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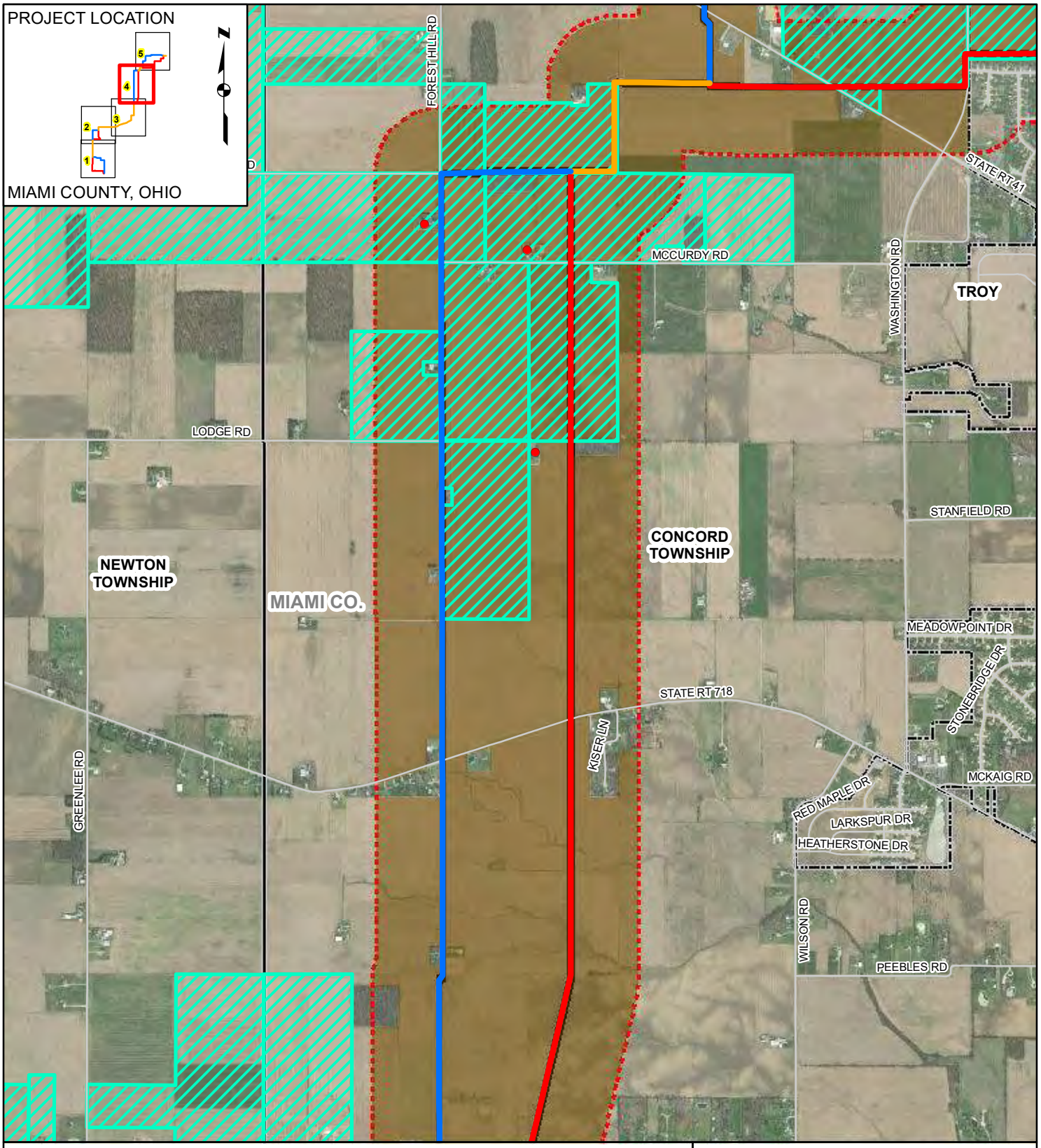

Substation
Preferred Route
Common Route
Alternate Route
Agricultural Structure
Agricultural
Pasture
Agricultural District
Road Centerline
2000-Foot Corridor
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 7-7
AGRICULTURAL LANDS
SHEET 4 OF 5

WEST MILTON - ELDEAN 138 kV

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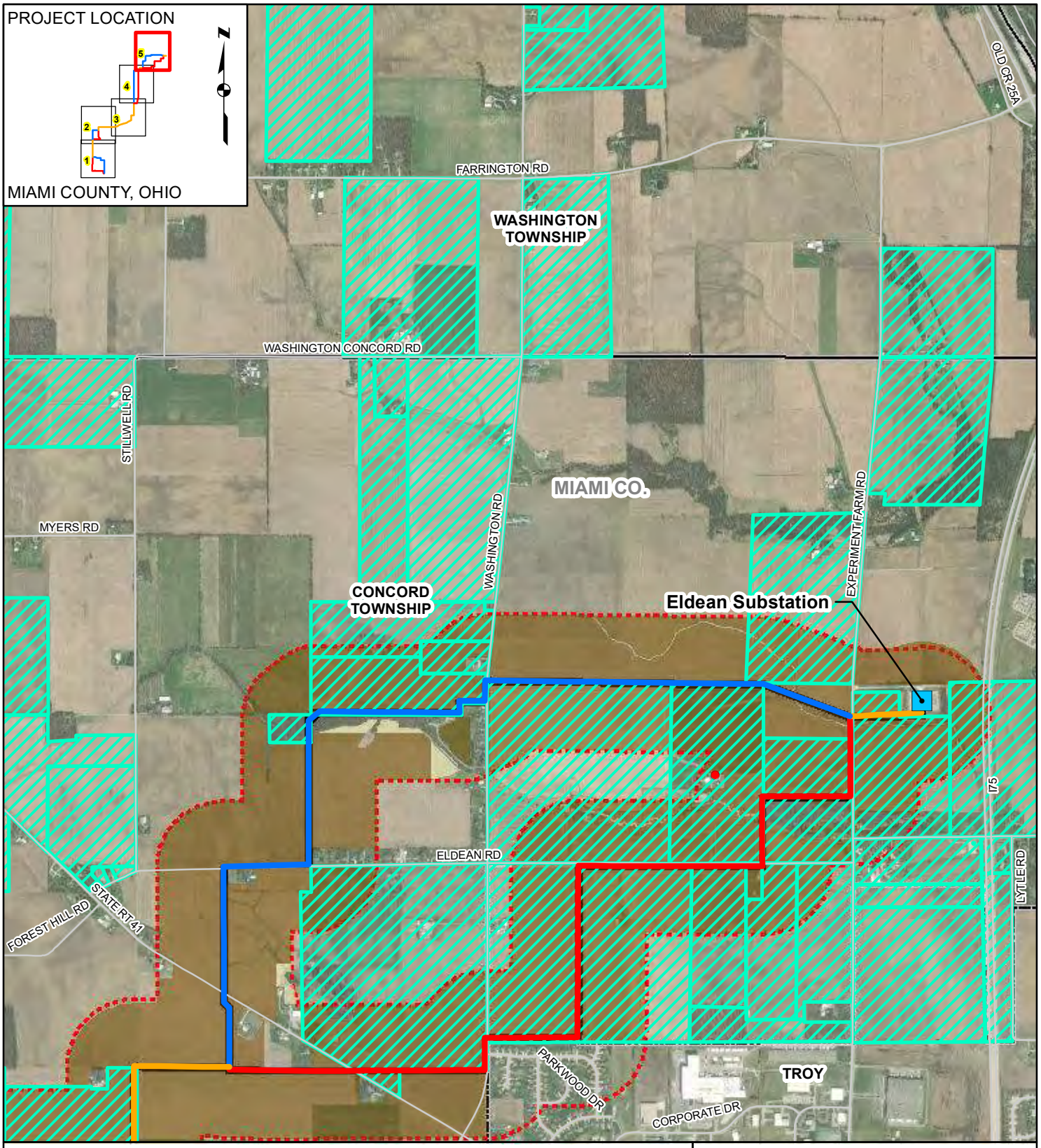

Substation
Preferred Route
Common Route
Alternate Route
Agricultural Structure
Agricultural
Pasture
Agricultural District
Road Centerline
2000-Foot Corridor
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 7-7
AGRICULTURAL LANDS
SHEET 5 OF 5

WEST MILTON - ELDEAN 138 kV

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4906-5-08 ECOLOGICAL INFORMATION AND COMPLIANCE WITH PERMITTING REQUIREMENTS

Text provided in the May 2019 Application filing remains unchanged.

(A) ECOLOGICAL MAP

A map at a scale of 1:12,000 (one-inch = 1,000 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 is presented as Figure 8-1. This map depicts the Preferred and Alternate Routes, streams, lakes, ponds, and reservoirs, NWI wetlands, highly-erodible soils, and slopes of 12 percent or greater. Also shown on Figure 8-1 are wildlife areas, nature preserves, and publicly identified conservation areas that are managed by a public body or a recognized nonprofit organization where present. Data presented on Figure 8-1 was compiled from publicly available published data.

(B) FIELD SURVEY REPORT FOR VEGETATION AND SURFACE WATERS

From October 2014 through October 2015, POWER ecologists, at the request of AES Ohio ~~DP&L~~, conducted an ecological field study to quantify the occurrence and quality of wetlands and streams and document vegetation and wildlife within the review corridor of 100 feet on either side of the of the Preferred Route centerline (200 feet total width; "Field Survey Area"). Additionally, POWER ecologists performed ecological field studies within the 200-foot review corridor of the Alternate Route to the extent permissible from June 2015 through October 2015. In April 2019, GAI completed an ecological field study on properties where access was previously not granted as well as new properties that had yet to be surveyed that had resulted from open house route optimizations. Ecological field studies have been completed for both the Preferred and Alternate Routes as well as all assumed off-ROW access roads. GAI completed additional ecological field studies in 2021. Results and findings from these field studies are described in greater detail in the sections below.

(1) Vegetation Communities, Wetlands, and Streams in Study Area

Vegetation Communities

Text provided in the May 2019 Application filing remains unchanged.

Wetlands

According to the United States 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. AES Ohio's ~~DP&L's~~ consultants, POWER and GAI, used the on-site methodology described in the 1987 Technical Report Y-87-1, USACE Wetlands Delineation Manual, and subsequent guidance documents including the 2012 Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region (Version 2.0). Additionally, each identified wetland was evaluated in accordance with the Ohio Rapid Assessment Method

("ORAM") developed by Ohio Environmental Protection Agency ("OEPA") (Mack, 2001[2]). Wetland categorizations were conducted in accordance with the latest quantitative score calibration procedure (Mack, 2001).

Wetlands are scored on the basis of 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).

~~Six~~ Seven wetlands were identified and delineated within the Field Survey Area. ~~Five~~ Six of the delineated wetlands were PEM wetlands with a delineation size of 0.02 to ~~0.50~~ 0.54 acres; wetlands may extend beyond the Field Survey Limits. The ~~sixth~~ seventh wetland, Wetland F, has a delineated size of 3.4 acres, of which 1.18 acres was PEM, 0.46 acres was PFO, and 1.76 acres was PSS. The boundaries of Wetland F may extend beyond the Field Survey Limits. ~~Five~~ Four wetlands received an ORAM rating of Category 2. Wetlands C, E, and G received an ORAM rating of Category 1. Wetland and corresponding upland data forms along with completed ORAM data forms are provided in Appendix 8-1. Wetland photographs are provided in Appendix 8-3.

[2] Mack, John J. 2001. Ohio Rapid Assessment Methods for Wetlands Manual for Using Version 5.0. Ohio EPA Technical Bulletin Wetland/2001-1-1. Ohio Environmental Protection Agency, Division of Surface Water, 401 Wetland Ecology Unit, Columbus, Ohio.

Streams and Waterbodies

Field evaluations were conducted on streams within the Field Survey Area of the Preferred and Alternate Routes. Three streams that drain areas greater than one-square-mile were assessed using the OEPA's Qualitative Habitat Evaluation Index ("QHEI") method. Within the QHEI scoring convention, streams are classified based on their drainage area. QHEI streams that drain an area greater than 20 square miles are classified as "large streams", and streams that drain an area less than 20 square miles are classified as "headwater streams." QHEI-classified streams are assigned a narrative rating based upon their score. The narrative rating gives a general indication of aquatic assemblages that may be found at any given site. Five narrative ratings scale the 100-point scoring system. Very poor streams have a QHEI score of less than 30. Poor streams have a QHEI score between 30 and 42. Fair streams have a QHEI score between 43 and 54. Good streams have a QHEI score between 55 and 69. Streams that have a QHEI score greater than or equal to 70 are classified as excellent (OEPA, 2006[3]).

QHEI evaluations were conducted on the Stillwater River (Stream 5), a State Scenic River, and two additional streams [Jones Run (Stream 9), a tributary to the Stillwater River and an unnamed tributary (Stream 6) to the Great Miami River]. The evaluations were conducted at or near the proposed transmission line crossing of the streams. According to the OAC rule 3745-1-21 (OEPA Beneficial Use Designations for streams), the Stillwater River is classified as exceptional warm water habitat and scored 69 on the QHEI scale. The Jones Run stream is classified as warm water habitat and scored 52.5 for QHEI and the unnamed tributary of the Great Miami River scored 57.5 for the QHEI (no Ohio stream use designation).

Streams with a drainage basin less than one-square-mile were evaluated using the OEPA's Headwater Habitat Evaluation Index ("HHEI") method. The HHEI is a rapid field assessment method for physical habitat that can be used to appraise the biological potential of most Primary Headwater Habitat ("PHWH") streams. Headwater streams are typically considered to be first and second-order streams, meaning streams that have no upstream tributaries and those that have only first-order tributaries, respectively. Headwater streams are scored on the basis of channel substrate composition, bank full width, and maximum pool depth. Assessed areas result in a score (0 to 100) that is converted to a specific PHWH stream class. Streams that are scored from 0 to 29.9 are typically grouped into "Class I PHWH Streams", 30 to 69.9 are "Class II PHWH Streams", and 70 to 100 are "Class III PHWH Streams". Evidence of anthropogenic alterations to the natural channel resulted in a "Modified" qualifier for the stream (OEPA, 2012[4]).

[3]Ohio Environmental Protection Agency. 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Division of Surface Water, Columbus, Ohio.

[4] Ohio Environmental Protection Agency. 2012. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams. Version 3.0. Ohio EPA Division of Surface Water, Columbus, Ohio.

HHEI evaluations were conducted on ~~four~~ eight streams. The evaluations were conducted at or near the proposed transmission line crossing of each stream.

Copies of the QHEI and HHEI forms for the streams delineated within 100 feet of the Preferred and Alternate Routes are included in Appendix 8-2. Stream photographs are provided in Appendix 8-3.

A total of 11 streams were identified within the Field Survey Area, one stream, Stream 6, was identified ~~three times~~ as four segments. Of these streams, ~~13~~ 14 stream segments in total, eight were evaluated using the HHEI method and ~~five~~ six were evaluated using OEPA's QHEI method for streams with drainage areas greater than one-square-mile or maximum pool depths of greater than 40 cm.

No major lakes or reservoirs were observed within the Field Survey Area. However, ~~one~~ two Ponds (Ponds 1 and 2) was identified within the Field Survey Area. ~~and~~ Pond 1 has a total estimated acreage of 0.27~~-acre, with 0.08-acre within the Field Survey Area~~ and is not within the planned ROW of the Preferred or Alternate Routes. Pond 2 has a total estimated acreage of 0.31, of which <0.01-acre is within the planned ROW of the Preferred Route. ~~A p~~Photographs of Ponds 1 and 2 are provided in Appendix 8-3.

(2) Map of Facility, Right-of-Way, and Delineated Aquatic Resources

Detailed maps at 1:12,000 scale depicting the delineated features and proposed ROW for the Preferred and Alternate Routes are provided as Figure 8-2.

(3) Construction Impacts on Vegetation and Surface Waters

Construction Impacts on Vegetation

The construction impacts on woody and herbaceous vegetation along both the Preferred and Alternate Route will be limited to the initial clearing of vegetation within the 75-foot-wide ROW where routes are cross-country and within the 30-foot-wide ROW where routes are roadside for the proposed transmission line and the 15-foot-wide ROW for the temporary access roads. Preliminary locations for temporary access roads have been identified and will be confirmed at the time of AES Ohio's ~~DP&L~~ transmission line easement acquisition process. No permanent access roads are proposed. Trees and woody vegetation will be removed from the ROW and subsequent grading is anticipated to be minimal due to the nearly level terrain. Trees adjacent to the ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe construction and operation of the transmission line. Vegetation waste (e.g., 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 along the Preferred and Alternate Route ROWs are provided in Table 8-1. Figure 7-6~~1~~, Land Use and Constraints, depicts the land use types within the ROW.

Table 8-1. Approximate Vegetation Impacts From Transmission Line ROW Construction[1]

Land Use Type	Length of Route (in feet)	Length of Route (in miles)	Acreage within ROW
Preferred Route			
Agricultural	~~73,690~~ 69,887	~~14.0~~ 13.2	~~90.0~~ 81.1
Aquatic Resources[2]	~~928~~ 1,013	0.2	~~1.5~~ 1.8
Industrial/Commercial	~~1,097~~ 3,050	~~0.2~~ 0.6	~~2.1~~ 4.1
Institutional[3]	- 1,663	- 0.3	~~<0.0~~ 1.2
Open Land/Pasture	~~2,919~~ 2,929	0.6	~~2.3~~ 2.4
Residential	~~2,365~~ 4,290	~~0.4~~ 0.8	~~2.4~~ 4.1
Road/Railroad ROW	~~1,573~~ 2,041	~~0.3~~ 0.4	~~1.6~~ 1.9
Utility ROW	~~2,726~~ 1,606	~~0.5~~ 0.3	~~4.4~~ 2.6
Woodlot	~~2,977~~ 1,814	~~0.6~~ 0.3	~~3.2~~ 2.7
Alternate Route			
Agricultural	~~74,853~~ 71,959	~~14.2~~ 13.5	~~94.0~~ 90.4
Aquatic Resources[2]	~~308~~ 314	0.1	~~0.5~~ 0.4
Industrial/Commercial	~~1~~ <0.0	<0.0	~~<0.0~~ 0.2
Institutional[3]	~~-~~ 1,663	~~-~~ 0.3	~~<0.0~~ 1.2
Open Land/Pasture	~~3,763~~ 3,773	0.7	~~4.5~~ 4.8
Residential	~~3,488~~ 4,543	~~0.7~~ 0.9	~~3.1~~ 4.0
Road/Railroad ROW	~~1,927~~ 2,065	0.4	~~1.9~~ 2.1
Utility ROW	~~2,369~~ 2,156	0.4	~~3.8~~ 3.6
Woodlot	~~1,913~~ 1,822	0.4	~~2.1~~ 1.6

Notes:

1 Vegetation impacts associated with off ROW access roads are not included.

2 Since wetland, open water, and streams make up a minor component of the land use, a combination of NHD waterbodies and waterways, NWI wetlands, and field delineated aquatic resources were used to define these values.

3 Institutional may include but is not limited to schools, hospitals, churches, government facilities, etc.

Construction Impacts on Streams and Waterbodies

The Preferred Route crosses ~~nine~~ seven streams, with ~~453~~ 320 linear feet within the proposed ROW. The Alternate Route crosses ~~six~~ five streams, with a total of ~~290~~ 238 linear feet within the proposed construction corridor. ~~Only one identified stream within the Field Survey Area crosses a temporary access road that would only be used for the Preferred Route, Stream 11. Stream 11 has 16 linear feet within the proposed temporary access road corridor.~~ No access roads are planned to cross an identified stream. No ponds or other waterbodies are proposed to be impacted based on completed field surveys. No major lakes or reservoirs were observed within the proposed ROW of the Preferred or Alternate Routes. Impacts to ponds or other waterbodies (i.e., lakes, reservoirs, etc.) are not anticipated by the construction of the transmission line ROW. The approximate stream and waterbody impacts along the Preferred and Alternate Route ROWs are provided in Table 8-2. The locations and approximate extents of these streams are shown on Figure 8-2.

AES Ohio ~~DP&L~~ will not perform mechanized clearing within 25 feet of any stream and will hand cut only trees in these areas that could potentially interfere with safe construction and operation of the line. Field investigations indicated that no streams would need to be filled or permanently impacted. ~~However, one stream will need to be crossed by construction vehicles along a temporary access road for the Preferred Route only based on completed field studies.~~ Construction crews will access pole installation locations primarily by utilizing existing farm roads and fields. Should a stream crossing need to occur, and an existing culvert or bridge does not currently exist, construction crews will utilize a temporary culvert or temporary access bridge.

Culvert stream crossings are proposed for crossing marginal quality perennial, ephemeral, and intermittent streams with a drainage basin of less than one mile. These crossings will be removed as no permanent access roads are proposed.

- 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 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 flow from the access road directly into the stream. Diversions and swales will be used to direct runoff to storm water management locations. 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. The minimum diameter culvert that will be used is 18 inches.

- 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 completion of construction, some rock aggregate and structures such as culvert pipes used for the crossing will be left in place if approved by the landowner. 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 revegetated 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 flow from the access road directly into the stream. Diversions and swales will be used to direct runoff to storm water 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 eight 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 eight feet of span width. No footings, piers, or supports will be allowed for spans of less than eight feet.

- No fill other than clean stone, free from soil, will be placed within the stream channel.

Additional details related to any necessary temporary access bridges will be detailed in the Project's Storm Water Pollution Prevention Plan.

Table 8-2. Approximate Stream and Waterbody Impacts From Transmission Line ROW Construction

Stream ID	Route	Flow Regime	Stream Form	Score	Narrative	Length (ft) within Field Survey Area	Length (ft) within ROW
1	Alternate	Ephemeral	HHEI	36	Modified Class II	~~96~~ 127	~~35~~ 30
2	Common	Ephemeral	HHEI	50	Modified Class II	107	~~35~~ 30
3	Common	Ephemeral	HHEI	45	Modified Class II	~~239~~ 245	~~38~~ 33
4	Common	Intermittent	HHEI	70	Class III	~~23~~ 414	0
5	Common	Perennial (Stillwater River)	QHEI	69	Good	209[1]	~~39~~ 34[1]
6	Alternate	Perennial	QHEI	57.5	Good	~~279~~ 304	~~106~~ 111
6-A	Preferred	Intermittent	QHEI	37	Poor	~~288~~ 361	~~103~~ 0
6-B	Preferred	Intermittent	QHEI	48.5	Fair	~~998~~ 1,174	0
6-C	Preferred	Intermittent	QHEI	48.5	Fair	361	79
7	Preferred	Intermittent	HHEI	39	Class II	~~120~~ 126	~~30~~ 4
8	Preferred	Intermittent	HHEI	65	Class II	~~172~~ 187	~~71~~ 60
9	Preferred	Perennial (Jones Run)	QHEI	52.5	Fair	335	~~77~~ 80
10	Preferred	Intermittent	HHEI	61	Modified Class II	~~237~~ 246	~~24~~ 0
11	~~Temporary Access Road for Preferred Route Only~~ Preferred	Ephemeral	HHEI	53	Modified Class II	~~166~~ 177	~~16~~ 0

Notes:

[1] Right bank measurement utilized for reference length, as it was the longer of the two banks.

Construction Impacts on Wetlands

The Preferred Route crosses two wetlands, Wetlands ~~D and~~ F and E. Based on the location of Wetland D within the ROW and the location of the proposed temporary access road, impacts to Wetland D are not anticipated. Based on the preliminary engineering, new structures may be placed within Wetland F resulting in minimal permanent impacts along the Preferred Route. Permanent impacts, if any, to Wetland F would be determined following final engineering of structure placement along a final route once avoidance and minimization of impacts is taken into consideration. Any permanent impacts would be minimal resulting from structure backfills. Wetland conversion impacts, if any, to Wetland F, will be determined following final existing and proposed easement location determination along the alignment of the new double circuit of an existing transmission line through the extents of Wetland F.

One wetland, Wetland E, is crossed by the Common Route ~~and a temporary access road~~. No wetlands are located within the proposed transmission line ROW for the Alternate Route. No structures are anticipated to be placed within wetlands along the Common or Alternate Routes. Delineated wetlands within the Field Survey Area are mapped on Figure 8-2 and the approximate ROW impacts are summarized in Table 8-3.

Any temporary and/or permanent wetland impacts will be permitted with appropriate state and federal agencies as needed.

In order to reduce potential sedimentation impacts to nearby wetlands, Best Management Practices such as silt fences and construction matting will be implemented. Due to the nature of the topography along the routes, sedimentation runoff potential into wetlands will be minimal. Construction equipment will only cross wetlands using construction matting, if necessary, and appropriate permits are obtained. Additionally, wetlands will be marked with stakes before any clearing activities occur in order to avoid incidental vehicle or sediment impacts.

Table 8-3. Approximate Wetland Impacts From Transmission Line ROW Construction

Wetland ID	Route	Cowardin Wetland Type[1]	ORAM Score	ORAM Category	Acreage within Field Survey Area	Acreage within ROW
Wetland A	Alternate	PEM	42.5	Category 2	~~0.33~~ 0.54	0.00
Wetland B	Common	PEM	38	Category 2	~~0.05~~ 0.16	0.00
Wetland C	Alternate	PEM	26	Category 1	0.02	0.00
Wetland D	Preferred	PEM	44	Category 2	~~0.06~~ 0.07	~~0.01~~ 0.00
Wetland E	Common	PEM	14	Category 1	0.50	~~0.12~~ 0.10
Wetland F	Preferred	PEM	54	Category 2	1.18	~~0.40~~ 0.44
		PSS			~~0.46~~ 1.76	~~0.62~~ 0.56
		PFO			~~1.76~~ 0.46	~~0.01~~ 0.10
Wetland G	Preferred	PEM	0	Category 1	0.05	0.03

Notes:

[1] Cowardin, L.M., F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, US Fish and Wildlife Service, US Department of the Interior, Washington, DC. 103 p.

(4) Operation and Maintenance Impacts on Vegetation and Surface Water

Text provided in the May 2019 Application filing remains unchanged.

(5) Mitigation Procedures

Text provided in the May 2019 Application filing remains unchanged.

(C) LITERATURE SURVEY OF PLANT AND ANIMAL LIFE POTENTIALLY AFFECTED

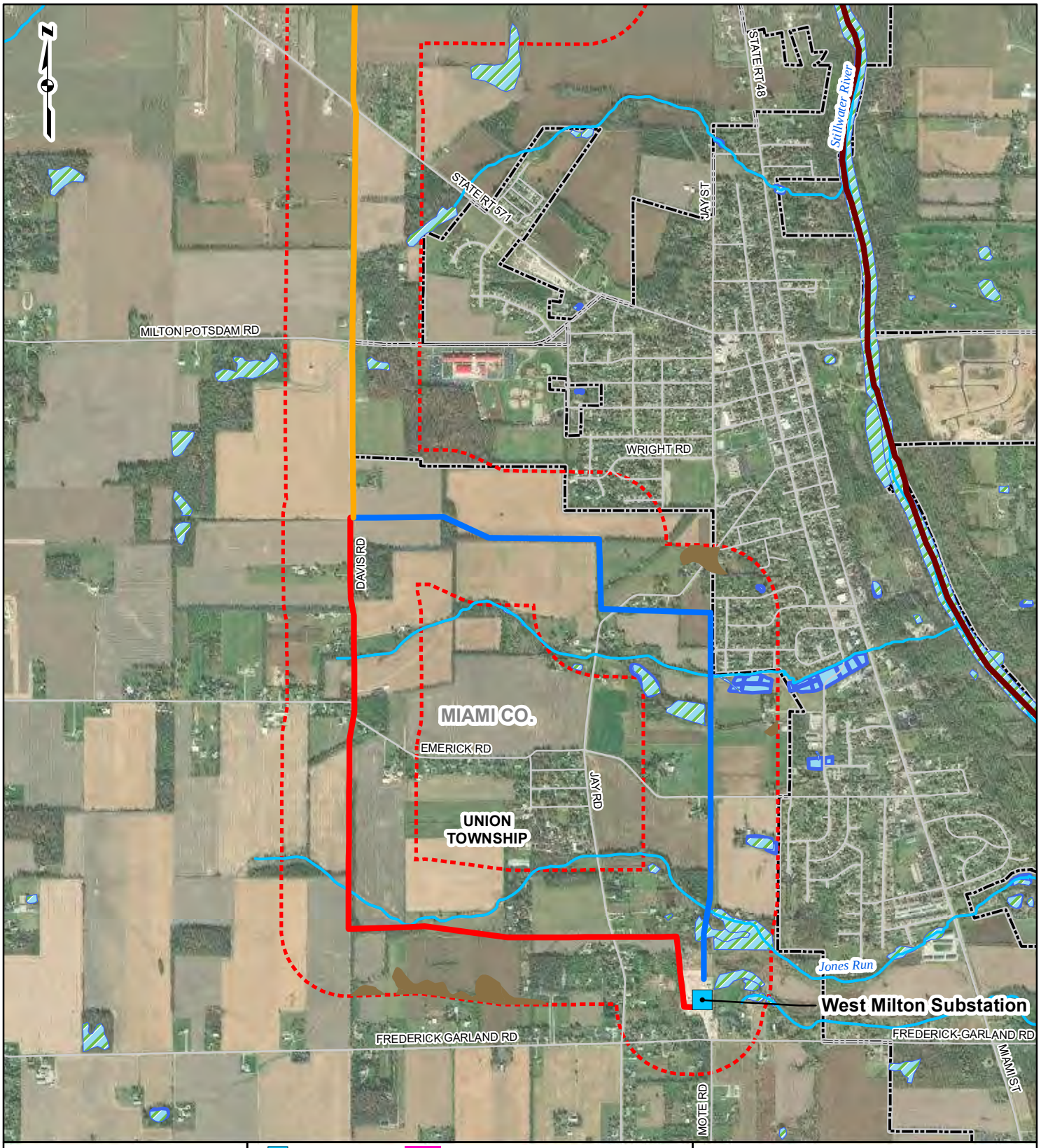
Text provided in the May 2019 Application filing remains unchanged.

(D) SITE GEOLOGY

Text provided in the May 2019 Application filing remains unchanged.

(E) ENVIRONMENTAL AND AVIATION REGULATION COMPLIANCE

Text provided in the May 2019 Application filing remains unchanged.



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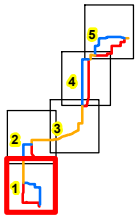

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
State Scenic River
Park
Nature Preserve
Slopes >12%
Highly-Erodible Soil
NHD Waterway
Road Centerline
NWI Wetland
NHD Waterbody
2000-Foot Corridor
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-1
ECOLOGICAL RESOURCES
SHEET 1 OF 5

WEST MILTON - ELDEAN 138 kV

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REFERENCE: ESRI WORLD IMAGERY, 2018, OBTAINED THROUGH ESRI WORLD IMAGERY, MICROSOFT CORPORATION, ACCESSED 8/2021; USFWS NWI, 2020; USGS NHD, 2020; USGS SSURGO SOILS, 2020; ODNR, 2015; MIAMI COUNTY, 2021; ODOT, 2018.

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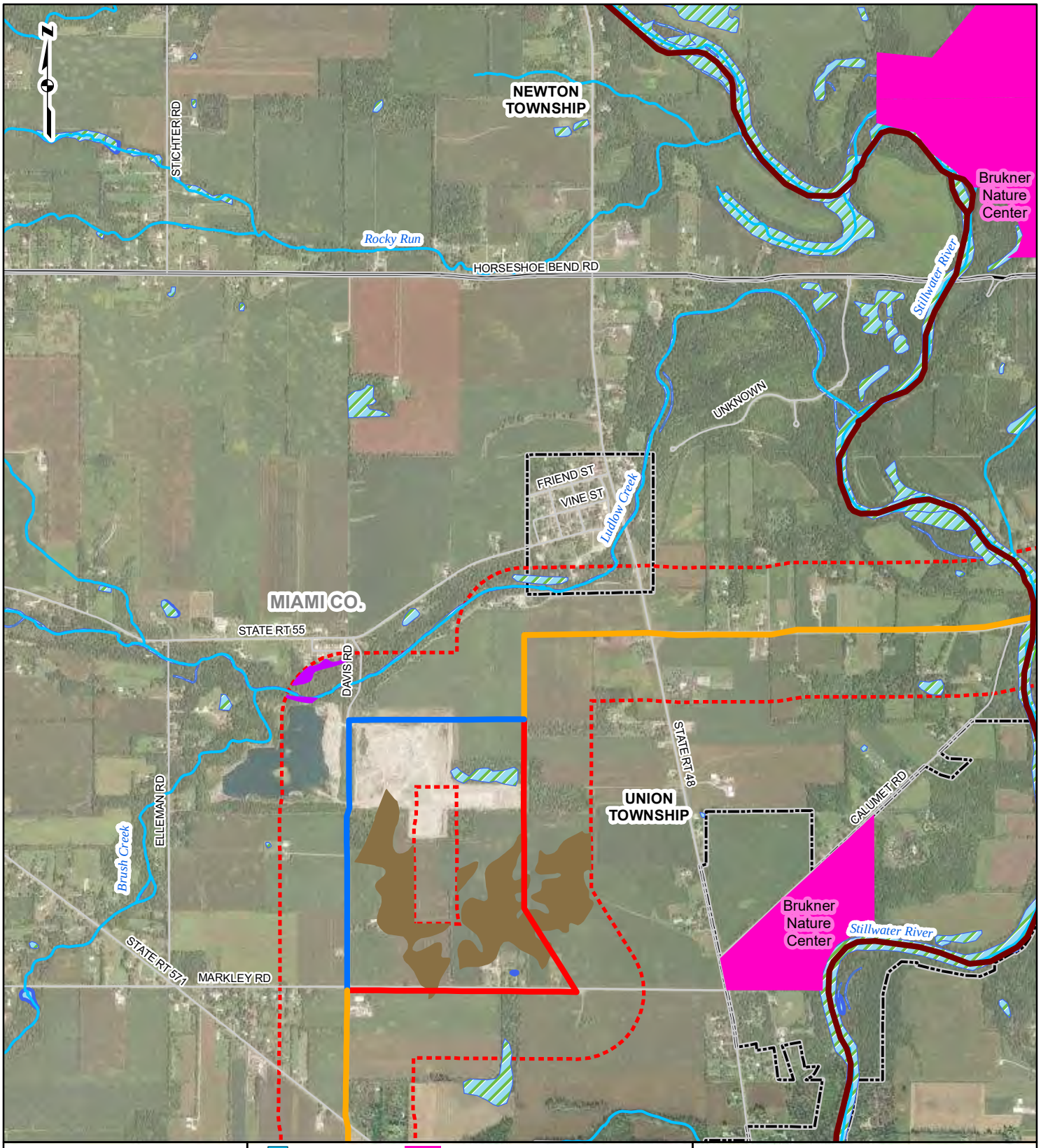

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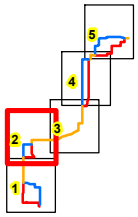

MIAMI COUNTY, OHIO

Substation
Preferred Route
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State Scenic River
Park
Nature Preserve
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Highly-Erodible Soil
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2000-Foot Corridor
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-1
ECOLOGICAL RESOURCES
SHEET 2 OF 5

WEST MILTON - ELDEAN 138 kV

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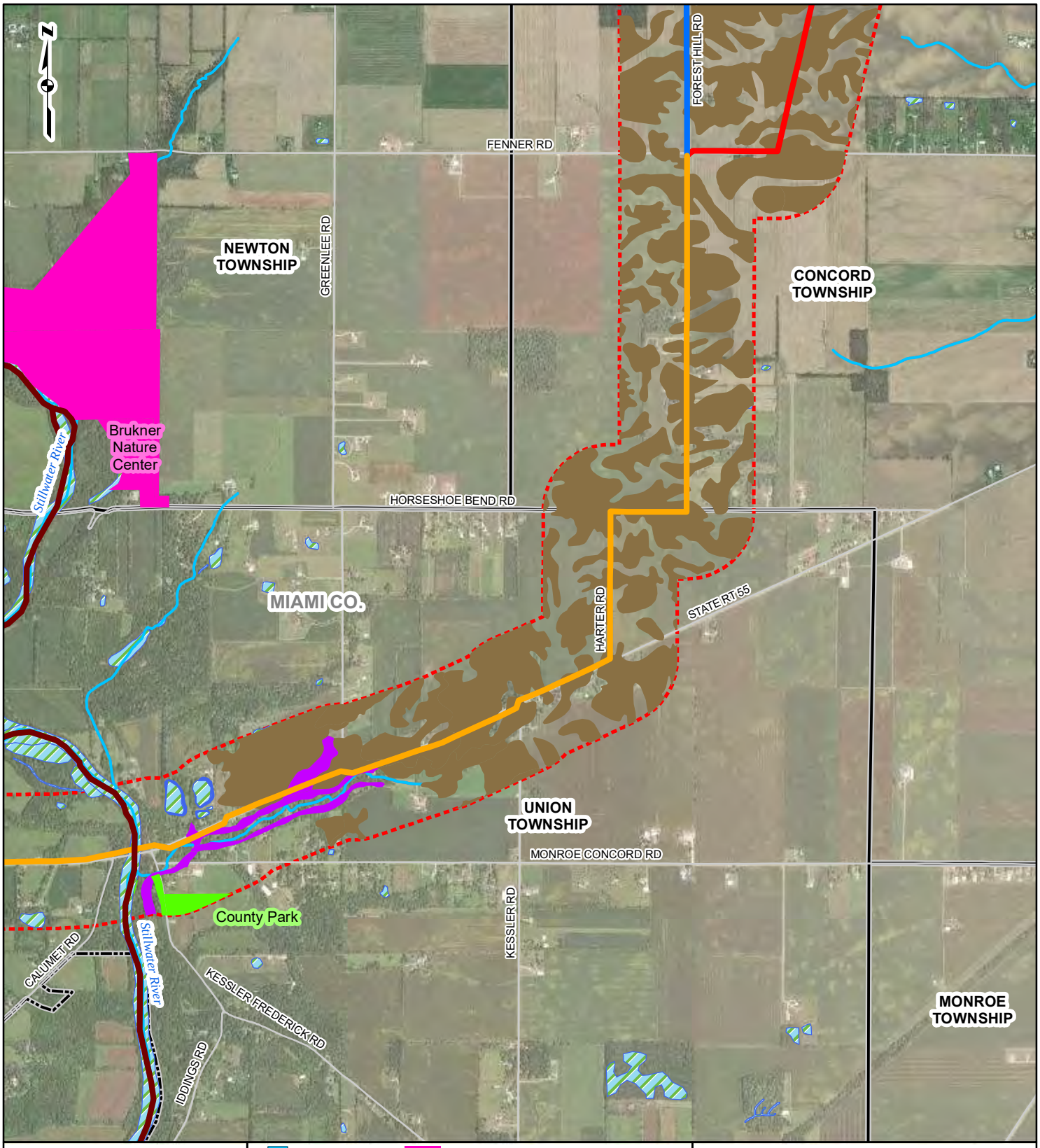

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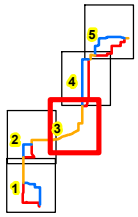

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
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State Scenic River
Park
Nature Preserve
Slopes >12%
Highly-Erodible Soil
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Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-1
ECOLOGICAL RESOURCES
SHEET 3 OF 5

WEST MILTON - ELDEAN 138 kV

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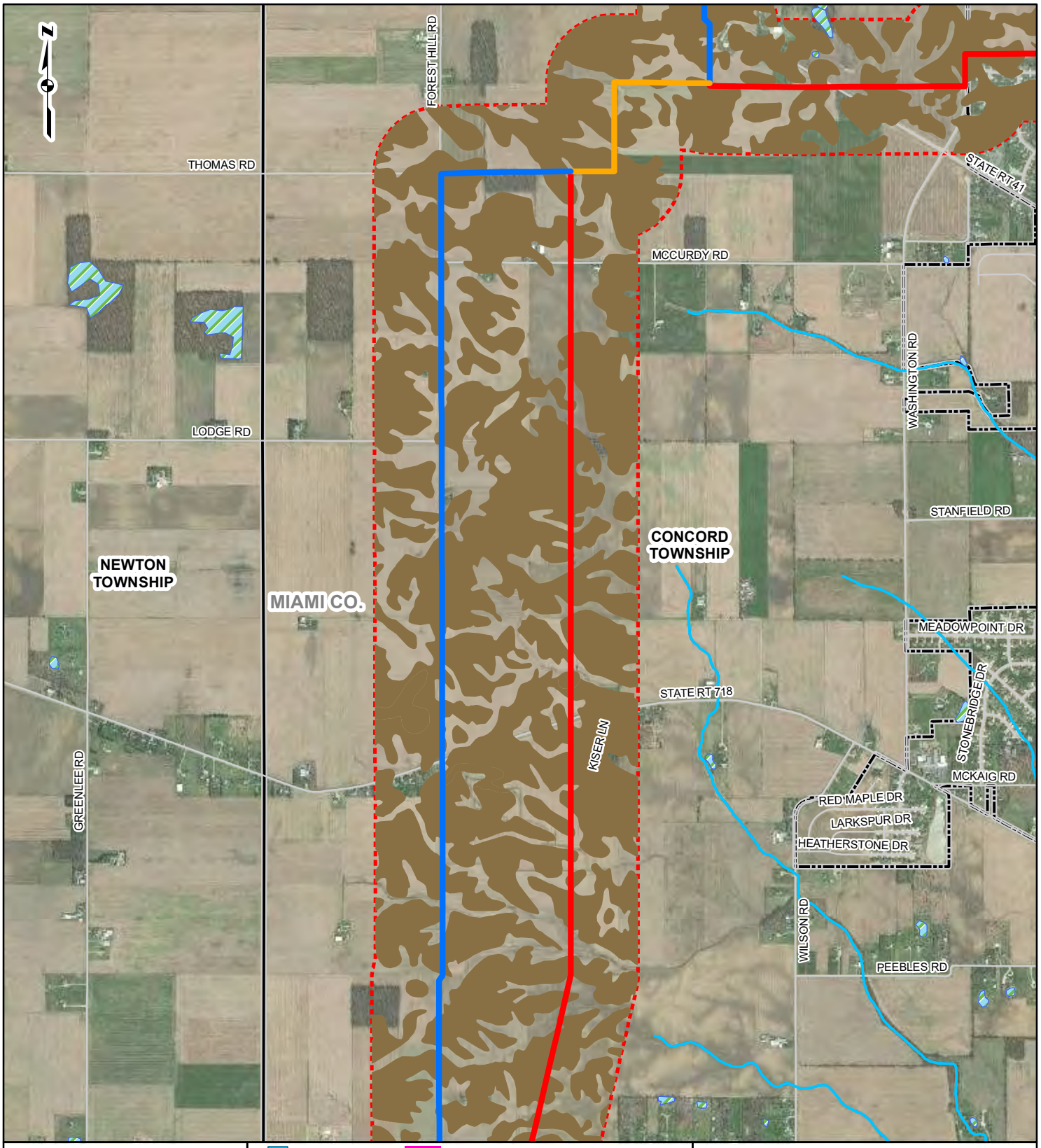

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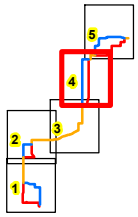

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
State Scenic River
Park
Nature Preserve
Slopes >12%
Highly-Erodible Soil
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Road Centerline
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NHD Waterbody
2000-Foot Corridor
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-1
ECOLOGICAL RESOURCES
SHEET 4 OF 5

WEST MILTON - ELDEAN 138 kV

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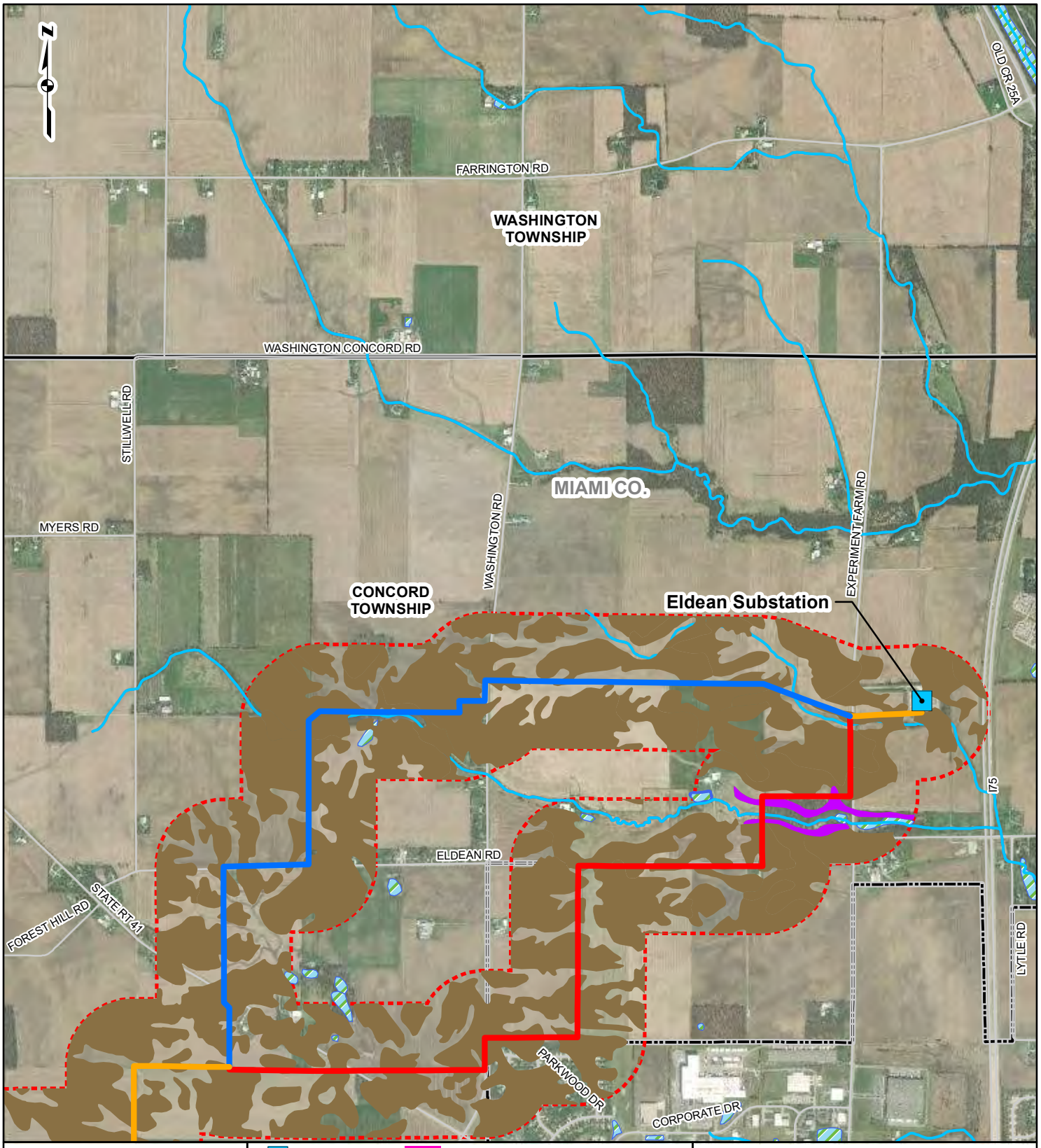

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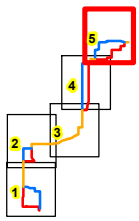

MIAMI COUNTY, OHIO

- Substation
- Preferred Route
- Common Route
- Alternate Route
- State Scenic River
- Park
- Nature Preserve
- Slopes >12%
- Highly-Erodible Soil
- NHD Waterway
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- NHD Waterbody
- 2000-Foot Corridor
- Municipal Boundary
- Township Boundary
- County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-1
ECOLOGICAL RESOURCES
SHEET 5 OF 5

WEST MILTON - ELDEAN 138 kV

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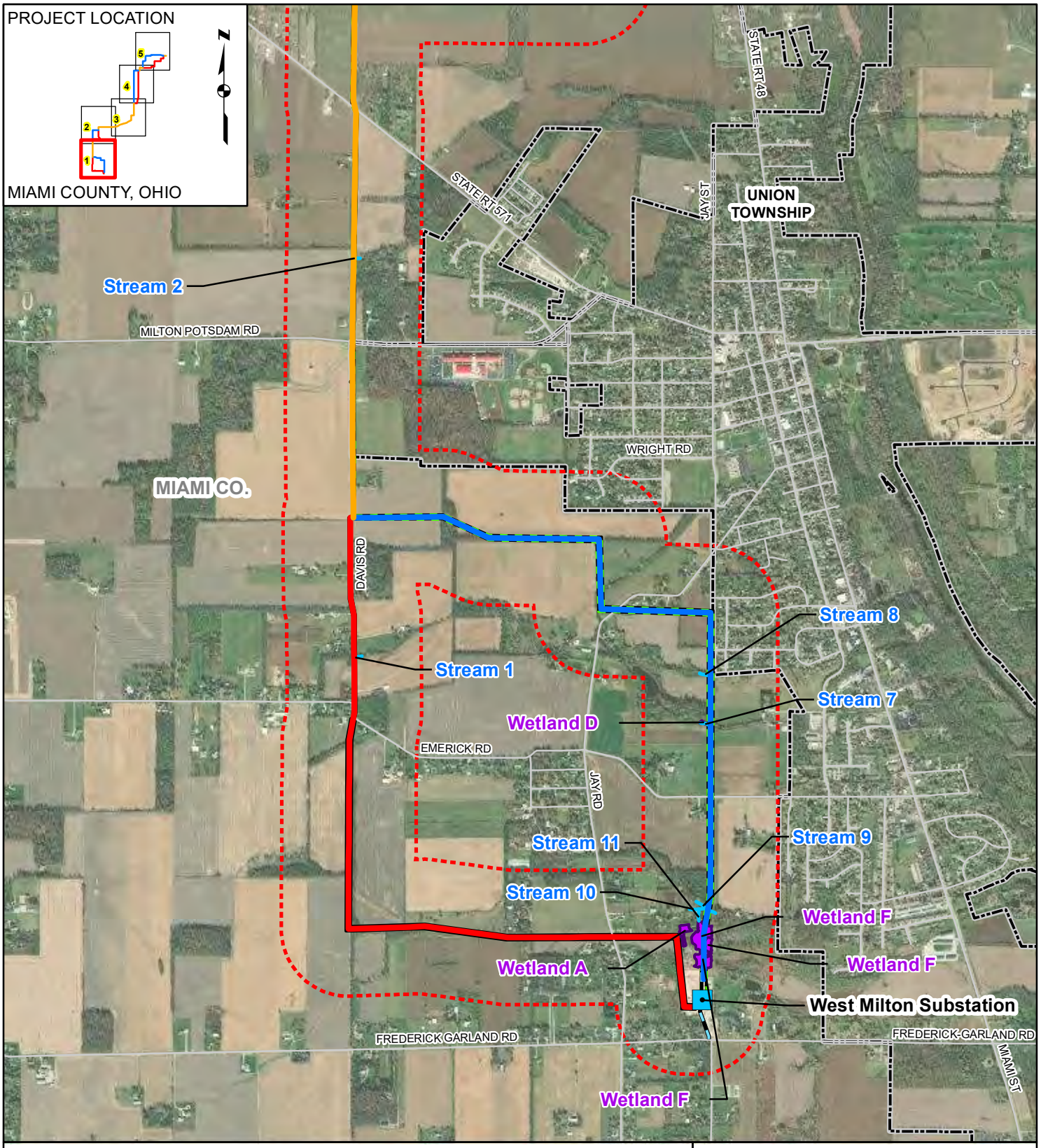

Substation
Preferred Route
Common Route
Alternate Route
Proposed Access Route
Delineated Stream
Delineated Wetland
Delineated Pond
Study Corridor
Road Centerline
2000-Foot Corridor
Right-of-Way
Municipal Boundary
Township Boundary
County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-2
DELINEATED AQUATIC RESOURCES
SHEET 1 OF 5

WEST MILTON - ELDEAN 138 kV

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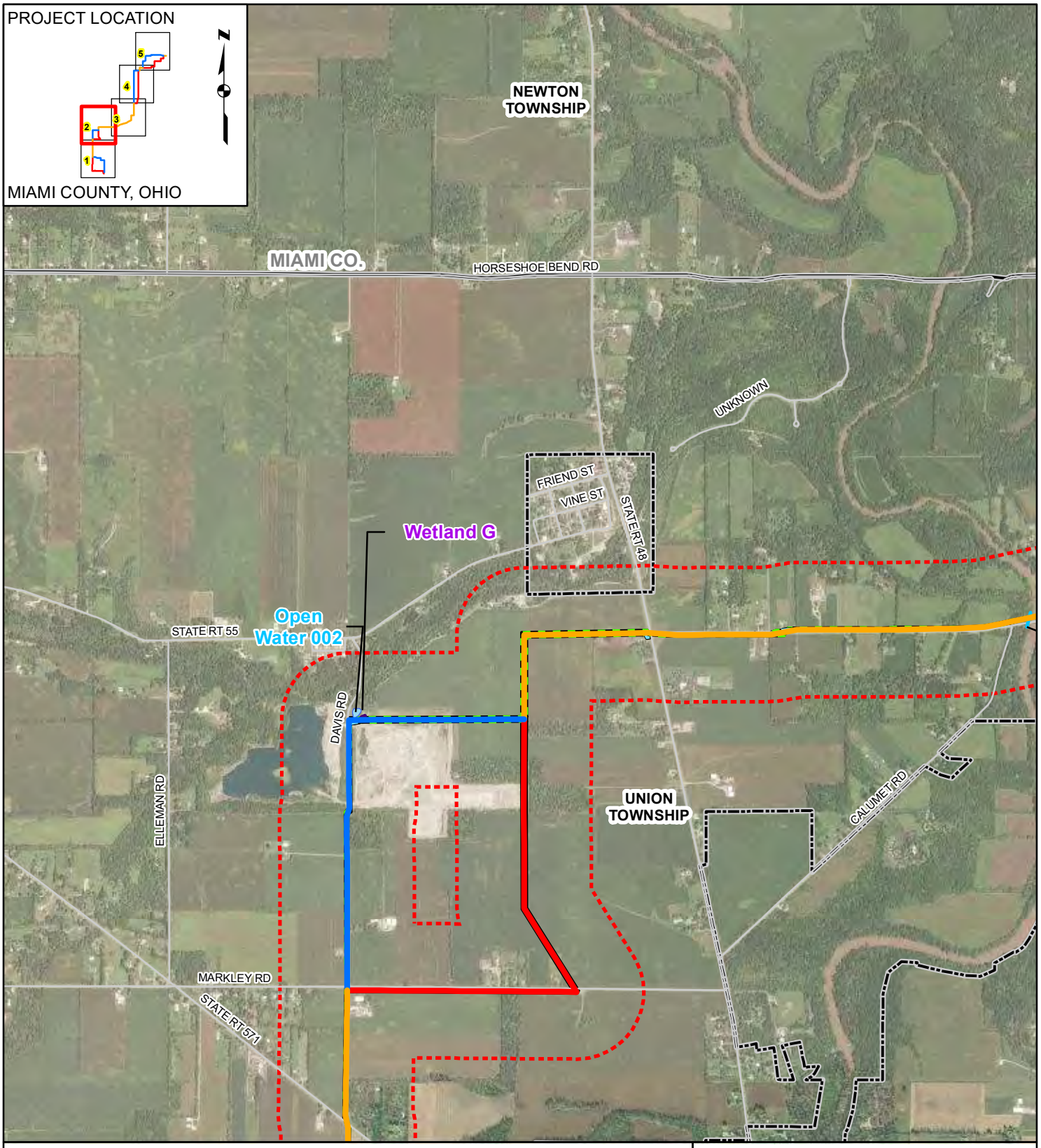

Substation
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Study Corridor
Road Centerline
2000-Foot Corridor
Right-of-Way
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County Boundary

0 1,000 2,000 4,000 Feet

FIGURE 8-2
DELINEATED AQUATIC RESOURCES
SHEET 2 OF 5

WEST MILTON - ELDEAN 138 kV

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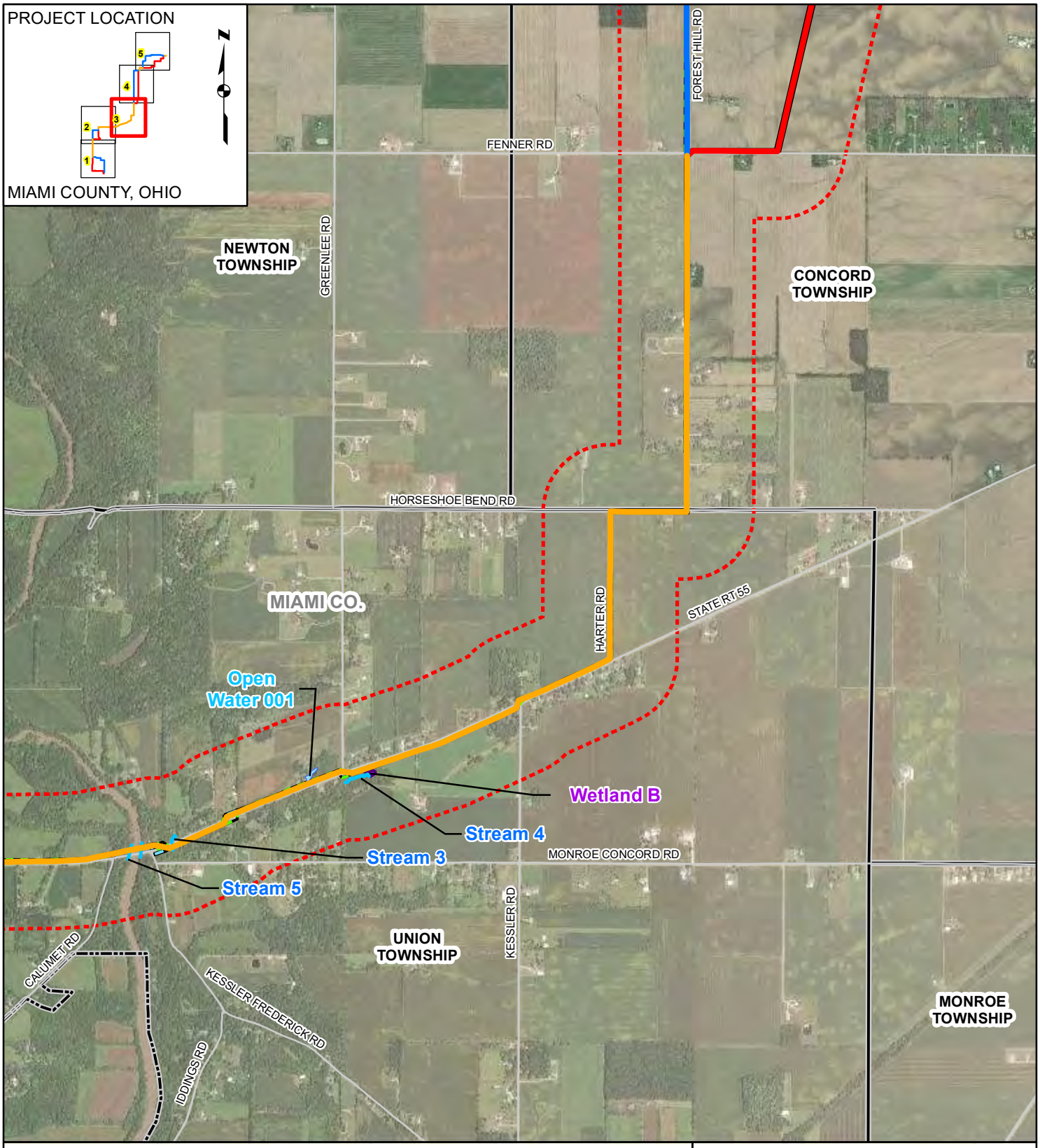

FIGURE 8-2
DELINEATED AQUATIC RESOURCES
SHEET 3 OF 5

WEST MILTON - ELDEAN 138 kV

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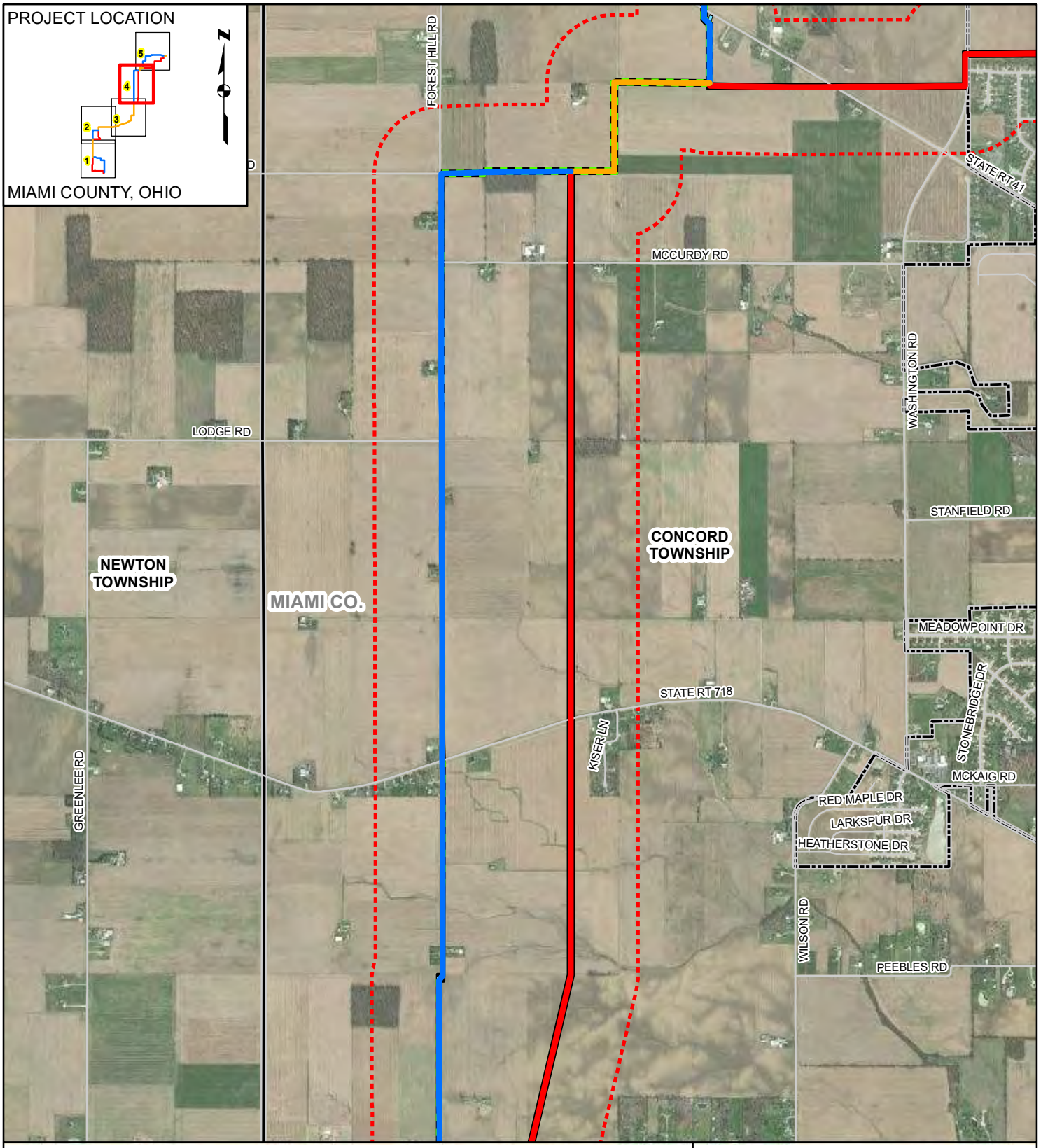

Substation
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Delineated Stream
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FIGURE 8-2
DELINEATED AQUATIC RESOURCES
SHEET 4 OF 5

WEST MILTON - ELDEAN 138 kV

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AES OHIO

aes Ohio

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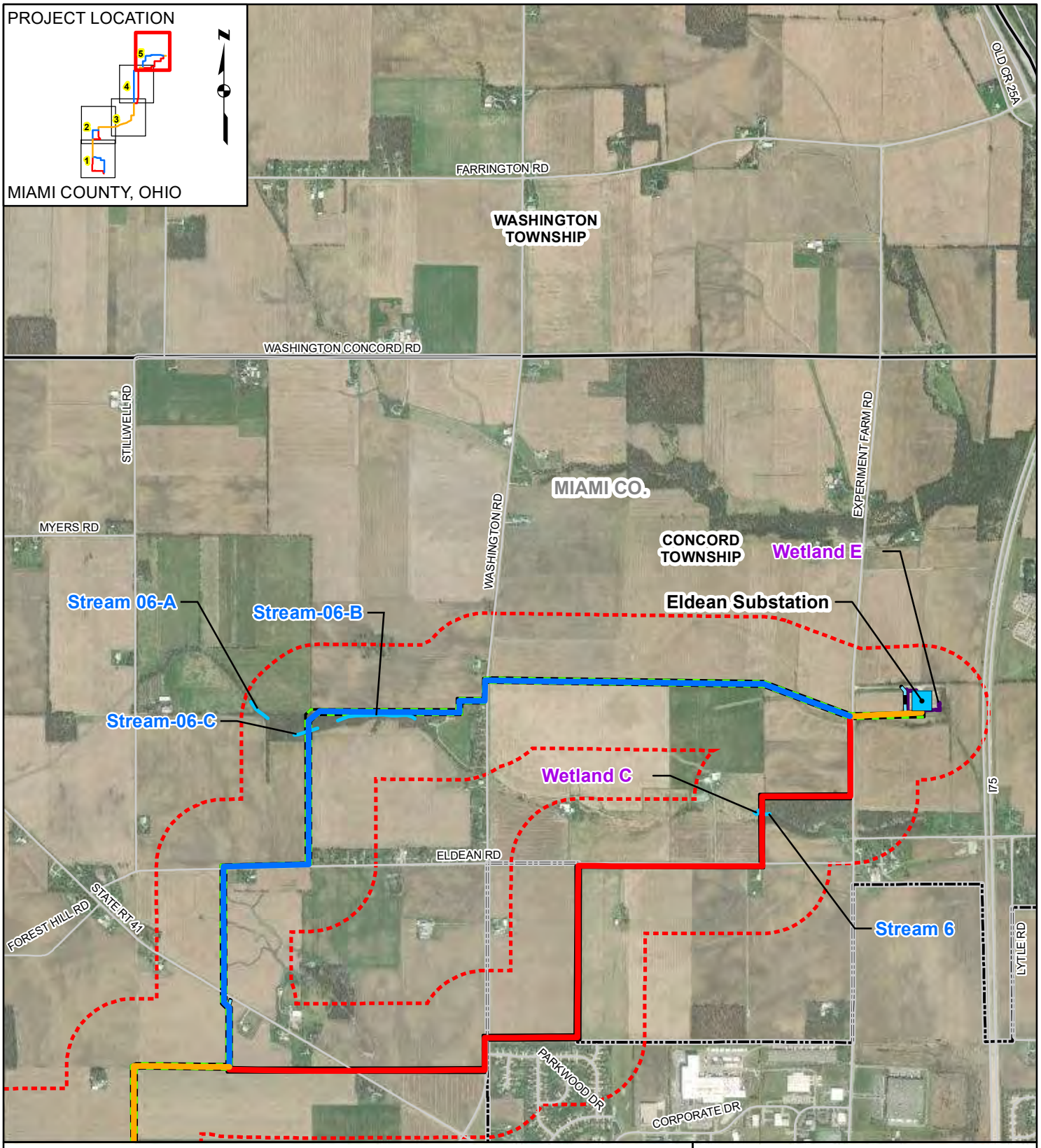

FIGURE 8-2
DELINEATED AQUATIC RESOURCES
SHEET 5 OF 5

WEST MILTON - ELDEAN 138 kV

AES OHIO

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APPENDIX 4-1

Route Selection Study

Route Selection Study

The Dayton Power and Light Company

West Milton to Eldean

138 kV Transmission Line Project

Miami County, Ohio

GAI Project Number: G121196.00

October 2015

Prepared for: The Dayton Power and Light Company
1900 Dryden Road
Dayton, Ohio 45439

Prepared By: GAI Consultants, Inc.
Cincinnati Office
1830 Airport Exchange Boulevard, Suite 220
Erlanger, Kentucky 41018

Table of Contents

1.0 Introduction and Purpose

The Dayton Power and Light Company (DP&L) is planning to construct a new 138 kV transmission line to improve the reliability of electric power in the northwest area of the DP&L transmission system. The West Milton to Eldean 138 kV Transmission Line Project (Project) area is located in the vicinity of West Milton, Ohio, west of the city of Troy in Miami County (Townships of Union and Concord), as illustrate din Figure 1 below. The new transmission line will be constructed to connect the West Milton Substation and the Eldean Substation which are 11 miles apart based on a straight linear path.

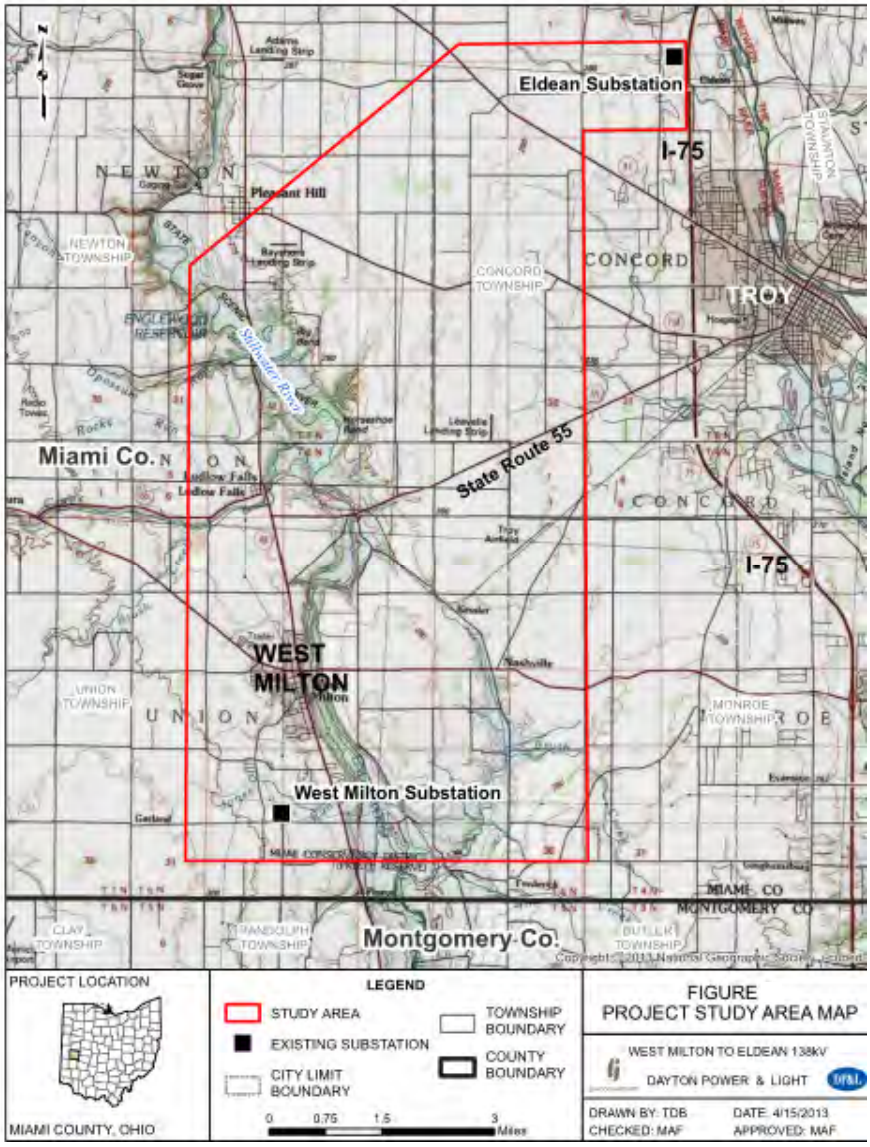

Figure 1
Project Overview Map and Study Area

The proposed new 138 kV circuit will ensure that adequate transmission system voltages are maintained in the northwest area of the DP&L transmission system under various outage conditions, as required to comply with the mandatory North American Electric Reliability Corporation (NERC) reliability standards. A recent contingency analysis conducted by Regional Transmission Expansion Planning indicated that, under a multiple contingency condition for two DP&L circuits in the area, voltages would be below the minimum acceptable level at eight transmission buses according to Pennsylvania, New Jersey, Maryland Interconnection (PJM) reliability criteria. This multiple contingency would effectively leave the northwest area of the DP&L transmission system without a 138 kV source. The proposed new 138 kV circuit will mitigate this situation and ensure compliance with the mandatory NERC reliability standards.

This purpose and overall objective of this Route Selection Study is to assist in determining the best transmission line route alternatives that avoid or minimize adverse environmental and social impacts to the extent practical, considering technical and economic feasibility. The Route Selection Study involved the acquisition and evaluation of environmental, land use, cultural and engineering data to develop several route segments that could be combined to create various route alternatives for comparative analysis and ultimate ranking to meet the above objective. The study will result in the selection of preferred and alternate routes to advance into application development. The siting criteria employed for establishing route segments and complete route alternatives were as follows:

- avoidance or minimization with existing and proposed future land uses (e.g., by utilizing existing transmission line or road corridors where possible);
- avoidance or minimization of effects on human, natural, visual, and cultural resources;
- avoid or minimize visibility from densely populated areas;
- minimize impacts to construction and maintenance costs by selecting shorter, more direct routes;
- locate routes through terrain where economical construction and mitigation techniques can be employed; and
- consistency with DP&L's transmission needs, schedule, regulatory agency directives, and environmental regulations.

Construction of a 138 kV transmission line of this length requires that DP&L prepare and submit and Application for a Certificate of Environmental Compatibility and Public Need to the Ohio Power Siting Board (OPSB). To that end, this route selection study serves as the first component to fulfill the application development process, and ultimately gaining regulatory approval to construct the line.

2.0 Route Selection Methodology

GAI Consultants, Inc. (GAI) and DP&L assembled a team of environmental scientists, design engineers, geographic information specialists, and a cultural resource specialist to conduct this route selection study. The methodology of the study is designed to identify transmission line route alternatives that minimize the overall effects on ecology, sensitive land uses, and cultural resources to the greatest extent practical while maintaining economic and engineering or technical feasibility. GAI utilized techniques adapted from the methods reported by Electric Power Research Institute (EPRI) and Georgia Transmission Corporation (GTC) (2009). The study process relies on detailed land use, ecological and cultural resource data from many public sources and other providers which is confirmed to the extent possible and supplemented through field observations. This process results in a comprehensive assessment of the study area and the candidate route alternatives that is presented in this report. The data and analysis process presented herein also allows comparison of additional route alternatives or modifications in response to public input or regulatory agency reviews.

2.1 Defining the Study Area

The first step in the siting process involved the identification of a study area encompassing the Milton and Eldean Substations and intervening areas. The 53-square mile study area, measuring 10.7 miles (north-south) by 7.3 miles (east-west) based on the longest sides of the study area, generally encompasses the town of West Milton, a portion of the Stillwater River watershed area, sparsely populated communities to the south, and largely rural land to the north. The study area is situated west of the city of Troy, Ohio, outside of the city boundaries and is shown in Figure 3.1, Project Location Map and Figure 3.2, Project Study Area, both of which follow the text of this report.

The boundaries of the study area were determined based on a review of United States Geological Survey (USGS) maps and aerial photography. Significant siting features such as urban or densely populated areas, water bodies, large forested and riparian areas, utility corridors, and transportation routes, and the fixed terminus points of the proposed transmission line were principally used to define the boundaries for the study. The eastern study boundary was generally positioned to avoid the western developed suburban areas of Troy, Ohio while capturing the rural lands for possible route corridors. The western study area limit was established just west of the DP&L's 69 kV transmission line (oriented north-south) in order to evaluate co-location or paralleling of this transmission corridor.

The selected study area offers the flexibility to consider a wide range of route corridors and route segments while maintaining reasonable distances of route alternatives to connect the Milton and Eldean Substations. Furthermore, the east to west breadth of the study area allows for route options that would cross the Stillwater River at a variety points north to south.

2.2 Siting Attributes and Constraints

The key objective of the Route Selection Study is to systematically determine the most viable routes for construction of the transmission line while avoiding or minimizing effects on ecological features, sensitive lands, densely populated areas, and cultural sites while maximizing the economical feasibility and the construction practicability. GAI and DP&L defined a variety of siting attributes and siting constraints. Attributes are generally features or factors that are favorable or desirable (e.g., shorter route lengths, paralleling utility corridors, minimizing turn angles, etc.) for construction and operation of a transmission line. Siting constraints are generally those features or factors that are undesirable, to be minimized or avoided to the extent practical, in proximity to a transmission line. The attributes and constraints utilized for the study area are summarized in Table 3-1.

Table 3-1
Quantitative Route Scoring Criteria

Siting Attributes and Constraints[1]	Score Weighting
Ecology	
Number of Perennial Streams Crossed	30%
Wetlands Crossed, acres in ROW (National Wetland Inventory data)	
Forests Lands Crossed, acres to be cleared	
Threatened and Endangered Species Sitings/Listings, within 1,000 feet	
Land Use	
Residences, # within 100 feet of centerline (accounts for 70% within subcategory "Residences")	30%
Residences, # within 100 to 1000 feet (accounts for 30% within subcategory "Residences")	
Number of Properties Crossed	
Institutional Uses, number within 1,000 feet (schools, hospitals, churches)	
State Scenic River Area, feet crossed in undeveloped zones ("area" includes 1000 feet adjacent to river)[2]	
Other Sensitive Areas Crossed (parks, preserves, trails, agency-managed areas, golf courses, public-use airports or airstrips), linear feet (70% within "sensitive areas" category)	
Number of Other Sensitive Areas within 1,000 feet (parks, preserves, trails, agency-managed areas, golf courses, public-use airports or airstrips) (30% within "sensitive areas" category)	
Cultural	
National Register of Historic Places listed sites or structures, within 1,000 feet	10%
Ohio Historic Structure/Sites Inventory, # within 1,000 feet	
Known Archaeological Sites, # within 100 feet	
Cemeteries, # within 100 feet	
Engineering	
Route Length, feet	30%
Paralleling Existing ROW (utility or road), linear feet	
Number of Highway, Road, or Railroad Crossings	
Length of Route with Slope >20%, feet	
Number of Turn Angles >10 degrees	

Notes:

1. Where applicable, right-of-way (ROW) required to be cleared or disturbed is assumed to be 75 feet, or 37.5 feet if parallel to road ROW or existing transmission line ROW.
2. "Undeveloped zones" are defined as areas without residences or other structures, or where agricultural land is in use.

Following establishment of the study area, GAI utilized aerial photography from the Ohio State Imagery Program (Miami County, 2011), USGS topographic mapping, and published data to compile an attributes and constraints map based on geographic information system (GIS) software programs. This mapping was primarily utilized to identify major siting features, avoidance areas, and socioeconomic attributes and constraints.

2.3 Selection of Candidate Route Alternatives

After defining the limits of the study area, various geographical data and aerial imagery (2012) were assembled and organized using a GIS program to produce maps consisting of readily available data sources (locations of rivers and streams, National Wetland Inventory data, floodplains, forests, scenic or public preservation areas, regulatory-protected species, residences, airports, churches, cemeteries, cultural resource and historic sites, public-use areas such as golf courses, etc.). The geographical area between the two substations can generally be described as three subareas, 1) the vicinity of West Milton, its suburbs, and the Stillwater River corridor, 2) middle area consisting of hamlets of Kessler and Nashville south of State Route 55 and sparse groupings of residences and agricultural fields, and 3) the northern subarea that is largely used for agricultural crops with sparse farm residences, small groupings of residences, and the western residential developments of Troy.

DP&L's guidelines in commissioning this study included evaluating both road or existing transmission line ROW corridors and "cross-country" corridors (largely agricultural fields), where land use may be suitable, for potential siting of a transmission line in terms of construction, operation and maintenance. For possible "cross-country" routes, following property lines was preferred over diagonal crossing when practical. GAI and DP&L selected some avoidance areas based on land use, relatively dense residential areas, and preserved natural areas (mainly the Stillwater River vicinity) to be considered for avoidance or minimization while identifying possible route corridors. Route alternative corridors crossing the Stillwater River, a State Scenic River, were chosen to coincide with bridges or existing aerial electric line (distribution or transmission lines) crossing points. A windshield survey was conducted on several occasions from February 2012 to May 2014 to view the general study area for potential corridors as well as constraints or avoidance areas as defined above that may not be apparent based solely on GIS data and mapping sources. GAI also consulted with the Ohio Department of Natural Resources to obtain location data for protected species for consideration in siting the route corridors.

All of the route segments utilized to form the various route alternatives that were devised for analysis and scoring are depicted in Figure 3.3 which is located at the end of the report text. There were four potential route corridors selected in the immediate vicinity of the West Milton Substation, which begin with connection to the substation itself. Three of the four corridors follow existing DP&L-owned transmission lines including various voltages (69 kV, 138 kV, and 345 kV). The fourth corridor follows a road ROW (Frederick Garland Road) toward the east. In general, four largely unique route corridors were identified which span from the southern study area limit to the north section of the study area. These corridors were selected to provide a full range of options for analysis, including paralleling of road ROW, and crossing through agricultural lands aligning with property boundaries to the extent practical. In addition, one corridor was established from south to north on the west side of West Milton, due to the presence of schools and existing area development. This corridor diverges toward the north (north of Ludlow Falls community) to offer two additional route candidate corridors to cross the Stillwater River.

In the north and northwest portion of the study area approaching Eldean Substation, several route candidates (approximately five general corridors with additional segments for optional routing between the five primary corridors) were developed and analyzed. These route alternatives offered a combination of agricultural land and road ROW for comparative analysis. All route segments were assigned a node for each end of the segment (letter A through JJ during the first study phase) as a system to track and identify route segments.

2.4 Route Scoring Process

After all potential route segments were created, segment combinations were then assembled to create individual route alternatives to span between the two substations. All possible segment combinations were assigned a route identification number. Segment combinations that would require backtracking, thus increasing distance and potential effects, were not considered. During the initial scoring process, a total of 105 route alternatives were analyzed and scored through a comparative analysis process. As described below the number of route alternatives evaluated and scored was increased to 110 for the supplemental (second) scoring process following several route adjustments and newly identified route segments.

Relative Scaling of Attribute Data: In order to compare attribute measurements on a relative scale and to obtain a score that could be compared across the different alternatives, each summed data result for each attribute for a particular route alternative was normalized, or mathematically proportioned, to a scale of one to 100. The normalized values for each attribute/constraint, the total normalized score for each route alternative, and the overall rank of the route alternatives after applying weighting factors was then calculated. In this procedure the alternative with the highest value (less favorable result) for individual attributes receives a relative score of 100; that with the lowest value (more favorable result) receives a relative score of 0. (Note: If all alternatives have an impact value of zero for a specific attribute criterion, then the weighted value is set to zero). Note that the value system for the attribute of paralleling existing ROW (distance) is converse of that described above. Thus, the attribute values are transformed to a relative scale from one to 100 to obtain relative scores for each attribute criterion that was considered in the analysis and scoring. Using the relative score position, or rank, of the alternative in comparison to the values for all alternatives provided an indication of how a particular alternative compares overall. The normalized attribute scores within each category (ecological, land use, engineering, cultural resources) were then averaged for each route alternative, then all category scores were summed to determine the overall route score. The formula used for normalizing the data to achieve a relative scale is as follows, as based on a methodology suggested by EPRI/GTC (2009) and Gaige, et al. (1991):

*Normalized score value = (x – minimum value) / range] * 100, where x = actual attribute value*

Weighting of Attributes and Constraints: The weighting factors applied to individual attributes for route selection study were based on the Project planning team's (DP&L and GAI staff) professional judgment based on Project objectives and previous route study experience on similar projects. Certain attributes and constraints have more impact on the ecological features, humans and their activities, socioeconomic features, the engineering design specifications and construction implementation processes relative to other attributes. Based on these premises, the Project planning team developed the following weighting values for each attribute category: Ecological (30%), Land Use (30%), Cultural Resources (10%), and Engineering/Construction (30%).

3.0 Route Evaluation and Ranking Results

3.1 Initial Route Scoring Results and Rankings

Table 3-2 summarizes the criteria category scores, with weighting values applied, and the overall relative ranking of all route alternatives for the initial route scoring process for 105 route alternatives. The total route scores ranged from 1,838 to 4,425 out of a possible range from zero to 10,000. The weighting values were applied by multiplying the normalized score by the actual percent weighting value (rather than dividing the percent value by 100) in order to arrive at overall route scores expressed in the "thousands" for ease of comparison (versus decimal values). Based on the route scoring system and process, a lower overall score indicates a more favorable route alternative and conversely a higher score indicates a more inferior route alternative given the variety of attributes that were measured.

The results of the initial scoring process indicated that the 12 highest ranked routes (Routes 103, 132, 131, 104, 133, 113, 107, 115, 106, 105, 114, and 119) all utilize the same western route segments from the West Milton Substation (with the exception of the H'-LL-J' segment), and follow the same route to roughly reach halfway toward the Eldean Substation in the vicinity of nodes M, N, and O on State Route 55. This western route (segments A-H-H') consists of both cross-country and road ROW route portions and crosses the Stillwater River along the State Route 55 bridge and ROW where an overhead distribution line exists. The A-H-H'-J'-J-M combination is favored, based on the overall scores and the fact that it is common to 12 of the top 15 route scores, in comparison to other route alternatives exiting the West Milton Substation to the north and east.

From the vicinity of nodes M, N, and O, the top 15 route alternatives diverge on five different route paths to reach the northern section of the study area. Four of the top nine route alternatives utilize the N-O-P-BB route segment combination, including the top three scoring routes, for traversing the central portion of the study area which mostly consists of agricultural land. Five of the top 15 scoring routes include paralleling portions of Forest Hill Road (segments N-O-R and N-O-R-W). Four of the top 15 routes parallel Greenlee Road (segments M-S-V-X) to reach the north section of the study area.

For the northern portion of the study area, 11 of the top 15 ranked route alternatives utilize the GG-HH-II-JJ segments to reach the Eldean Substation terminus. However, other route segment combinations in the Eldean Road vicinity (e.g., segment DD-EE-EE') scored high as well. These various segments consist of both road ROW and cross-country (agricultural land) routes.

New route segments were added on Markley Road starting at node H' and extending to new node LL, then turning north alongside DP&L's existing 69 kV circuit and ROW. The additional route offers a second alternative for reaching node J', and attempts to achieve a route alternative having less in common with the other route to node J'.

Initially, the segments A-B-C-G-N and A-D-G-N (refer to Figure 3.5) were devised as a route corridor option existing the West Milton Substation toward the east across the Stillwater River then heading north for a more direct access to the center of the study area to the north. Although this route corridor would pass by the privately owned Wagner air/landing strip (a single grass turf runway), the corridor was evaluated early in the Route Selection Study (RSS) to determine if the routes in this corridor would score relatively high. The routes were evaluated due to the air strip's unknown status (active or no longer operational) and potential availability for purchase. While some routes in this corridor scored moderately high, DP&L decided to remove this corridor from further consideration due to the logistical issues of the route proximity to the private Wagner air strip. For the same reasons (although all routes would run parallel with the air strip), the route segment (P-BB) near the Leavelle air strip (private, turf single runway) was abandoned due to the potential logistics and unknown status as to its current operational status.

Based on the initial scoring results, DP&L staff reviewed several of the top ranked routes for qualitative aspects that were not necessarily fully considered in the route analysis and scoring process. The section of State Route 55 used for the majority of the top ranked routes (segments J-M-N-O) is heavily traveled and presents challenges for transmission line construction due to the heavier traffic, shared ROW with highway maintenance operations, and other overhead utilities adjacent to the highway. Most notably, the existing communication cables near State Route 55 presents a potential set back issue (further from road edge) as transfer of such cables to DP&L's proposed future pole structures is not guaranteed. Additionally, it was DP&L's preference to minimize the number of residential parcels crossed by or adjacent to the proposed route. DP&L concluded that Route 120 and 128 as the most viable and feasible two routes to be presented to the public for soliciting input.

Route 120 (A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-GG-HH-II-JJ) was ranked 14 overall. Route 128 was selected as one of the highest ranked route alternatives having the lowest percentage of route in common with Route 120 at 28%. The commonality of this route with the Preferred Route exceeds the

OPSB rule, Administrative Rule 4906-05-04(A), that states: "Two routes shall be considered as alternatives if not more than 20% of the routes are in common". However, it is within the acceptable range for a variance request from the OPSB given the study area (which was ultimately granted). Route 128 consists of the following segments: A-H-H'-LL-J'-J-M-N-O-R-P'-BB-AA-EE-EE'-KK-II-JJ. Although this route presents the logistical challenges noted above for segments J-M-N-O, it was considered a viable route that is constructible and capable of meeting transmission operational needs. The two routes are depicted below in Figure 2.

3.2 Public Input and Supplemental Route Development

DP&L held the first public meeting on March 25, 2014 to present Route 120 (displayed as the blue/orange route in Figure 2) and Route 128 (red/orange route) to residents and stakeholders interested in the Project. The public meetings, which are required by OPSB rules, are intended to inform the public of DP&L's route alternatives being considered for an application to the OPSB and to allow the public to make inquires about the route selection process and to make comments and suggestions on the two route alternatives. Public input was received during the meeting, including both verbal and written comments, as well as residents' comments received subsequent to the meeting through direct communication to DP&L staff and filing letters with the OPSB.

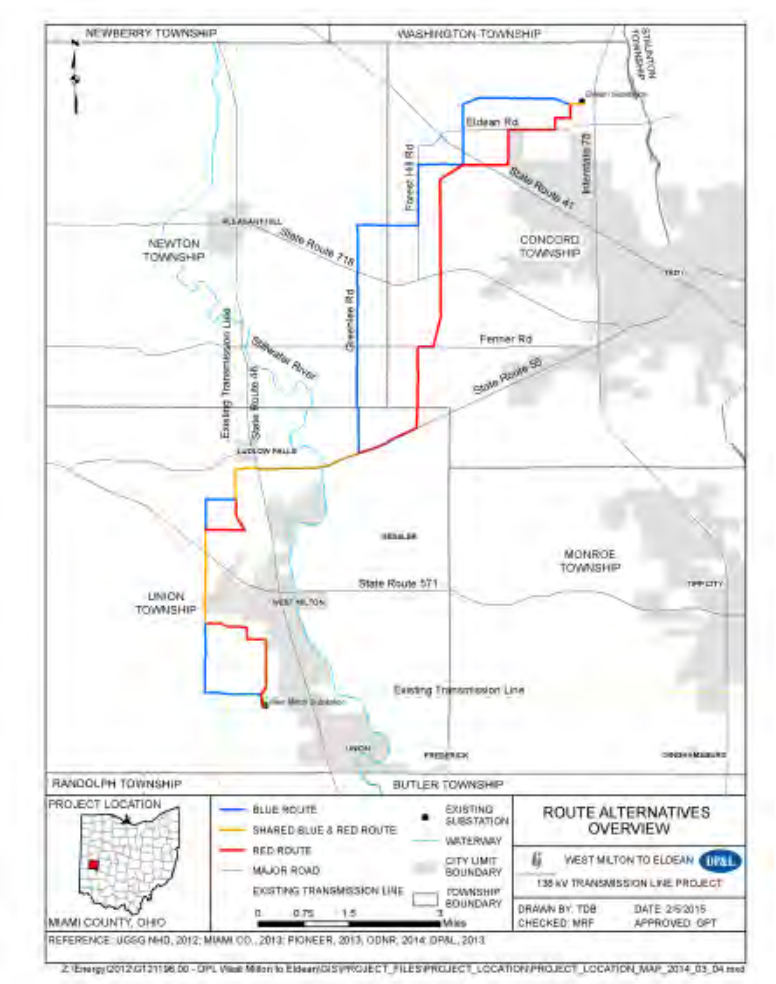

Figure 2
Route Alternatives for Public Input – March 2014 Meeting

The vast majority of comments (87%) generated from the public meeting were offered by residents of Greenlee Road which is the primary north-south road corridor that comprises 3.8 miles of Route 120 (blue/orange route). Additionally, Greenlee Road residents submitted several comment letters to the OPSB including a signed petition in opposition to the Greenlee Road portion of Route 120. The comments primarily concerned 1) the effect on landscape aesthetics, in particular where no overhead utilty lines currently exist, and the viewshed toward and from land owned by the Brukner Nature Center, 2) the potential and/or perceived adverse effect on a farm on Greenlee Road considered to be of historical significance (a "Bicentennial Farm" as designated by the Ohio Department of Agriculture), and 3) lower property values as a result of a transmission line along road frontage, among other documented concerns. A few comments were also received from residents or landowners crossed by Route 128 (red/orange route) expressing concerns and opposition to this route due to various effects on their property including its impacts to crop cultivation.

Following DP&L's consideration and review of all public comments received during and after the March 25, 2014 public meeting, several new route segment alternatives were developed for evaluation in the vicinity of the southern Forest Hill Road vicinity, in lieu of the Greenlee Road option.

To avoid new route segments that would parallel Forest Hill Road along a number of residential lots, routes were devised to cross agricultural fields and align with property boundaries where feasible. Refer to Figure 3, Revised Route Alternatives Based on Public Input (March 2014). Starting at a new node NN on State Route 55, one new route segment heads north along Harter Road then continues for one mile through agricultural fields until Fenner Road is reached, then turns to the east to re-join the existing route segment on Forest Hill Road where residential lots are relatively sparse.

Additionally, new route segments were added at node OO to provide options for more length through agricultural fields, further to the north, following the Concord and Newton Township boundary (north-south). Several complete route alternatives (from substation to substation) were assembled using the supplemental route segments in the southern Forest Hill Road vicinity. The new routes were then analyzed, scored, and ranked against all previous route alternatives as describe in the next section.

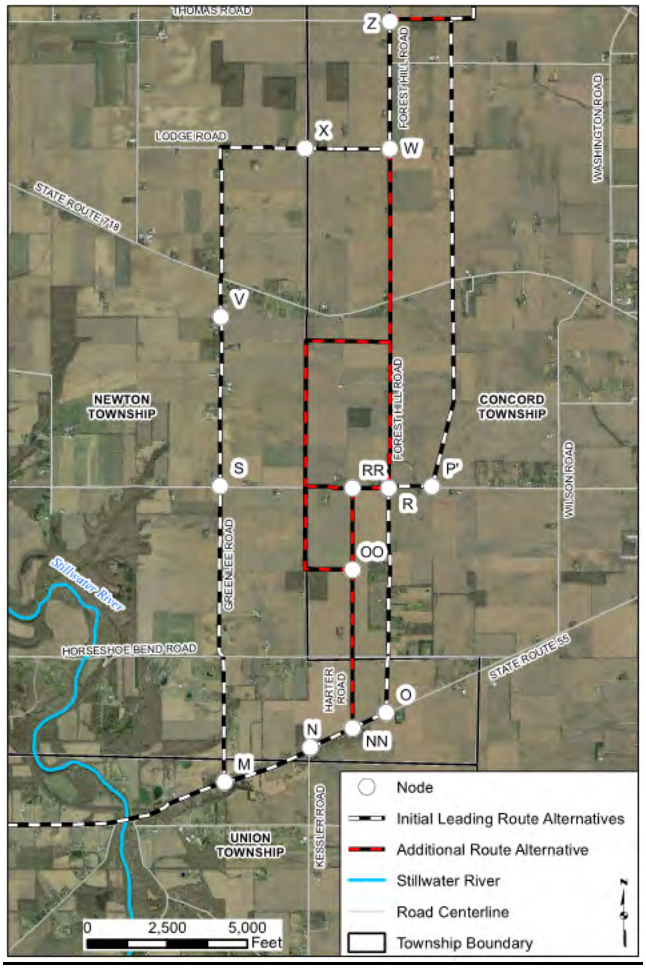

Figure 3
Revised Route Alternatives Based on Public Input (March 2014)

3.3 Supplemental Route Alternatives Analysis and Ranking

As a result of developing the above-mentioned supplemental route segments, after considering input received from the March 25th public meeting, the analysis and route scoring process described in Section 2.4 was performed. The purpose was to produce a relative comparison of all of the route alternatives including the new supplemental route segments used to form several new route alternatives. A total of 110 route alternatives were analyzed and processed with resulting scores ranging from 2,114 (best scoring alternative) to 4,587.

Table 3-3 summarizes the scoring results of the 110 route alternatives including the attribute category rankings for each route. The top 10 route alternatives consisted of three unique route segments in the central portion of the RSS study area, which indicates that the three different route segments are comparatively close in scoring. The central part of the study area is generally the south end of the Forest Hill Road, State Route 55, and vicinity, which is where supplemental route options were added. Three of the top 10 routes consisted of the agricultural field option from State Route 55 to Fenner Road (NN-OO-RR), three routes consisted of the Forest Hill Road alignment (O-R), and four routes included the Greenlee Road alignment (M-S-V or M-S-R).

The top ranked route segments in the northern section of the Project entering the Eldean Substation were DD-GG'-HH-II'-JJ (all of which crosses agricultural fields) and DD-EE-EE'-KK-II' (utilizing Eldean

Road, a short segment of agricultural land, and Experiment Farm Road). The DD-GG'-HH-II'-JJ segment combination ranks slightly better for ecological, land use and cultural resources criteria categories than the alternate leading segment entering the substation.

The alternative route segments exiting the West Milton Substation include the A-B'-H segment which heads north and the A-H segment that heads westward from the substation then north. The A-H segment is ranked higher for the ecological category (due to likely fewer wetland crossings), but A-H is ranked lower for the land use (primarily due to a summer camp located adjacent to the alignment), cultural resources, and engineering (due to less co-location with existing transmission corridor) categories.

The scoring process resulted in the highest ranked route being Route 138 which utilizes the new supplemental segment NN-OO-RR crossing agricultural fields, then crossing over Forest Hill Road toward the east, then turning north through agricultural fields (P'-BB) then entering the Eldean Substation utilizing the northern-most segment combination (DD-GG-HH-II). Route 138, considered a "cross-country" route, would span and bisect several agricultural field parcels in the P'-BB segment, which is less desired than routes that follow agricultural field property boundaries or road ROW to the extent practical. The second highest ranked route, Route 139, utilizes Greenlee Road (from State Route 55) and then the northernmost route segments to enter the Eldean Substation. For the reasons discussed above concerning Greenlee Road, this is not a viable route based on public input.

The #3 ranked route, Route 135, was ultimately selected by DP&L as one of two routes to advance for presentation at a second public informational meeting. Refer to Figure 4 below for a map of this route (shown as the blue/orange route). Besides the route being one of the highest scoring, Route 135 offers the advantage of a combination of routing along rural roads (e.g., Forest Hill Road) and crossing agricultural fields aligning with property boundaries where practical.

The second selected route alternative for presentation to the public should ideally have <20% in common with the other route alternative being considered for possible selection as the Preferred Route. Early in the RSS, DP&L and GAI recognized that the <20% in common requirement would be difficult to achieve for the Project and requested a waiver of the rule, and suggested approximately 30% or less in common, from the OPSB. The OPSB granted this waiver of the rule to DP&L. The next highest favorably ranked route that approaches 30% or less in common was Route 128. Route 128, having 34% in common with the alternative selected Route 135, was ranked 31st overall out of 110 route alternatives. It utilizes segments that diverge from Route 135 in several locations including exiting the West Milton Substation from the north and utilizing the Markley Road option to utilize more existing DP&L transmission ROW. Route 125 runs roughly parallel with Route 135 north of State Route 55 but spans much more agricultural fields and a shorter and different section of Forest Hill Road to the south. The route is depicted on the Figure 4 map below as the red/orange route.

3.4 Second Public Meeting Input on Revised Route Alternatives

Following the development of supplemental route segments resulting from the first public meeting, and the identification, evaluation and scoring of supplemental route alternatives, a second public informational meeting was held on July 9, 2014. Similar to the first meeting, the purpose of the meeting was to seek public input and comments on the two revised route alternatives (blue/orange Route 135 and red/orange Route 128 as shown in Figure 4) being considered for an application to the OPSB.

Public comments were received during the meeting as well as two comments submitted to the OPSB several weeks subsequent to the meeting. The majority of comments were supportive of the blue/orange route, which consisted of the longest section paralleling Forest Hill Road (Route 135). Few public comments supported the red/orange route alternative (Route 128) which consists of a larger percentage of agricultural fields in the central portion of the study area.

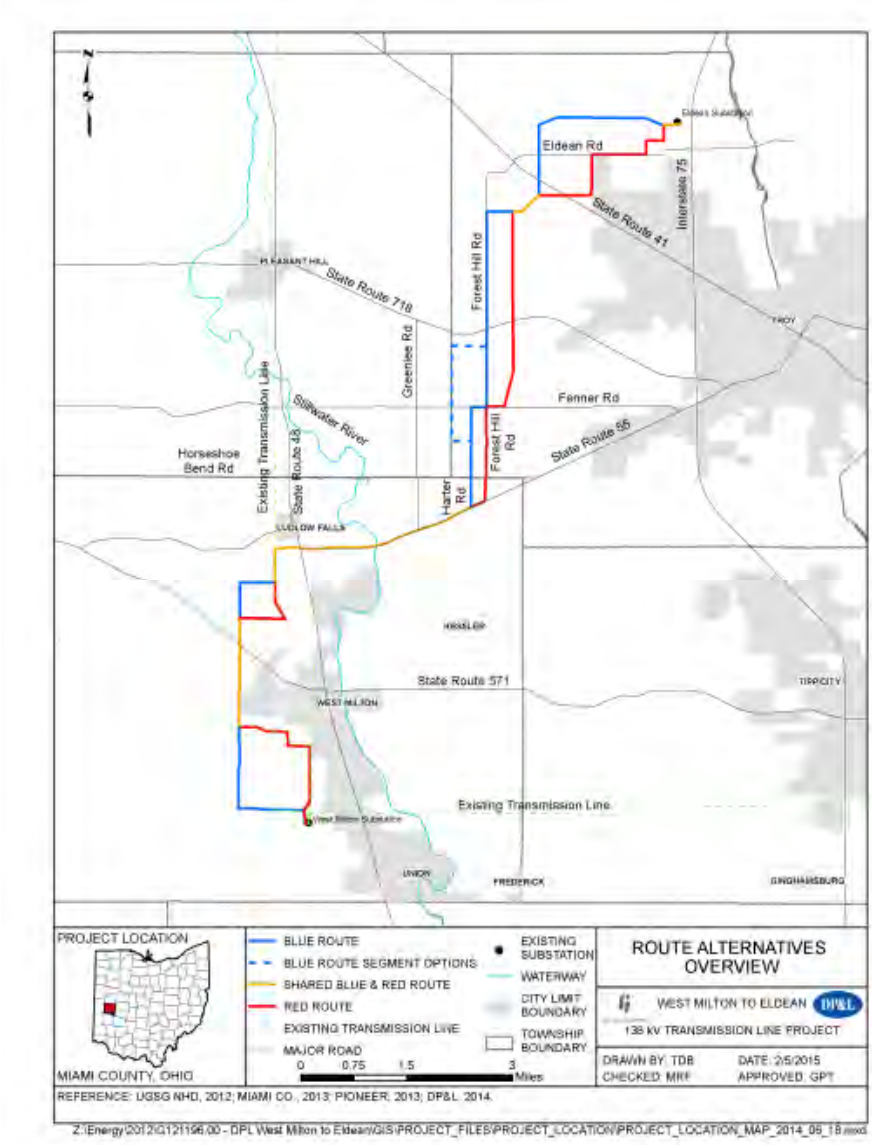

Figure 4
Revised Route Alternatives for Public Review – July 2014 Meeting

3.5 Selection of Preferred and Alternate Routes

Based on the results of the public meeting and a qualitative review of the route alternatives (depicted in Figure 4), the Preferred and Alternate Routes were selected by the DP&L siting team. The primary qualitative factors considered in the final selection were the minimization of route lengths that bisect land parcels (mainly agricultural fields) to the extent practical, minimization of routes proximal to residences along road ROW, and the feasibility of construction and maintenance of the transmission line.

3.5.1 Preferred Route

The Preferred Route was determined to be Route 135 (blue/orange route in Figure 5). The route is the 3rd highest scoring route overall and received comments of support based on the

second public meeting. The ranking of individual attribute categories for Route 135 are as follows (in terms of higher rank being more favorable): 12th for ecological rank, 17th for land use rank, 5th for cultural resources rank, and 39th for engineering rank.

3.5.2 Alternate Route

The Alternate Route was determined to be Route 128 (red/orange route in Figure 5). The route is the 31st highest scoring route overall and has 34% in common with Route 128. The ranking of individual attribute categories for the Alternate Route are: ecological rank of 27th, land use rank of 15th, cultural resources rank of 90th, and engineering rank of 93rd. This is the highest overall ranked route that approaches the 30% range for in-common percentage with the Preferred Route – all other higher ranked routes that could be considered for the alternate have more than 34% in common with the Preferred Route.

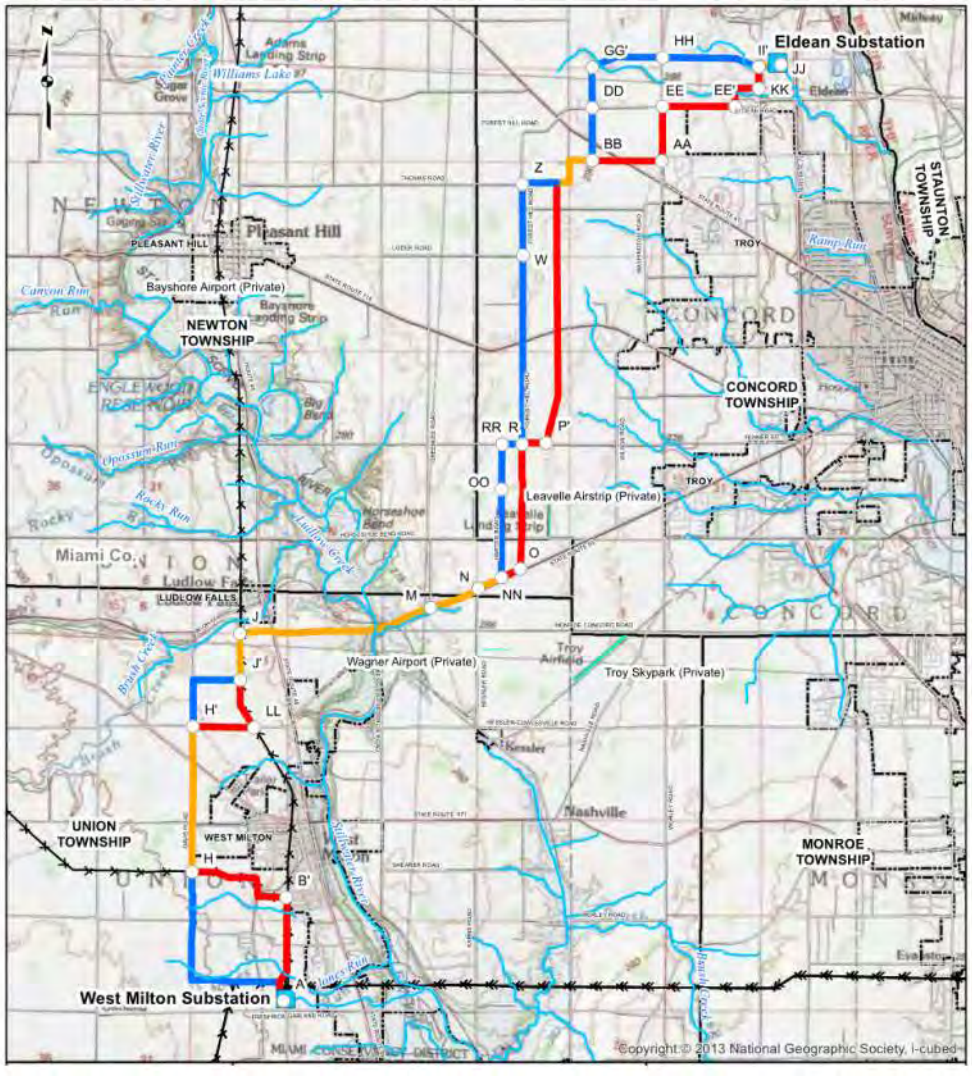

Figure 5
Preferred (Blue/Orange) and Alternate (Red/Orange) Routes

3.6 Route Adjustments for Optimizing Alignments

Following the selection of the Preferred and Alternate Routes, DP&L responded to a few landowners' request for meetings to discuss the proposed transmission alignment on their properties. These requests for changing the alignment, exclusively within an individual landowner's property, were evaluated on a case-by-case basis to determine the impact on ecological features, land use, socioeconomics, and engineering design and constructability. One area on the Preferred Route, one area on the Alternate Route, and one area on the common route were determined to be reasonable requests to optimize the alignment of these route segments, which are described below.

3.6.1 Common Route – South of State Route 41

A route adjustment relocated the proposed centerline from a diagonal orientation (1,750 feet length) over an agricultural field to the landowner's nearby property line requiring the addition of a right angle turn in the transmission line (the common route south of node BB). The optimized route segment is now 2,470 feet in length and will have less impact on agricultural crop operations. One residence is located 540 feet from this optimized route segment.

3.6.2 Preferred Route – West of Washington Road North

A request was made of DP&L to adjust the Preferred Route from the previous alignment through the middle of an agricultural crop land parcel (a 0.77-mile segment of the route) to a parallel alignment that would be situated along the landowner's property boundary in the same crop land parcel. The landowner requesting this optimization of the route has the property registered as an Ohio Agricultural District land parcel and the shift in alignment will result in a lesser impact to agricultural crop operations. The adjusted route is shown in Figure 6 below. The new alignment will also shift the line from the middle of the agricultural field of the adjacent landowner's parcel (to the west) to the property boundary (near node GG'). The overall length of the optimized route is 0.79 miles compared to 0.77 miles for the former route segment. The route will be positioned closer to an un-named ephemeral or intermittent tributary, which drains crop land and is partially parallel with the property boundary; however, the stream would be outside of the ROW with the exception of one crossing of the route. One residence is located 180 feet, and nine residences are located from 230 feet to 1,000 feet, from the optimized route. This is reasonably comparable to the previous Preferred Route where eight residences were located within 1,000 feet of the route segment.

Figure 6
Preferred Route – West of Washington Road Route Adjustment

3.6.3 Alternate Route – Area of Eldean Road / Washington Road Intersection

Similar to the previously described route adjustments for the Preferred Route, a request was received from the owner of the agricultural land, including their residence (<100 feet from the Alternate Route), located southeast of the intersection of Eldean Road and Washington Road on the Alternate Route. The adjusted route is shown in Figure 7 below between nodes AA-EE^{OPT}-EE'. The landowner, having crop land registered as Ohio Agricultural District land, requested that the route be shifted from the 0.74-mile road frontage route to the opposite side of their land and property boundary line. The optimized route segment is 0.74 miles in length through crop land, essentially the same as the previous Alternate Route (also 0.74 miles along road ROW and the edge of the crop land). Approximately a 1,300-foot portion the route

adjustment (segment AA-EE^{OPT}) is situated parallel with the rear property boundary of 15 residences (located on Parkwood Drive) but the route's centerline is more than 100 feet distance to any of these residences. The previous Alternate Route alignment was within 1,000 feet of 59 residences compared to 65 residences within 1,000 feet of the new route adjustment. There is no difference in ecological impacts – no streams, wetlands, or forested areas exist within the planned ROW of the optimized route.

Figure 7
Alternate Route – Eldean Road / Washington Road Intersection Route Adjustment

3.6.4 Preferred and Alternate Route Substitution – State Route 55 and Forest Hill Road

Subsequent to the submission of the Application for Certificate of Environmental Compatibility and Public Need in February 2015, and the OPSB's initial review of the Application, DP&L decided to substitute or switch a 1.6-mile section of the Preferred Route with a parallel segment of the Alternate Route. This section of the Preferred Route begins at State Route 55 on Harter Road and extends to the intersection of Fenner Road and Forest Hill Road. The area and route change is shown in Figure 8 below. In effect, the originally designated Alternate Route segment, which begins on State Route 55 then heads north mostly along Forest Hill Road (small section of field), was changed to or became the revised Preferred Route. This substitution of route segments was made by DP&L to alleviate a major landowner's objection to placing transmission facilities over a 1.0-mile length of crop land. No ecological impacts are anticipated from this route change as compared to the original Preferred Route through the agricultural field. The new Preferred Route along Forest Hill Road will be in closer proximity to more residences in comparison to the former Preferred Route alignment, but will most likely be co-located with DP&L's existing distribution lines (underbuilt onto new transmission facilities).

Figure 8
Preferred and Alternate Route Switch – Between Node NN and R / Forest Hill Road and State Route 55

TABLES

Preferred Route
Alternate Route

TABLE 3-2
INITIAL ROUTE ALTERNATIVES SCORING RESULTS

			ECOLOGICAL		LAND USE		CULTURAL RESOURCES		ENGINEERING				
Route ID	Route Segment Description	Route Length	Normalized Ecological Score (30% weighting)	Ecological Rank	Normalized Land Use Score (30% weighting)	Land Use Rank	Normalized Cultural Resource Score (10% weighting)	Cultural Resource Rank	Normalized Engineering Score (30% weighting)	Engineering Rank	Total Route Score	Route ID	Overall Rank
103	A-H-H'-J'-J-M-N-O-R-P'-BB-DD-GG-HH-II-JJ	16.4	198	9	442	20	63	1	1,136	72	1,838	103	1
132	A-H-H'-LL-J'-J-M-N-O-R-P'-BB-DD-EE-EE'-KK-II-JJ	16.5	69	3	675	73	63	1	1,063	50	1,869	132	2
131	A-H-H'-LL-J'-J-M-N-O-R-P'-BB-DD-GG-HH-II-JJ	16.6	55	2	665	71	63	1	1,119	67	1,902	131	3
104	A-H-H'-J'-J-M-S-V-X-Y-FF-GG-HH-II-JJ	16.8	143	4	634	63	63	1	1,096	62	1,935	104	4
133	A-H-H'-LL-J'-J-M-S-V-X-Y-FF-GG-HH-II-JJ	17.0	0	1	857	92	63	1	1,030	39	1,950	133	6
113	A-H-H'-J'-J-M-N-O-P'-BB-DD-EE-EE'-MM-KK-II-JJ	16.3	213	13	457	28	94	16	1,181	86	1,945	113	5
107	A-H-H'-J'-J-M-N-O-P'-BB-AA-EE-EE'-MM-KK-II-JJ	16.3	213	13	445	23	94	16	1,209	94	1,961	107	7
115	A-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-DD-GG-HH-II-JJ	16.7	246	21	507	38	63	1	1,163	81	1,978	115	8
106	A-H-H'-J'-J-M-N-O-R-W-Z-CC-FF-GG-HH-II-JJ	16.5	193	8	470	32	63	1	1,255	102	1,980	106	9
105	A-H-H'-J'-J-M-S-R-W-Z-CC-FF-GG-HH-II-JJ	16.9	147	5	500	37	63	1	1,292	103	2,002	105	10
114	A-H-H'-J'-J-M-S-V-X-W-Z-CC-FF-GG-HH-II-JJ	16.8	147	5	641	65	63	1	1,156	79	2,006	114	11
119	A-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	200	10	537	44	63	1	1,217	97	2,016	119	12
68	A-B'-H-H'-J'-J-M-N-O-P'-BB-DD-GG-HH-II-JJ	16.4	382	30	208	1	344	34	1,088	59	2,023	68	13
120	A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	200	10	679	74	63	1	1,096	61	2,038	120	14
130	A-B'-H-H'-J'-J-M-N-O-R-P'-BB-DD-EE-EE'-KK-II-JJ	16.3	396	42	218	3	344	34	1,081	57	2,038	130	15
116	A-H-H'-J'-J-M-S-V-X-Y-Z-CC-FF-GG-HH-II-JJ	16.8	147	5	649	68	63	1	1,210	95	2,069	116	16
117	A-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	16.6	261	23	523	42	94	16	1,191	91	2,069	117	17
129	A-B'-H-H'-LL-J'-J-M-N-O-R-P'-BB-DD-GG-HH-II-JJ	16.6	239	20	432	19	344	34	1,072	54	2,087	129	18
45	A-B'-H-H'-J'-J-M-S-V-X-Y-FF-GG-HH-II-JJ	16.9	327	25	400	15	344	34	1,016	35	2,087	45	19
58	A-B'-H-H'-J'-J-M-N-O-R-W-Z-CC-FF-GG-HH-II-JJ	16.5	377	29	237	5	344	34	1,158	80	2,115	58	22
121	A-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-GG-HH-II-JJ	17.1	200	10	687	76	63	1	1,167	83	2,116	121	23
122	A-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	216	15	553	48	94	16	1,245	100	2,108	122	20
66	A-B'-H-H'-J'-J-M-N-O-P'-BB-DD-EE-EE'-MM-KK-II-JJ	16.4	398	43	224	4	375	62	1,117	66	2,114	66	21
118	A-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	16.6	261	23	511	40	94	16	1,252	101	2,118	118	24
123	A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	216	15	694	77	94	16	1,125	69	2,129	123	25
63	A-B'-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-DD-GG-HH-II-JJ	16.7	430	51	274	7	344	34	1,099	63	2,146	63	26
39	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-FF-GG-HH-II-JJ	16.9	332	26	266	6	344	34	1,212	96	2,153	39	27
124	A-H-H'-J'-J-M-S-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	216	15	541	47	94	16	1,306	104	2,157	124	28
128	A-B'-H-H'-LL-J'-J-M-N-O-R-P'-BB-AA-EE-EE'-KK-II-JJ	16.6	253	22	428	18	344	34	1,142	74	2,167	128	29
52	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-FF-GG-HH-II-JJ	16.9	332	26	408	16	344	34	1,092	60	2,175	52	30
44	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	384	33	304	10	344	34	1,152	78	2,185	44	33
125	A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	216	15	683	75	94	16	1,186	89	2,178	125	31
64	A-B'-H-H'-J'-J-M-N-O-P'-BB-AA-EE-EE'-MM-KK-II-JJ	16.4	398	43	212	2	375	62	1,194	92	2,179	64	32
57	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	384	33	445	22	344	34	1,032	40	2,206	57	34
46	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-FF-GG-HH-II-JJ	16.9	332	26	416	17	344	34	1,145	75	2,237	46	35
61	A-B'-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	16.6	446	54	290	9	375	62	1,127	70	2,238	61	36
67	A-B'-H-H'-J'-J-M-N-O-P'-BB-DD-EE-HH-II-JJ	16.5	382	30	390	14	344	34	1,138	73	2,254	67	37
51	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-GG-HH-II-JJ	17.1	384	33	454	25	344	34	1,103	64	2,285	51	39
42	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	400	45	320	12	375	62	1,181	87	2,276	42	38
65	A-B'-H-H'-J'-J-M-N-O-P'-BB-AA-EE-HH-II-JJ	16.5	382	30	378	13	344	34	1,182	88	2,286	65	40
59	A-B'-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	16.7	446	54	278	8	375	62	1,188	90	2,287	59	41
55	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	400	45	461	30	375	62	1,061	49	2,297	55	42
40	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	400	45	308	11	375	62	1,242	99	2,325	40	43
53	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	400	45	449	24	375	62	1,122	68	2,346	53	44
62	A-B'-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-DD-EE-HH-II-JJ	16.8	430	51	456	27	344	34	1,148	76	2,378	62	46
49	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	400	45	469	31	375	62	1,131	71	2,376	49	45
60	A-B'-H-H'-J'-J-M-N-O-R-W-Z-CC-BB-AA-EE-HH-II-JJ	16.8	430	51	444	21	344	34	1,176	85	2,394	60	47
43	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-EE-HH-II-JJ	17.1	384	33	486	34	344	34	1,202	93	2,416	43	49
47	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	400	45	458	29	375	62	1,176	84	2,408	47	48

TABLE 3-2
INITIAL ROUTE ALTERNATIVES SCORING RESULTS

			ECOLOGICAL		LAND USE		CULTURAL RESOURCES		ENGINEERING				
Route ID	Route Segment Description	Route Length	Normalized Ecological Score (30% weighting)	Ecological Rank	Normalized Land Use Score (30% weighting)	Land Use Rank	Normalized Cultural Resource Score (10% weighting)	Cultural Resource Rank	Normalized Engineering Score (30% weighting)	Engineering Rank	Total Route Score	Route ID	Overall Rank
41	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-AA-EE-HH-II-JJ	17.2	384	33	474	33	344	34	1,230	98	2,432	41	50
56	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-EE-HH-II-JJ	17.1	384	33	627	62	344	34	1,082	58	2,437	56	51
54	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-AA-EE-HH-II-JJ	17.2	384	33	615	60	344	34	1,109	65	2,453	54	52
48	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.2	384	33	624	61	344	34	1,163	82	2,515	48	53
50	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.1	384	33	636	64	344	34	1,152	77	2,516	50	54
134	A-H-H'-LL-J'-J-M-N-O-R-P'-BB-AA-EE-EE'-KK-II-JJ	18.0	234	19	739	79	94	16	1,556	105	2,623	134	55
126	A-H-J-U-T-V-X-W-Z-CC-FF-GG-HH-II-JJ	17.0	713	56	764	86	250	28	1,042	45	2,768	126	56
69	A-B'-H-H'-J'-J-M-N-O-P-Q-AA-EE-EE'-MM-KK-II-JJ	16.1	763	58	832	91	375	62	808	19	2,778	69	57
70	A-B'-H-H'-J'-J-M-N-O-P-Q-AA-EE-HH-II-JJ	16.2	747	57	998	99	344	34	796	16	2,885	70	58
84	A-B'-H-J-U-T-V-X-W-Z-CC-FF-GG-HH-II-JJ	17.0	898	59	530	43	531	74	978	29	2,937	84	59
89	A-B'-H-J-U-T-V-X-W-Z-CC-BB-DD-GG-HH-II-J	17.2	951	61	568	49	531	74	918	25	2,968	89	60
77	A-B'-H-J-U-T-S-V-X-Y-FF-GG-HH-II-JJ	17.0	1,001	72	589	56	531	74	887	24	3,008	77	61
90	A-B'-H-J-U-T-V-X-Y-Z-CC-FF-GG-HH-II-JJ	17.0	898	59	539	46	531	74	1,048	46	3,016	90	62
71	A-B'-H-J-U-T-S-R-W-Z-CC-FF-GG-HH-II-JJ	17.1	1,005	73	455	26	531	74	1,050	47	3,042	71	63
95	A-B'-H-J-U-T-V-X-Y-Z-CC-BB-DD-GG-HH-II-J	17.2	951	61	576	52	531	74	989	30	3,047	95	64
87	A-B'-H-J-U-T-V-X-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	966	67	583	55	563	96	947	26	3,059	87	65
76	A-B'-H-J-U-T-S-R-W-Z-CC-BB-DD-GG-HH-II-JJ	17.3	1,058	75	492	35	531	74	991	31	3,073	76	66
109	A-D-E-F-K-L-Q-AA-EE-EE'-MM-KK-II-JJ	15.9	1,183	85	986	97	219	27	691	9	3,078	109	67
85	A-B'-H-J-U-T-V-X-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	966	67	572	50	563	96	1,008	34	3,108	85	68
93	A-B'-H-J-U-T-V-X-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	966	67	592	58	563	96	1,017	36	3,138	93	69
74	A-B'-H-J-U-T-S-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	1,074	81	508	39	563	96	1,020	37	3,164	74	70
78	A-B'-H-J-U-T-S-V-X-Y-Z-CC-FF-GG-HH-II-JJ	17.1	1,005	73	605	59	531	74	1,033	41	3,175	78	71
91	A-B'-H-J-U-T-V-X-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	966	67	580	54	563	96	1,078	55	3,187	91	72
88	A-B'-H-J-U-T-V-X-W-Z-CC-BB-DD-EE-HH-II-JJ	17.3	951	61	750	82	531	74	968	27	3,199	88	73
83	A-B'-H-J-U-T-S-V-X-Y-Z-CC-BB-DD-GG-HH-II-JJ	17.3	1,058	75	642	66	531	74	974	28	3,206	83	74
86	A-B'-H-J-U-T-V-X-W-Z-CC-BB-AA-EE-HH-II-JJ	17.3	951	61	738	78	531	74	996	32	3,215	86	76
72	A-B'-H-J-U-T-S-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	1,074	81	496	36	563	96	1,080	56	3,213	72	75
3	A-B-C-D-E-F-K-L-Q-AA-EE-EE'-MM-KK-II-JJ	15.7	1,870	103	803	87	94	16	453	4	3,220	3	77
127	A-H-J-U-Y-FF-GG-HH-II-JJ	17.2	1,510	86	755	83	250	28	747	13	3,262	127	78
94	A-B'-H-J-U-T-V-X-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.3	951	61	758	85	531	74	1,038	43	3,278	94	79
92	A-B'-H-J-U-T-V-X-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.3	951	61	746	81	531	74	1,066	52	3,294	92	80
75	A-B'-H-J-U-T-S-R-W-Z-CC-BB-DD-EE-HH-II-JJ	17.3	1,058	75	674	72	531	74	1,040	44	3,304	75	82
81	A-B'-H-J-U-T-S-V-X-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	1,074	81	658	69	563	96	1,003	33	3,297	81	81
73	A-B'-H-J-U-T-S-R-W-Z-CC-BB-AA-EE-HH-II-JJ	17.3	1,058	75	662	70	531	74	1,068	53	3,320	73	83
4	A-B-C-D-E-F-K-L-Q-AA-EE-HH-II-JJ	15.8	1,855	102	969	96	63	1	441	3	3,327	4	84
110	A-D-E-I-P-O-R-P'-BB-DD-GG-HH-II-JJ	16.7	975	71	832	90	500	73	1,037	42	3,344	110	85
79	A-B'-H-J-U-T-S-V-X-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	1,074	81	646	67	563	96	1,063	51	3,346	79	86
96	A-B'-H-J-U-Y-FF-GG-HH-II-JJ	17.2	1,694	92	522	41	531	74	683	8	3,430	96	87
82	A-B'-H-J-U-T-S-V-X-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.3	1,058	75	824	89	531	74	1,023	38	3,437	82	88
80	A-B'-H-J-U-T-S-V-X-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.3	1,058	75	812	88	531	74	1,051	48	3,453	80	89
2	A-B-C-D-E-F-L-Q-AA-EE-HH-II-JJ	16.2	1,716	94	1,313	101	63	1	368	1	3,460	2	90
97	A-B'-H-J-U-Y-Z-CC-FF-GG-HH-II-JJ	17.3	1,699	93	538	45	531	74	796	17	3,564	97	91
1	A-B-C-D-E-F-L-Q-AA-EE-EE'-MM-KK-II-JJ	16.0	1,732	95	1,361	102	94	16	381	2	3,568	1	92
102	A-B'-H-J-U-Y-Z-CC-BB-DD-GG-HH-II-J	17.5	1,752	96	576	51	531	74	737	11	3,595	102	93
12	A-B-C-D-E-I-P-O-R-P'-BB-DD-GG-HH-II-JJ	16.5	1,662	87	863	93	313	30	800	18	3,638	12	94
9	A-B-C-D-E-I-P-O-R-P'-BB-AA-EE-HH-II-JJ	15.8	1,662	87	987	98	313	30	730	10	3,692	9	96
100	A-B'-H-J-U-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.4	1,767	99	591	57	563	96	765	14	3,686	100	95
8	A-B-C-D-E-I-P-O-R-P'-BB-AA-EE-EE'-MM-KK-II-JJ	15.7	1,678	90	934	95	344	34	742	12	3,697	8	97
10	A-B-C-D-E-I-P-O-R-P'-BB-DD-EE-EE'-MM-KK-II-JJ	16.4	1,678	90	879	94	344	34	829	22	3,729	10	98

TABLE 3-2
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			ECOLOGICAL		LAND USE		CULTURAL RESOURCES		ENGINEERING				
Route ID	Route Segment Description	Route Length	Normalized Ecological Score (30% weighting)	Ecological Rank	Normalized Land Use Score (30% weighting)	Land Use Rank	Normalized Cultural Resource Score (10% weighting)	Cultural Resource Rank	Normalized Engineering Score (30% weighting)	Engineering Rank	Total Route Score	Route ID	Overall Rank
98	A-B'-H-J-U-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.4	1,767	99	579	53	563	96	826	21	3,735	98	99
101	A-B'-H-J-U-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.5	1,752	96	757	84	531	74	786	15	3,826	101	100
99	A-B'-H-J-U-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.5	1,752	96	746	80	531	74	814	20	3,842	99	101
11	A-B-C-D-E-I-P-O-R-P'-BB-DD-EE-HH-II-JJ	16.5	1,662	87	1,045	100	313	30	850	23	3,869	11	102
5	A-B-C-D-E-I-K-L-Q-AA-EE-EE'-MM-KK-II-JJ	15.5	1,793	101	1,430	103	344	34	613	7	4,180	5	103
6	A-B-C-D-E-I-P-Q-AA-EE-EE'-MM-KK-II-JJ	15.5	2,044	105	1,456	104	344	34	475	6	4,318	6	104
7	A-B-C-D-E-I-P-Q-AA-EE-HH-II-JJ	15.6	2,028	104	1,622	105	313	30	463	5	4,425	7	105

TABLE 3-3
SUPPLEMENTAL AND UPDATED ROUTE ALTERNATIVES SCORING RESULTS

			ECOLOGICAL		LAND USE		CULTURAL RESOURCES		ENGINEERING				
Route ID	Route Segment Description	Route Length	Normalized Ecological Score (30% weighting)	Ecological Rank	Normalized Land Use Score (30% weighting)	Land Use Rank	Normalized Cultural Resource Score (10% weighting)	Cultural Resource Rank	Normalized Engineering Score (30% weighting)	Engineering Rank	Total Route Score	Route ID	Overall Rank
138	A-H-H'-LL-J'-J-M-N-NN-OO-RR-R-P'-BB-DD-GG-HH-II'-JJ	16.7	55	3	265	12	281	5	1,513	49	2,114	138	1
139	A-H-H'-LL-J'-J-M-S-V-X-W-Z-BB-DD-GG-HH-II'-JJ	17.1	0	1	514	65	313	17	1,387	27	2,213	139	2
135	A-H-H'-J'-J-M-N-NN-OO-RR-R-W-Z-BB-DD-GG-HH-II'-JJ	16.6	188	12	306	17	281	5	1,461	39	2,237	135	3
133	A-H-H'-LL-J'-J-M-S-V-X-Y-FF-GG-HH-II'-JJ	17.0	0	1	492	59	313	17	1,440	34	2,244	133	4
129	A-B'-H-H'-LL-J'-J-M-N-NN-O-R-P'-BB-DD-GG-HH-II'-JJ	16.7	239	25	152	2	313	17	1,584	69	2,287	129	5
131	A-H-H'-LL-J'-J-M-N-NN-O-R-P'-BB-DD-GG-HH-II'-JJ	16.6	55	3	300	16	281	5	1,659	86	2,295	131	6
132	A-H-H'-LL-J'-J-M-N-NN-O-R-P'-BB-DD-EE-EE'-KK-II'-JJ	16.6	69	5	309	20	344	44	1,576	65	2,297	132	7
137	A-H-H'-J'-J-M-N-NN-OO-RR-R-P'-BB-DD-GG-HH-II'-JJ	16.5	198	15	256	10	281	5	1,599	72	2,334	137	8
44	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	384	38	247	9	344	44	1,422	31	2,396	44	9
39	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-FF-GG-HH-II-JJ	16.9	331	31	209	6	344	44	1,523	54	2,407	39	10
119	A-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	200	17	394	38	313	17	1,520	53	2,427	119	11
45	A-B'-H-H'-J'-J-M-S-V-X-Y-FF-GG-HH-II-JJ	16.9	326	30	336	24	344	44	1,451	37	2,457	45	12
105	A-H-H'-J'-J-M-S-R-W-Z-CC-FF-GG-HH-II-JJ	16.9	147	9	357	27	313	17	1,644	82	2,461	105	13
136	A-H-H'-J'-J-M-N-NN-OO-W-Z-BB-DD-GG-HH-II'-JJ	17.2	188	12	307	19	281	5	1,691	97	2,467	136	14
63	A-B'-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-DD-GG-HH-II-JJ	16.7	429	56	216	7	313	17	1,515	50	2,473	63	15
120	A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-GG-HH-II-JJ	16.9	143	7	506	61	313	17	1,519	52	2,480	120	16
58	A-B'-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-FF-GG-HH-II-JJ	16.5	376	34	179	5	313	17	1,616	75	2,484	58	17
68	A-B'-H-H'-J'-J-M-N-NN-O-R-P'-BB-DD-GG-HH-II-JJ	16.5	381	35	144	1	313	17	1,647	83	2,485	68	18
103	A-H-H'-J'-J-M-N-NN-O-R-P'-BB-DD-GG-HH-II-JJ	16.4	198	15	291	14	281	5	1,722	102	2,492	103	19
115	A-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-DD-GG-HH-II-JJ	16.7	246	26	364	30	281	5	1,613	74	2,504	115	20
104	A-H-H'-J'-J-M-S-V-X-Y-FF-GG-HH-II-JJ	16.8	143	7	484	57	313	17	1,572	63	2,511	104	21
42	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	399	50	262	11	375	90	1,479	43	2,516	42	22
57	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-GG-HH-II-JJ	17.1	384	38	381	33	344	44	1,427	32	2,535	57	23
52	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-FF-GG-HH-II-JJ	16.9	331	31	343	25	344	44	1,528	55	2,546	52	24
122	A-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	216	21	410	44	344	44	1,577	66	2,547	122	25
130	A-B'-H-H'-J'-J-M-N-NN-O-R-P'-BB-DD-EE-EE'-KK-II'-JJ	16.4	395	47	153	3	375	90	1,633	79	2,556	130	26
134	A-H-H'-LL-J'-J-M-N-NN-O-R-P'-BB-AA-EE-EE'-KK-II'-JJ	16.6	69	5	440	49	344	44	1,708	100	2,560	134	27
106	A-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-FF-GG-HH-II-JJ	16.5	193	14	327	23	281	5	1,760	105	2,561	106	28
114	A-H-H'-J'-J-M-S-V-X-W-Z-CC-FF-GG-HH-II-JJ	16.8	147	9	491	58	313	17	1,626	78	2,577	114	29
61	A-B'-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	16.6	445	59	232	8	344	44	1,572	64	2,593	61	30
128	A-B'-H-H'-LL-J'-J-M-N-NN-O-R-P'-BB-AA-EE-EE'-KK-II'-JJ	16.6	252	27	292	15	375	90	1,679	93	2,598	128	31
66	A-B'-H-H'-J'-J-M-N-NN-O-R-P'-BB-DD-EE-EE'-MM-KK-II-JJ	16.4	397	48	159	4	344	44	1,705	98	2,604	66	32
117	A-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	16.6	261	28	380	32	313	17	1,670	92	2,624	117	33
113	A-H-H'-J'-J-M-N-NN-O-R-P'-BB-DD-EE-EE'-MM-KK-II-JJ	16.4	213	19	307	18	313	17	1,803	108	2,635	113	34
55	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	399	50	397	39	375	90	1,484	44	2,655	55	35
43	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-DD-EE-HH-II-JJ	17.1	384	38	428	45	344	44	1,504	47	2,660	43	36
123	A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	216	21	544	74	344	44	1,582	68	2,686	123	37
46	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-FF-GG-HH-II-JJ	16.9	331	31	352	26	344	44	1,664	88	2,690	46	38
51	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-GG-HH-II-JJ	17.1	384	38	389	35	344	44	1,585	70	2,702	51	39
116	A-H-H'-J'-J-M-S-V-X-Y-Z-CC-FF-GG-HH-II-JJ	16.8	147	9	500	60	313	17	1,762	106	2,721	116	40
40	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	399	50	393	36	375	90	1,565	60	2,732	40	41
121	A-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-GG-HH-II-JJ	17.1	200	17	537	71	313	17	1,684	94	2,733	121	42
62	A-B'-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-DD-EE-HH-II-JJ	16.8	429	56	398	40	313	17	1,597	71	2,737	62	43
67	A-B'-H-H'-J'-J-M-N-NN-O-R-P'-BB-DD-EE-HH-II-JJ	16.5	381	35	325	21	313	17	1,730	103	2,749	67	44
124	A-H-H'-J'-J-M-S-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	216	21	541	72	344	44	1,663	87	2,763	124	45
56	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-DD-EE-HH-II-JJ	17.1	384	38	563	77	344	44	1,509	48	2,799	56	46
107	A-H-H'-J'-J-M-N-NN-O-R-P'-BB-AA-EE-EE'-MM-KK-II-JJ	16.4	213	19	438	47	313	17	1,842	110	2,806	107	47
59	A-B'-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	16.7	445	59	363	28	344	44	1,658	85	2,809	59	48
49	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.0	399	50	405	43	375	90	1,643	81	2,822	49	49
41	A-B'-H-H'-J'-J-M-S-R-W-Z-CC-BB-AA-EE-HH-II-JJ	17.2	384	38	559	76	344	44	1,544	57	2,830	41	50
118	A-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	16.6	261	28	511	64	313	17	1,756	104	2,840	118	51

TABLE 3-3
SUPPLEMENTAL AND UPDATED ROUTE ALTERNATIVES SCORING RESULTS

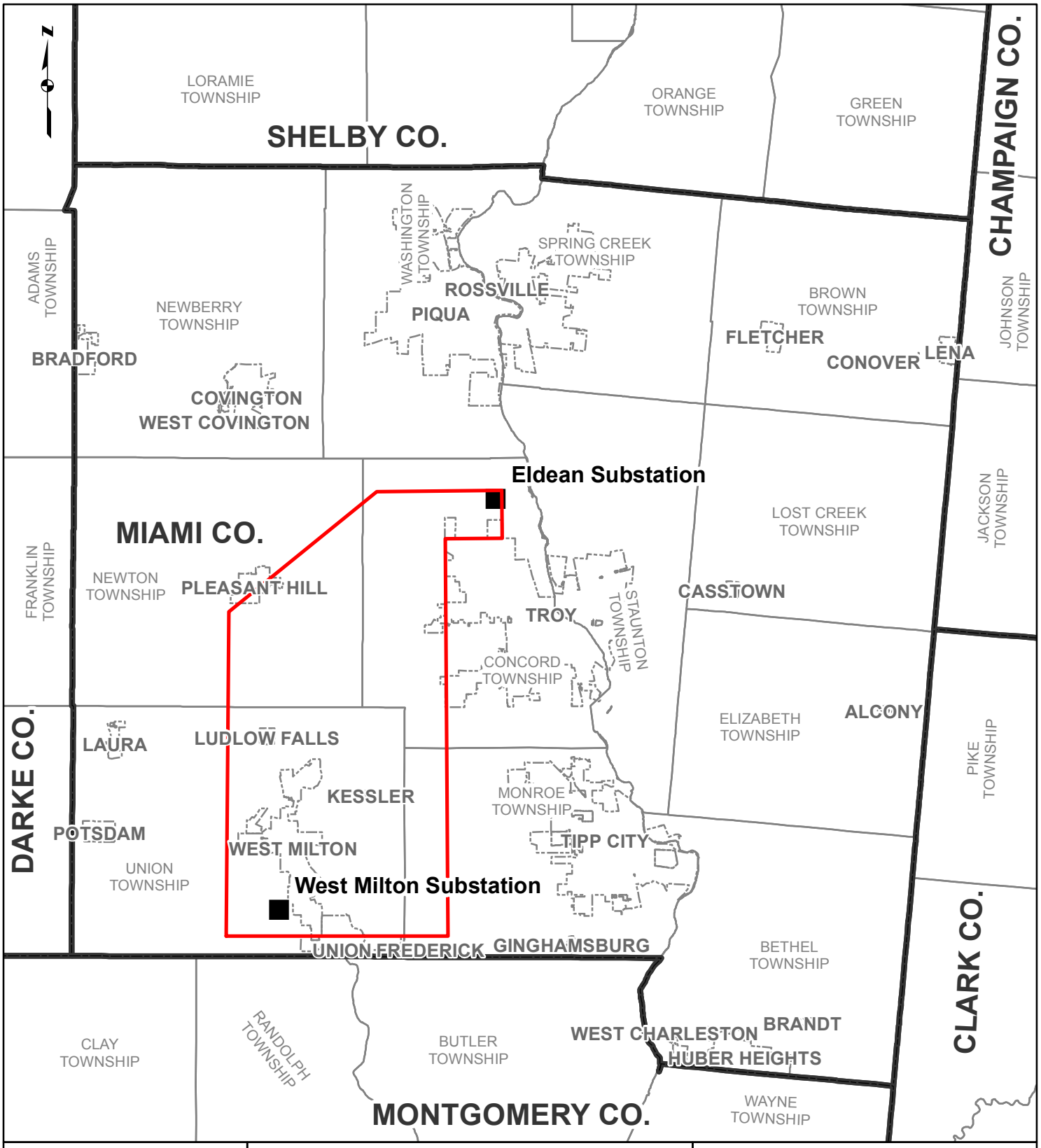
			ECOLOGICAL		LAND USE		CULTURAL RESOURCES		ENGINEERING				
Route ID	Route Segment Description	Route Length	Normalized Ecological Score (30% weighting)	Ecological Rank	Normalized Land Use Score (30% weighting)	Land Use Rank	Normalized Cultural Resource Score (10% weighting)	Cultural Resource Rank	Normalized Engineering Score (30% weighting)	Engineering Rank	Total Route Score	Route ID	Overall Rank
64	A-B'-H-H'-J'-J-M-N-NN-O-R-P'-BB-AA-EE-EE'-MM-KK-II-JJ	16.4	397	48	290	13	344	44	1,813	109	2,844	64	52
53	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	399	50	527	67	375	90	1,570	62	2,872	53	53
125	A-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	216	21	675	86	344	44	1,668	90	2,903	125	54
60	A-B'-H-H'-J'-J-M-N-NN-O-R-W-Z-CC-BB-AA-EE-HH-II-JJ	16.8	429	56	529	68	313	17	1,636	80	2,907	60	55
65	A-B'-H-H'-J'-J-M-N-NN-O-R-P'-BB-AA-EE-HH-II-JJ	16.5	381	35	456	55	313	17	1,792	107	2,942	65	56
50	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.1	384	38	571	78	344	44	1,668	89	2,966	50	57
54	A-B'-H-H'-J'-J-M-S-V-X-W-Z-CC-BB-AA-EE-HH-II-JJ	17.2	384	38	694	89	344	44	1,549	58	2,970	54	58
47	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.0	399	50	536	70	375	90	1,705	99	3,016	47	59
89	A-B'-H-H'-J'-J-U-T-V-X-W-Z-CC-BB-DD-GG-HH-II-J	17.2	950	66	432	46	344	44	1,319	22	3,045	89	60
84	A-B'-H-H'-J'-J-U-T-V-X-W-Z-CC-FF-GG-HH-II-JJ	17.0	897	64	394	37	344	44	1,421	30	3,055	84	61
126	A-H-H'-J'-J-U-T-V-X-W-Z-CC-FF-GG-HH-II-JJ	17.0	714	61	542	73	313	17	1,519	51	3,086	126	62
48	A-B'-H-H'-J'-J-M-S-V-X-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.2	384	38	702	90	344	44	1,684	95	3,114	48	63
76	A-B'-H-H'-J'-J-U-T-S-R-W-Z-CC-BB-DD-GG-HH-II-JJ	17.3	1,058	80	363	29	344	44	1,357	25	3,122	76	64
71	A-B'-H-H'-J'-J-U-T-S-R-W-Z-CC-FF-GG-HH-II-JJ	17.1	1,005	78	325	22	344	44	1,459	38	3,133	71	65
87	A-B'-H-H'-J'-J-U-T-V-X-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	966	72	447	51	375	90	1,377	26	3,164	87	66
95	A-B'-H-H'-J'-J-U-T-V-X-Y-Z-CC-BB-DD-GG-HH-II-J	17.2	950	66	440	50	344	44	1,478	41	3,212	95	67
69	A-B'-H-H'-J'-J-M-N-NN-O-P-Q-AA-EE-EE'-MM-KK-II-JJ	16.1	762	63	838	98	344	44	1,274	19	3,218	69	68
90	A-B'-H-H'-J'-J-U-T-V-X-Y-Z-CC-FF-GG-HH-II-JJ	17.0	897	64	402	42	344	44	1,579	67	3,222	90	69
77	A-B'-H-H'-J'-J-U-T-S-V-X-Y-FF-GG-HH-II-JJ	17.0	1,000	77	453	52	344	44	1,433	33	3,229	77	70
74	A-B'-H-H'-J'-J-U-T-S-R-W-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	1,073	86	379	31	375	90	1,415	29	3,242	74	71
88	A-B'-H-H'-J'-J-U-T-V-X-W-Z-CC-BB-DD-EE-HH-II-JJ	17.3	950	66	613	82	344	44	1,402	28	3,309	88	72
70	A-B'-H-H'-J'-J-M-N-NN-O-P-Q-AA-EE-HH-II-JJ	16.2	747	62	1,005	101	313	17	1,253	17	3,316	70	73
93	A-B'-H-H'-J'-J-U-T-V-X-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	966	72	456	54	375	90	1,535	56	3,332	93	74
85	A-B'-H-H'-J'-J-U-T-V-X-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	966	72	578	79	375	90	1,462	40	3,381	85	75
75	A-B'-H-H'-J'-J-U-T-S-R-W-Z-CC-BB-DD-EE-HH-II-JJ	17.3	1,058	80	545	75	344	44	1,440	35	3,386	75	76
72	A-B'-H-H'-J'-J-U-T-S-R-W-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	1,073	86	510	63	375	90	1,501	45	3,458	72	77
83	A-B'-H-H'-J'-J-U-T-S-V-X-Y-Z-CC-BB-DD-GG-HH-II-JJ	17.3	1,058	80	506	62	344	44	1,567	61	3,475	83	78
94	A-B'-H-H'-J'-J-U-T-V-X-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.3	950	66	622	84	344	44	1,560	59	3,476	94	79
86	A-B'-H-H'-J'-J-U-T-V-X-W-Z-CC-BB-AA-EE-HH-II-JJ	17.3	950	66	744	91	344	44	1,441	36	3,479	86	80
78	A-B'-H-H'-J'-J-U-T-S-V-X-Y-Z-CC-FF-GG-HH-II-JJ	17.1	1,005	78	468	56	344	44	1,669	91	3,486	78	81
96	A-B'-H-H'-J'-J-U-Y-FF-GG-HH-II-JJ	17.2	1,694	97	386	34	344	44	1,112	11	3,536	96	82
91	A-B'-H-H'-J'-J-U-T-V-X-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	966	72	586	81	375	90	1,621	76	3,548	91	83
73	A-B'-H-H'-J'-J-U-T-S-R-W-Z-CC-BB-AA-EE-HH-II-JJ	17.3	1,058	80	676	87	344	44	1,479	42	3,557	73	84
127	A-H-H'-J'-J-U-Y-FF-GG-HH-II-JJ	17.2	1,511	91	534	69	313	17	1,210	15	3,567	127	85
81	A-B'-H-H'-J'-J-U-T-S-V-X-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.2	1,073	86	522	66	375	90	1,625	77	3,595	81	86
109	A-D-E-F-K-L-Q-AA-EE-EE'-MM-KK-II-JJ	15.9	1,183	90	1,057	103	375	90	1,012	9	3,626	109	87
3	A-B-C-D-E-F-K-L-Q-AA-EE-EE'-MM-KK-II-JJ	15.7	1,871	108	945	99	156	4	655	4	3,627	3	88
92	A-B'-H-H'-J'-J-U-T-V-X-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.3	950	66	753	93	344	44	1,600	73	3,646	92	89
4	A-B-C-D-E-F-K-L-Q-AA-EE-HH-II-JJ	15.8	1,855	107	1,111	105	125	3	633	3	3,725	4	90
102	A-B'-H-H'-J'-J-U-Y-Z-CC-BB-DD-GG-HH-II-J	17.5	1,752	101	439	48	344	44	1,200	13	3,735	102	91
82	A-B'-H-H'-J'-J-U-T-S-V-X-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.3	1,058	80	688	88	344	44	1,649	84	3,739	82	92
97	A-B'-H-H'-J'-J-U-Y-Z-CC-FF-GG-HH-II-JJ	17.3	1,699	98	402	41	344	44	1,302	21	3,746	97	93
110	A-D-E-I-P-O-R-P'-BB-DD-GG-HH-II-JJ	16.8	975	76	760	94	531	110	1,503	46	3,770	110	94
2	A-B-C-D-E-F-L-Q-AA-EE-HH-II-JJ	16.2	1,717	99	1,455	109	63	1	551	1	3,786	2	95
79	A-B'-H-H'-J'-J-U-T-S-V-X-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.2	1,073	86	653	85	375	90	1,710	101	3,811	79	96
1	A-B-C-D-E-F-L-Q-AA-EE-EE'-MM-KK-II-JJ	16.0	1,733	100	1,432	107	94	2	572	2	3,831	1	97
100	A-B'-H-H'-J'-J-U-Y-Z-CC-BB-DD-EE-EE'-MM-KK-II-JJ	17.4	1,767	104	455	53	375	90	1,258	18	3,855	100	98
12	A-B-C-D-E-I-P-O-R-P'-BB-DD-GG-HH-II-JJ	16.5	1,663	92	791	95	281	5	1,147	12	3,882	12	99
80	A-B'-H-H'-J'-J-U-T-S-V-X-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.3	1,058	80	819	97	344	44	1,689	96	3,909	80	100
101	A-B'-H-H'-J'-J-U-Y-Z-CC-BB-DD-EE-HH-II-JJ	17.5	1,752	101	621	83	344	44	1,283	20	3,999	101	101

TABLE 3-3
SUPPLEMENTAL AND UPDATED ROUTE ALTERNATIVES SCORING RESULTS

			ECOLOGICAL		LAND USE		CULTURAL RESOURCES		ENGINEERING				
Route ID	Route Segment Description	Route Length	Normalized Ecological Score (30% weighting)	Ecological Rank	Normalized Land Use Score (30% weighting)	Land Use Rank	Normalized Cultural Resource Score (10% weighting)	Cultural Resource Rank	Normalized Engineering Score (30% weighting)	Engineering Rank	Total Route Score	Route ID	Overall Rank
10	A-B-C-D-E-I-P-O-R-P'-BB-DD-EE-EE'-MM-KK-II-JJ	16.5	1,679	95	806	96	313	17	1,204	14	4,002	10	102
9	A-B-C-D-E-I-P-O-R-P'-BB-AA-EE-HH-II-JJ	15.9	1,663	92	1,058	104	281	5	1,011	8	4,014	9	103
8	A-B-C-D-E-I-P-O-R-P'-BB-AA-EE-EE'-MM-KK-II-JJ	15.7	1,679	95	1,005	102	313	17	1,032	10	4,029	8	104
98	A-B'-H-H'-J'-J-U-Y-Z-CC-BB-AA-EE-EE'-MM-KK-II-JJ	17.4	1,767	104	586	80	375	90	1,343	24	4,072	98	105
11	A-B-C-D-E-I-P-O-R-P'-BB-DD-EE-HH-II-JJ	16.6	1,663	92	973	100	281	5	1,229	16	4,146	11	106
99	A-B'-H-H'-J'-J-U-Y-Z-CC-BB-AA-EE-HH-II-JJ	17.5	1,752	101	752	92	344	44	1,322	23	4,170	99	107
6	A-B-C-D-E-I-P-Q-AA-EE-EE'-MM-KK-II-JJ	15.5	2,044	110	1,455	108	313	17	677	6	4,489	6	108
5	A-B-C-D-E-I-K-L-Q-AA-EE-EE'-MM-KK-II-JJ	15.5	1,794	106	1,429	106	375	90	892	7	4,490	5	109
7	A-B-C-D-E-I-P-Q-AA-EE-HH-II-JJ	15.6	2,029	109	1,621	110	281	5	656	5	4,587	7	110

Preferred Route (March 2015)
Alternate Route
Optimized Preferred Route (October 2015)

FIGURES



PROJECT LOCATION

MIAMI COUNTY, OHIO

LEGEND

- STUDY AREA
- EXISTING SUBSTATION
- CITY LIMIT BOUNDARY
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY

0 1.5 3 6 Miles

FIGURE 3.1
PROJECT LOCATION MAP

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 2/5/2015

CHECKED: DRB APPROVED: MAF

REFERENCE: MIAMI CO. GIS, 2013; ODNR, 2014; GAI, 2015.

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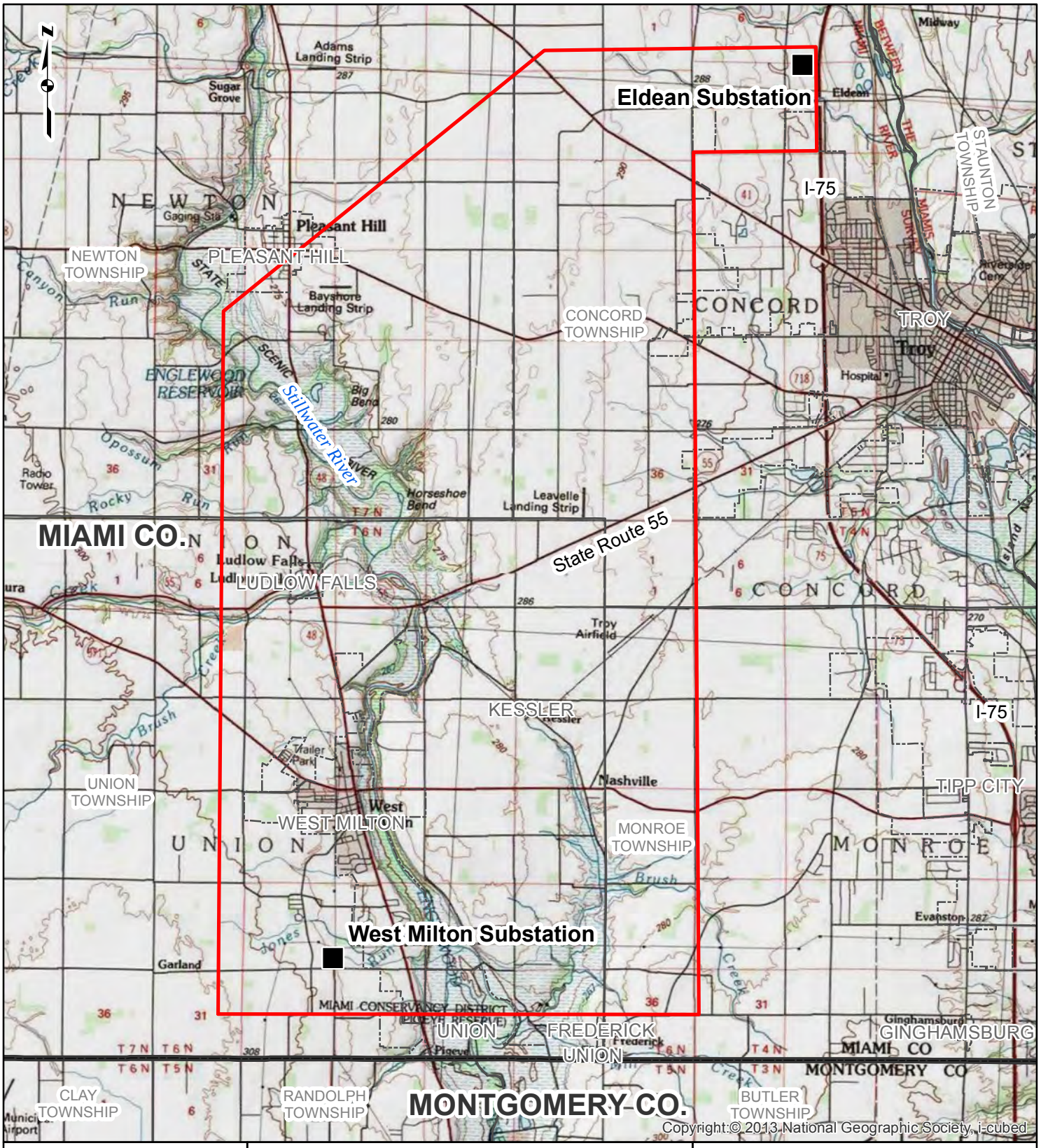

PROJECT LOCATION

MIAMI COUNTY, OHIO

LEGEND

- STUDY AREA
- EXISTING SUBSTATION
- CITY LIMIT BOUNDARY
- TOWNSHIP BOUNDARY
- COUNTY BOUNDARY

0 0.75 1.5 3 Miles

FIGURE 3.2
PROJECT STUDY AREA MAP

WEST MILTON TO ELDEAN 138kV

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 2/5/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: USGS 30' x 60' TOPOGRAPHIC QUADRANGLES: DAYTON (1986), PIQUA (1986), OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 02/2015. MIAMI CO. GIS, 2013; ODNR, 2014; GAI, 2015.

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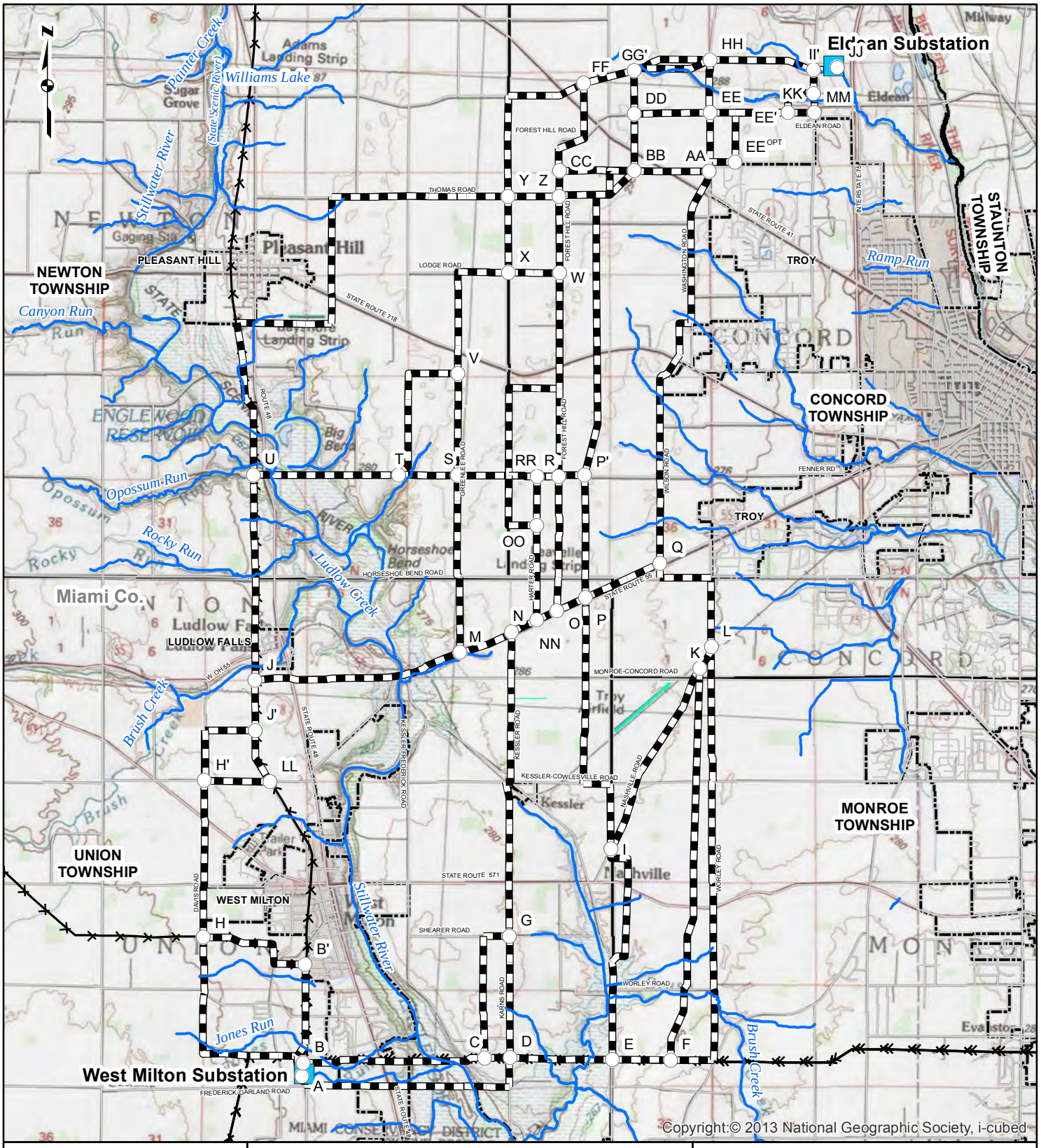

PROJECT LOCATION

MIAMI COUNTY, OHIO

Node
Substation
NHD Waterway
Proposed Route Alternative
Existing Transmission Line- Approximate
Road Centerline
Waterbody
Airport
City Limit
Township Boundary
County Boundary

0 3,500 7,000 14,000 Feet

FIGURE 3.3
ROUTE ALTERNATIVES

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 1/21/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: USGS 30' x 60' TOPOGRAPHIC QUADRANGLES: PIQUA (1986,) DAYTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2015.

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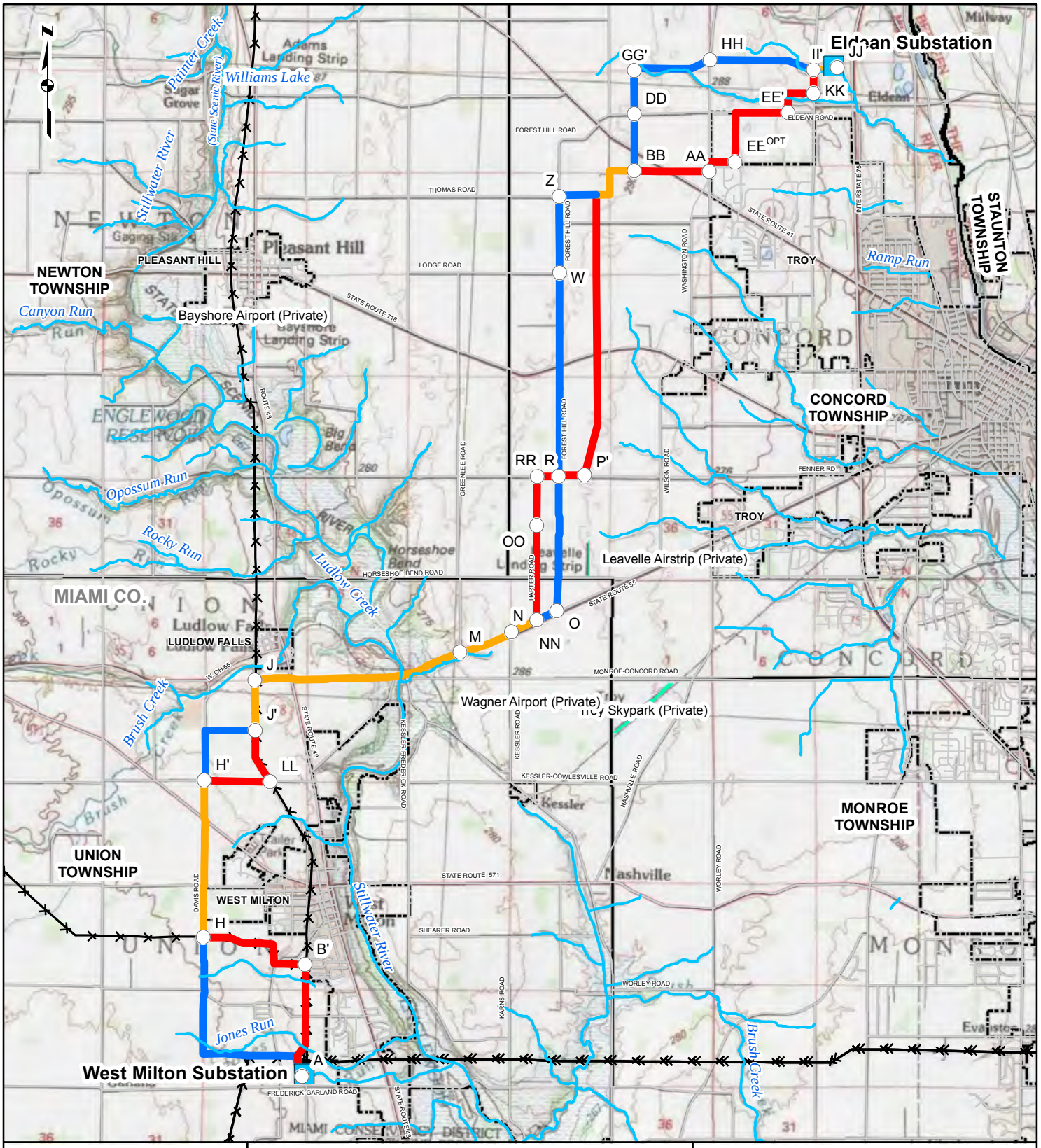

PROJECT LOCATION

MIAMI COUNTY, OHIO

Node
Substation
NHD Waterway
Preferred Route
Common Route
Alternate Route
Existing Transmission Line- Approximate
Road Centerline
Waterbody
Airport
City Limit
Township Boundary
County Boundary

0 3,500 7,000 14,000 Feet

FIGURE 3.4
PREFERRED AND ALTERNATE ROUTES

WEST MILTON TO ELDEAN 138kV
DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 10/22/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: USGS 30' x 60' TOPOGRAPHIC QUADRANGLES: PIQUA (1986,) DAYTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 10/2015. ODNR, 2014.

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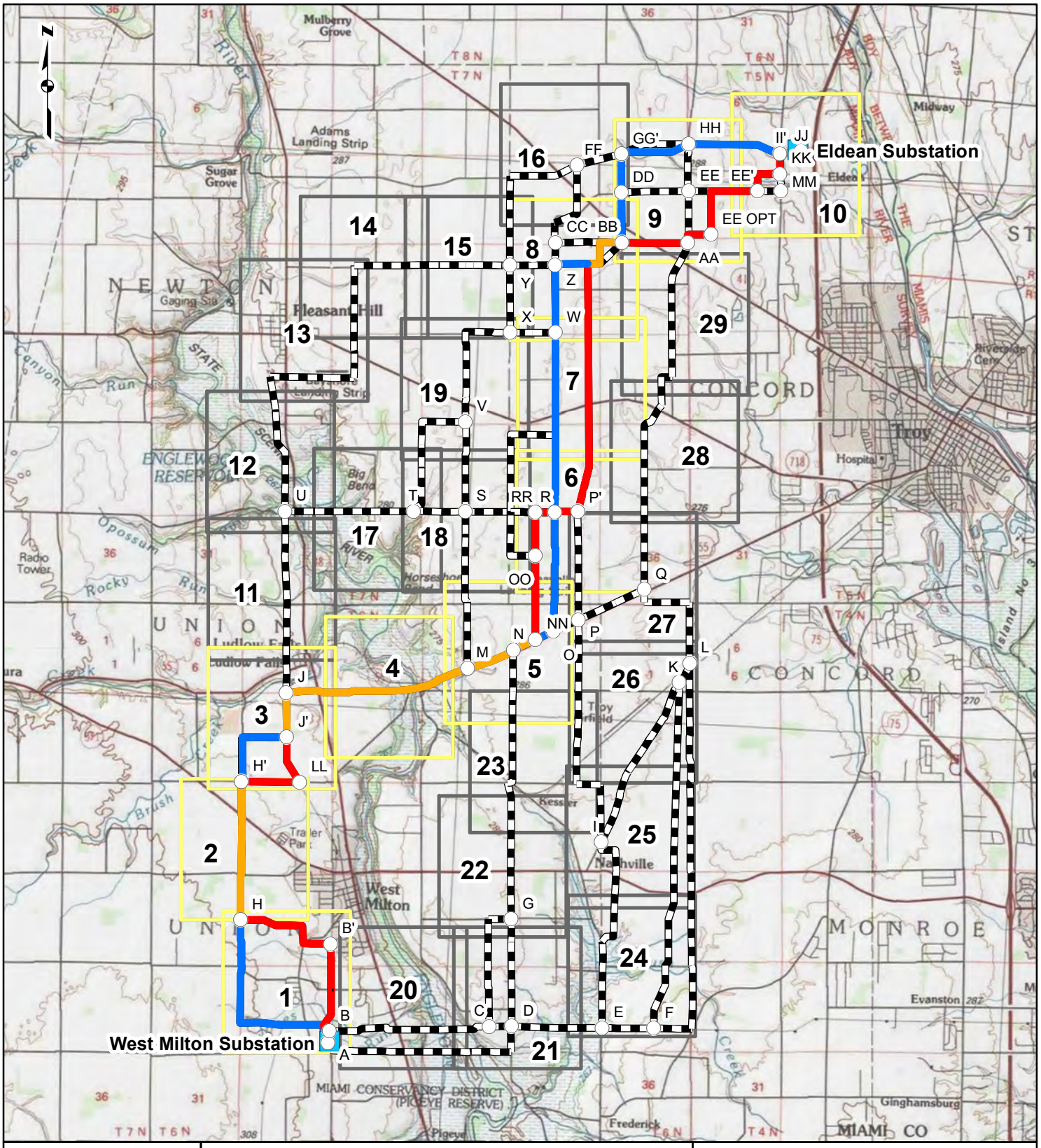

PROJECT LOCATION

MIAMI COUNTY, OHIO

Node

Existing Substation

Preferred Route

Common Route

Alternate Route

Proposed Route Alternative

Sheet Boundary- Preferred and Alternate Route

Sheet Boundary

0 0.75 1.5 3 Miles

FIGURE 3.5
ROUTE ALTERNATIVES INDEX

WEST MILTON TO ELDEAN 138kV

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: USGS 30' x 60' TOPOGRAPHIC QUADRANGLES: PIQUA (1986,) DAYTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 11/2015.

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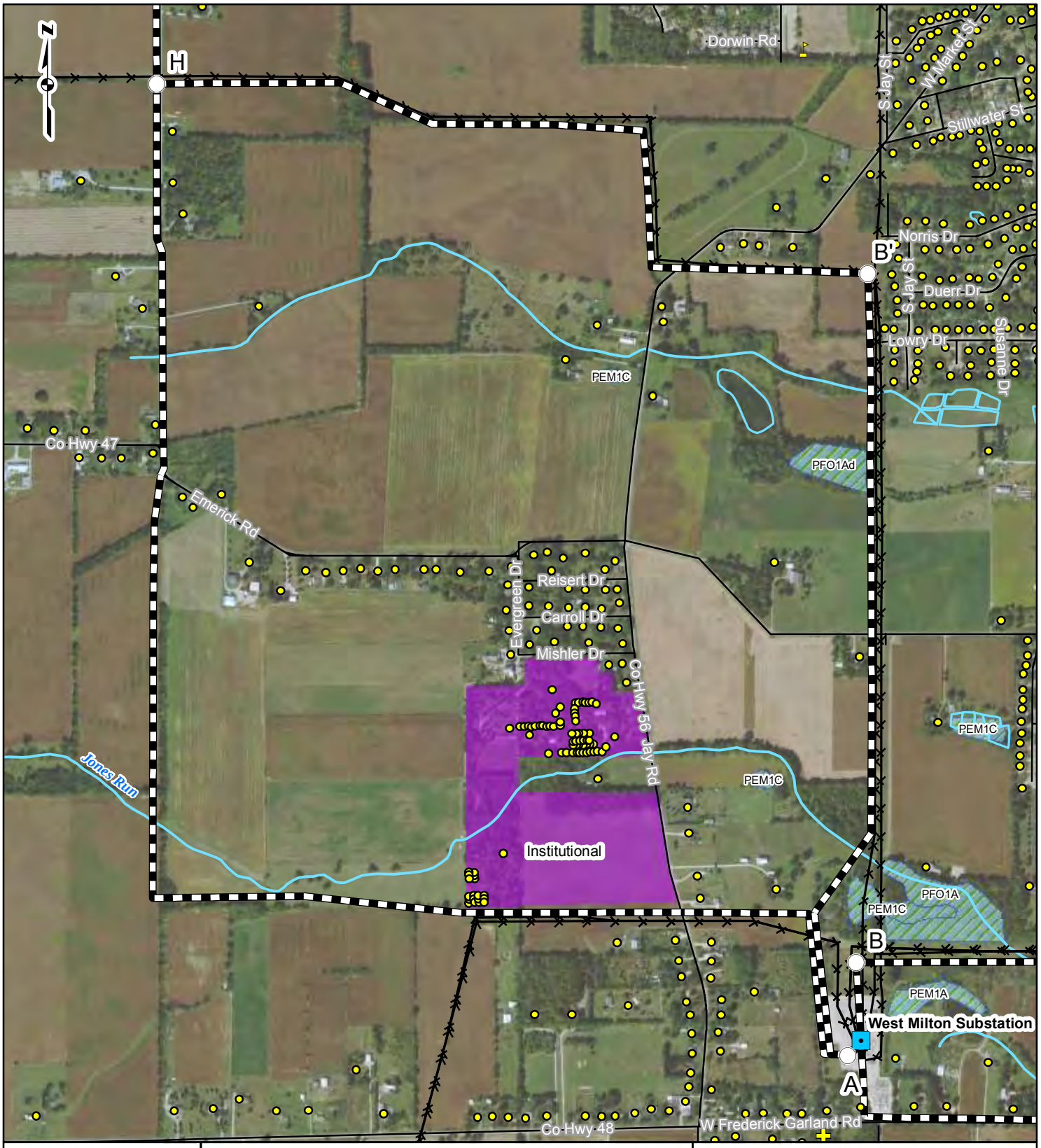

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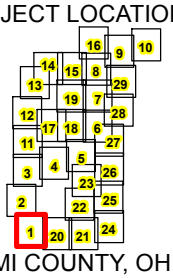

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 1 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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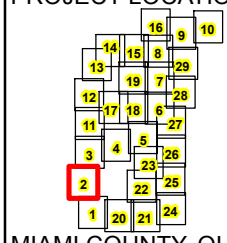

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 2 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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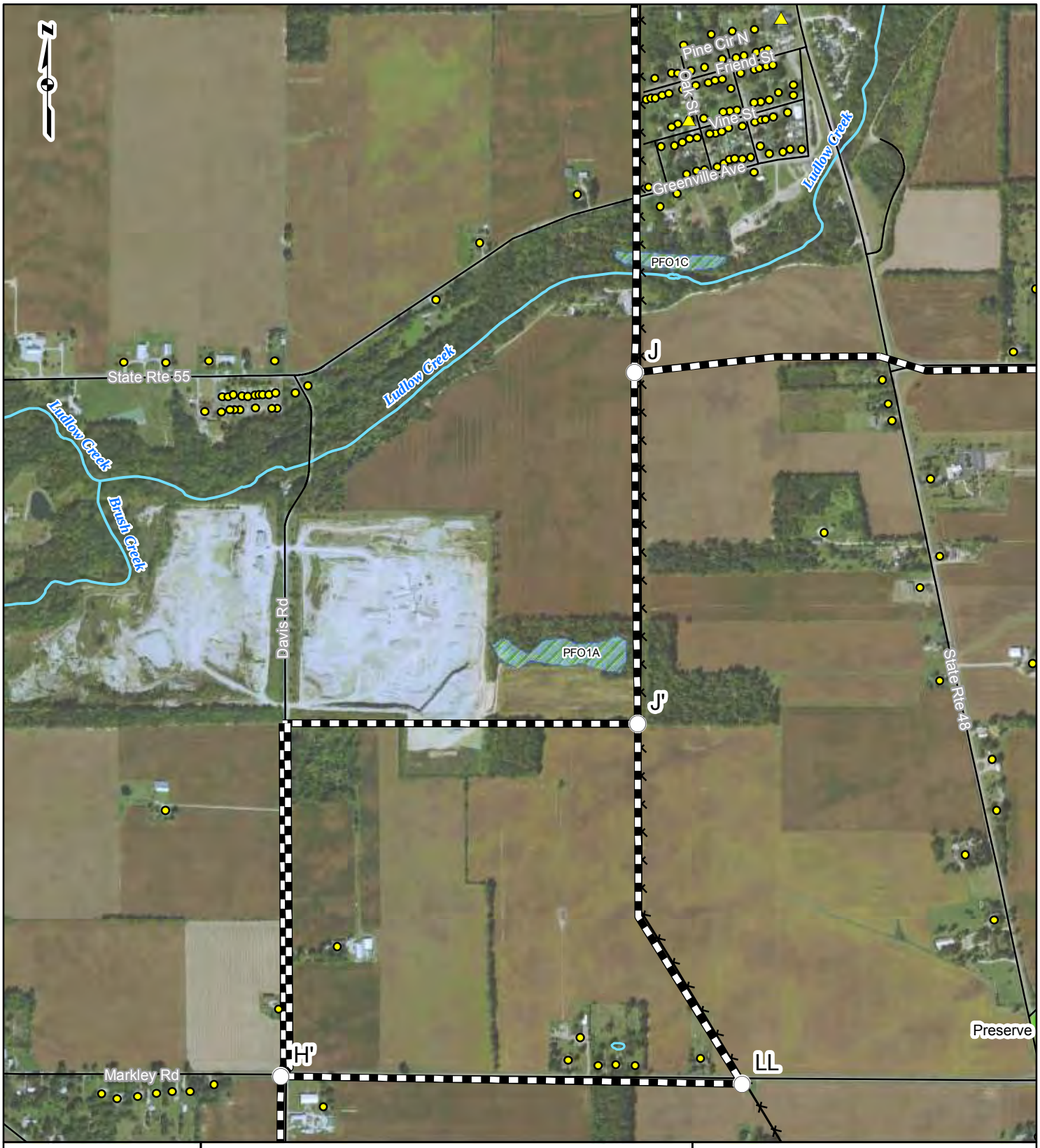

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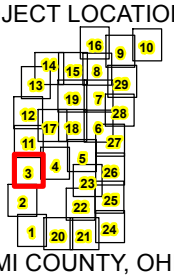

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 3 OF 29

WEST MILTON TO ELDEAN 138kV

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DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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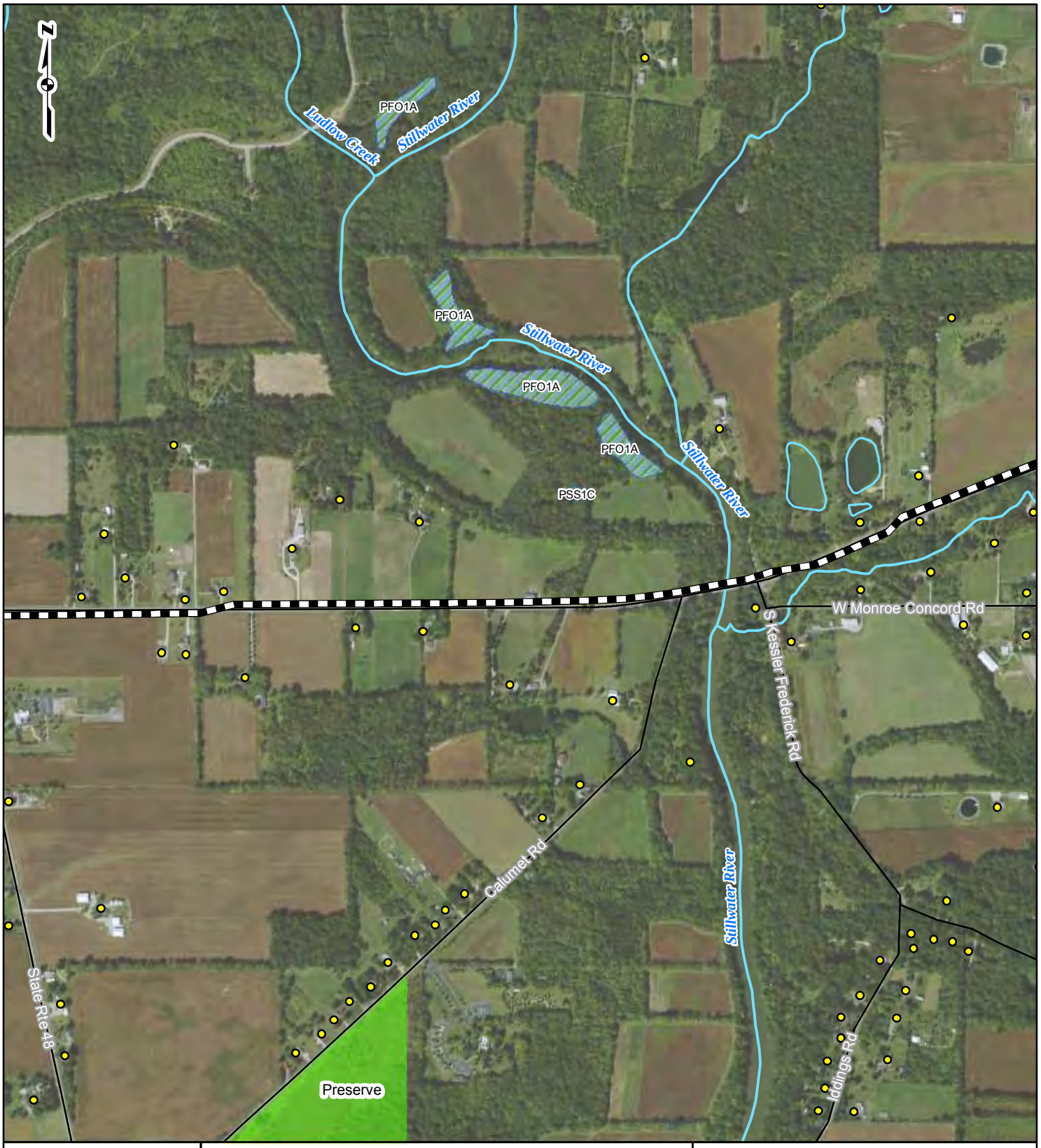

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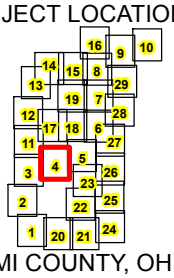

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 4 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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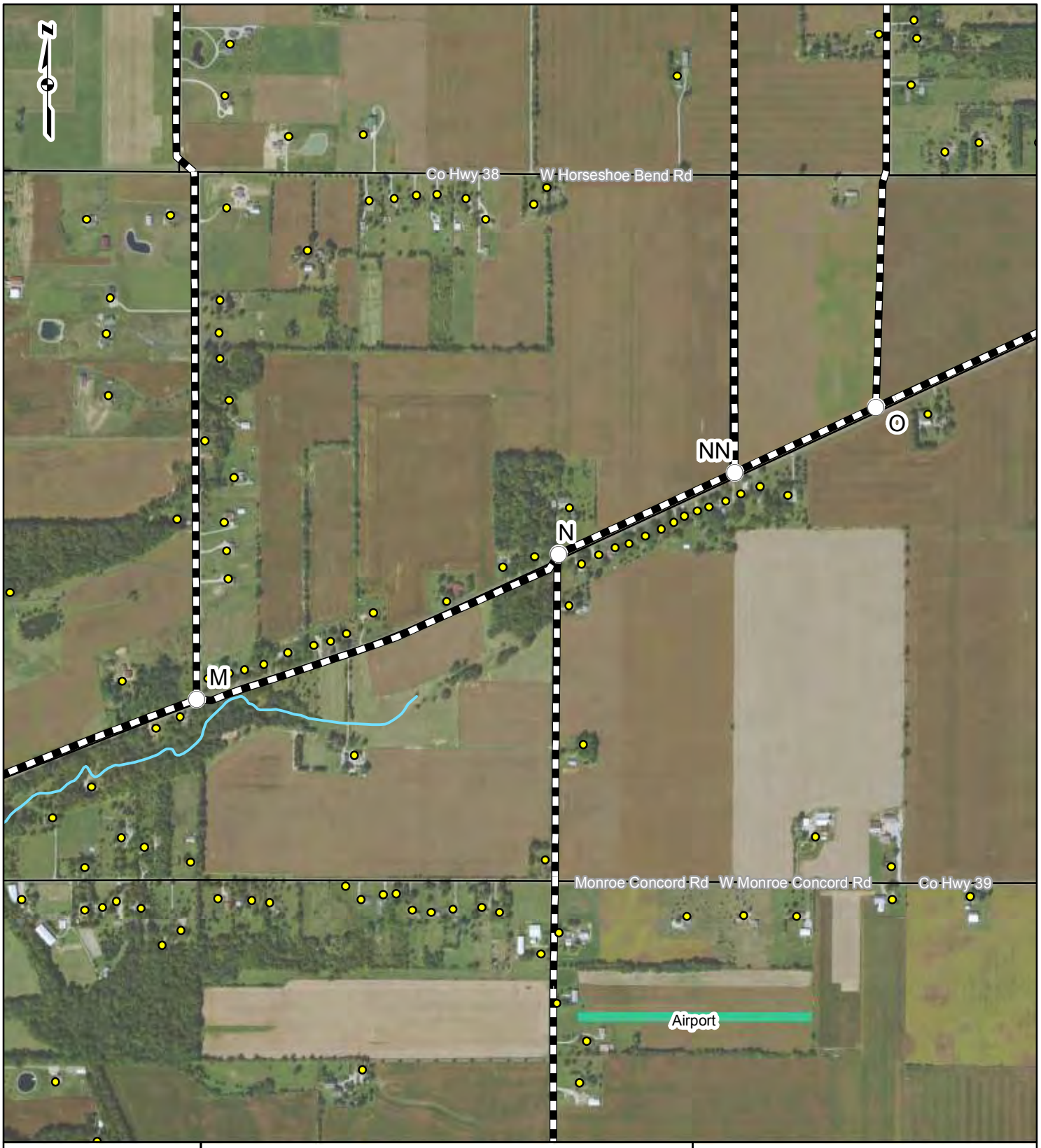

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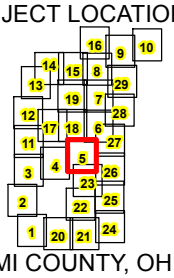

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 5 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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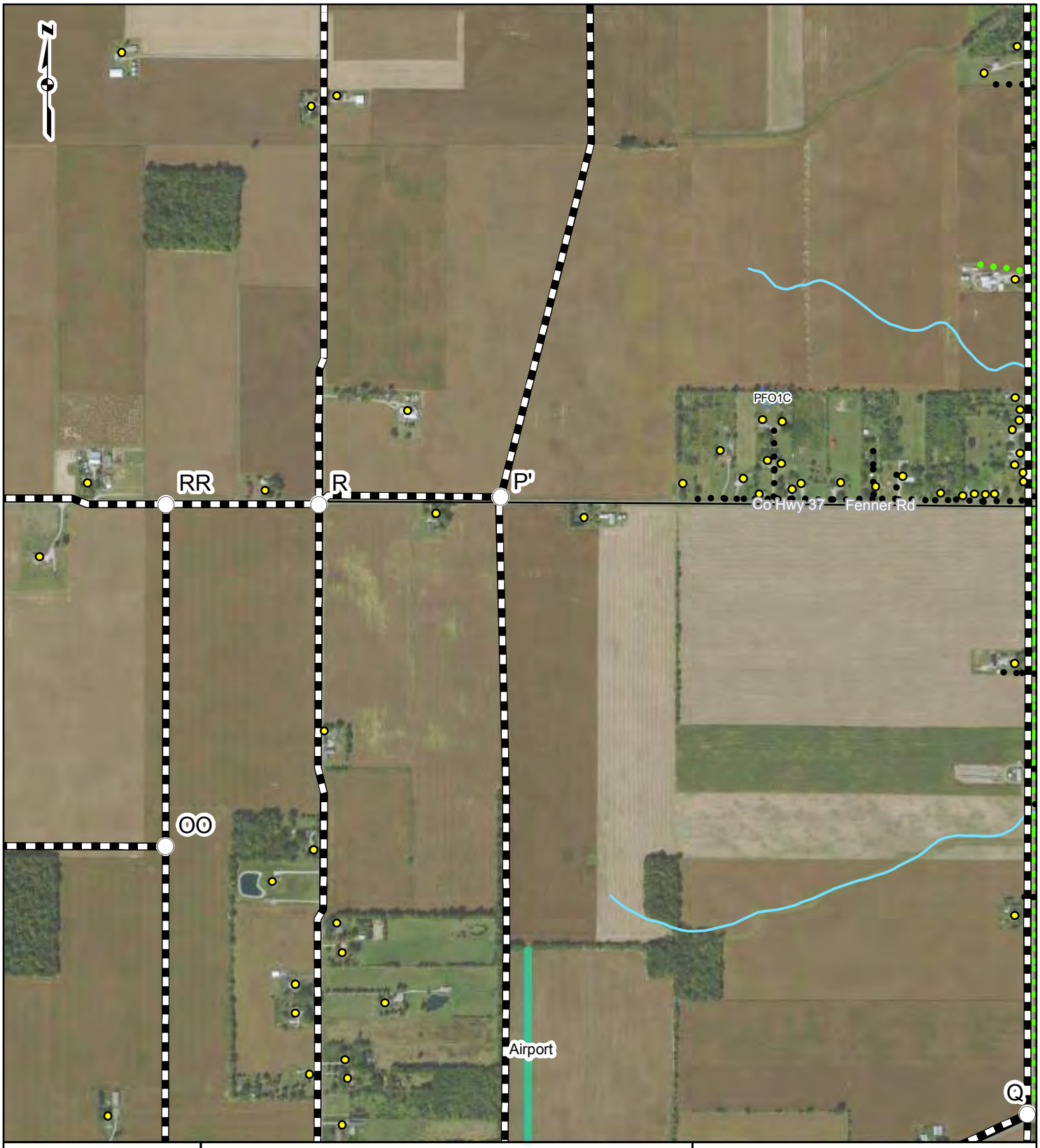

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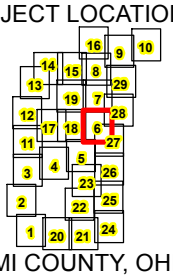

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 6 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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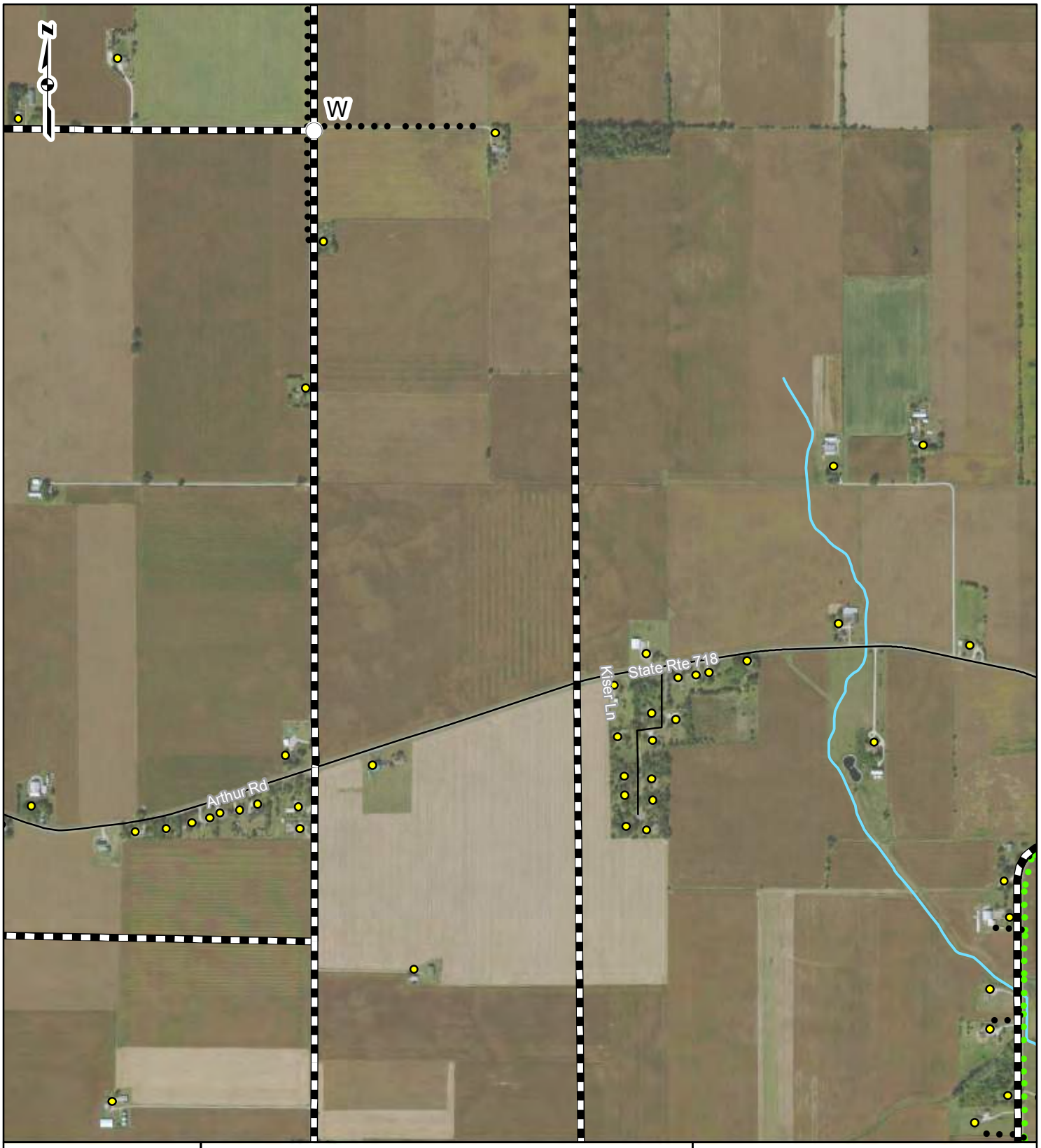

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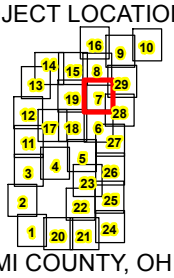

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 7 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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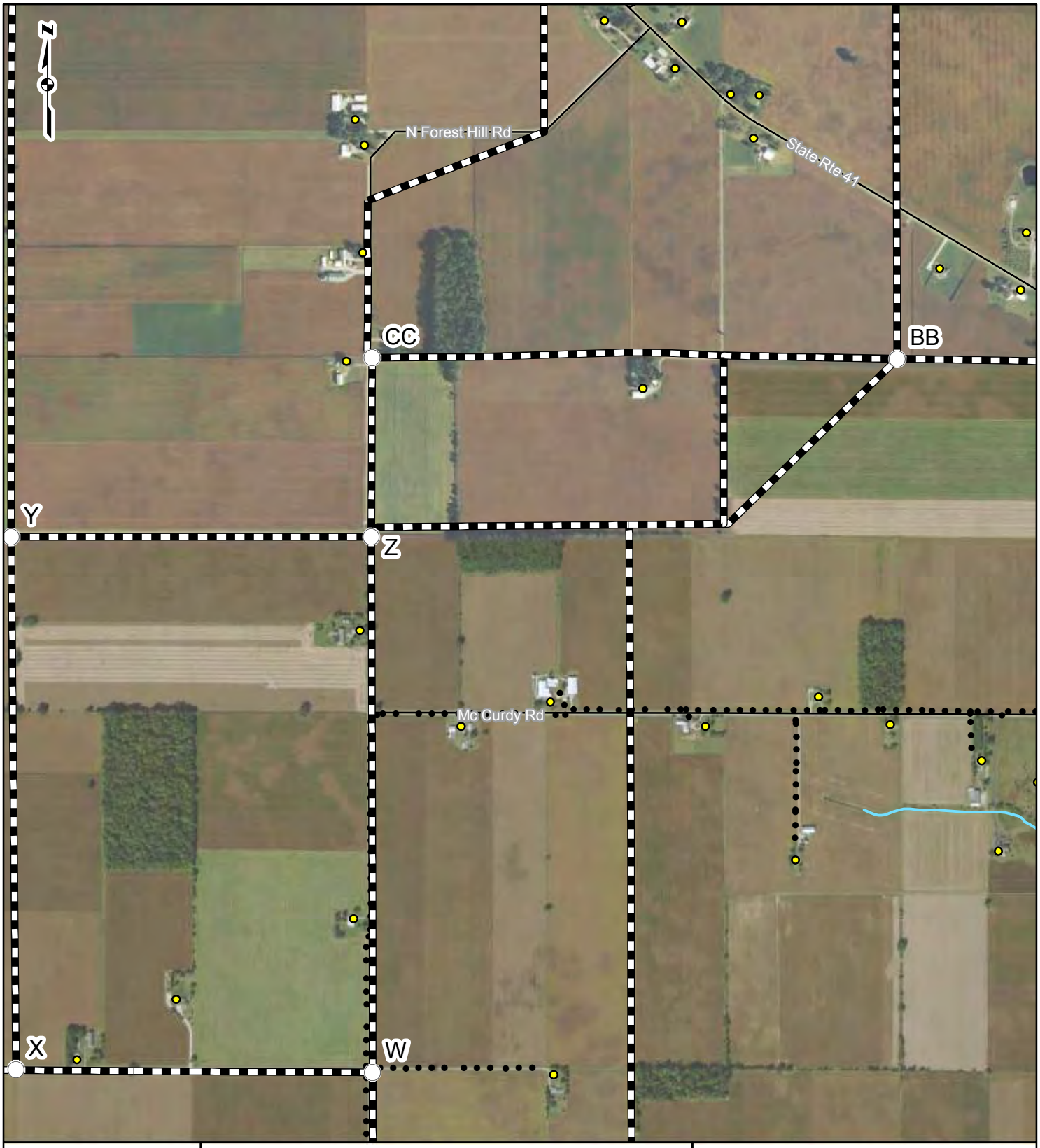

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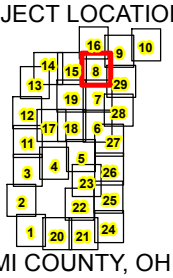

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 8 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT

DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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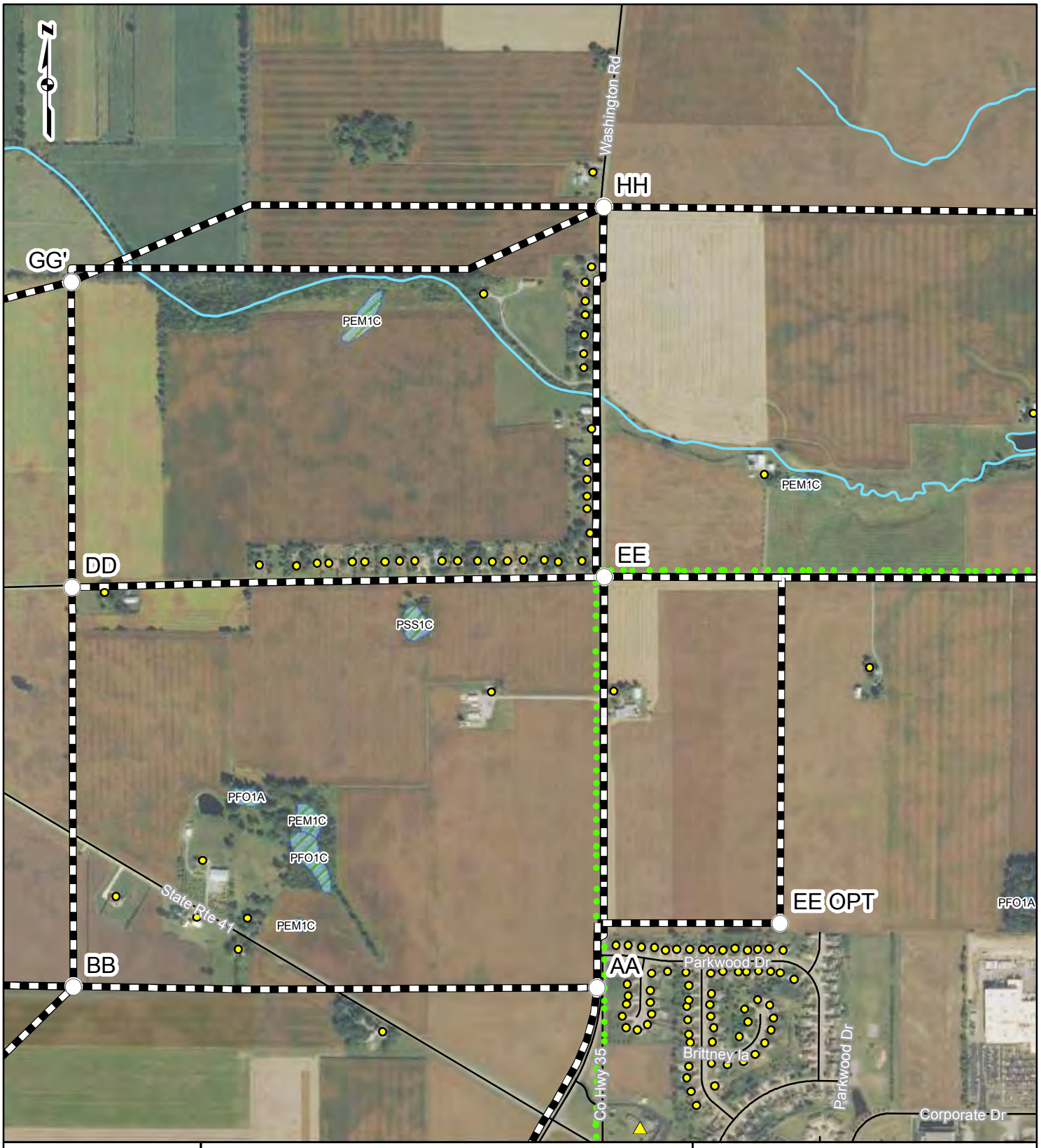

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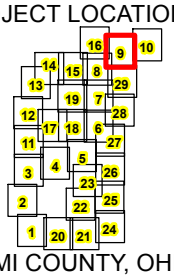

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 9 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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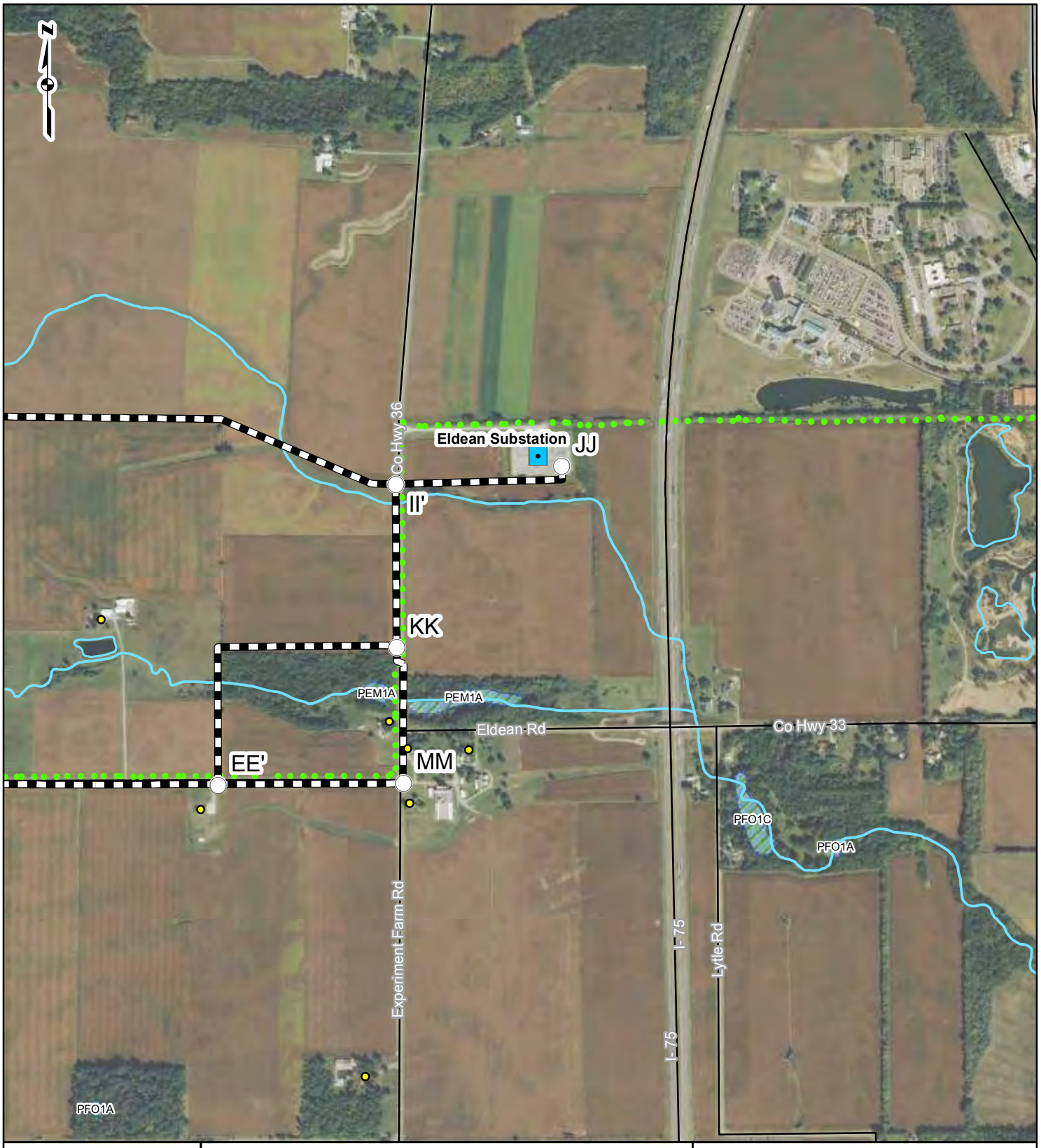

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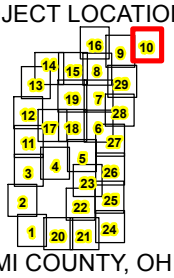

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 10 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

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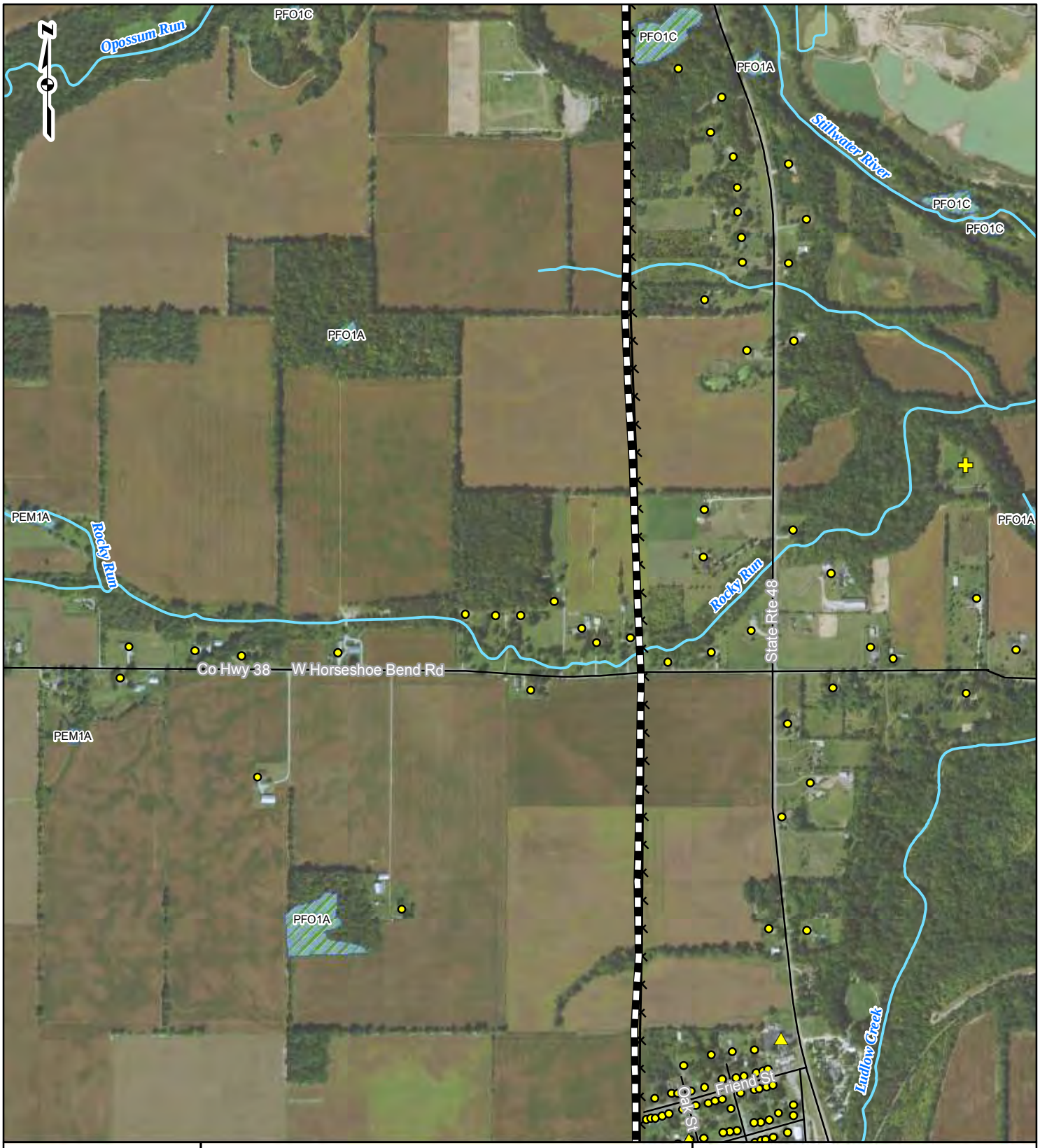

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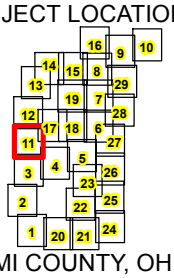

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 11 OF 29

WEST MILTON TO ELDEAN 138kV

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DAYTON POWER & LIGHT

DP&L

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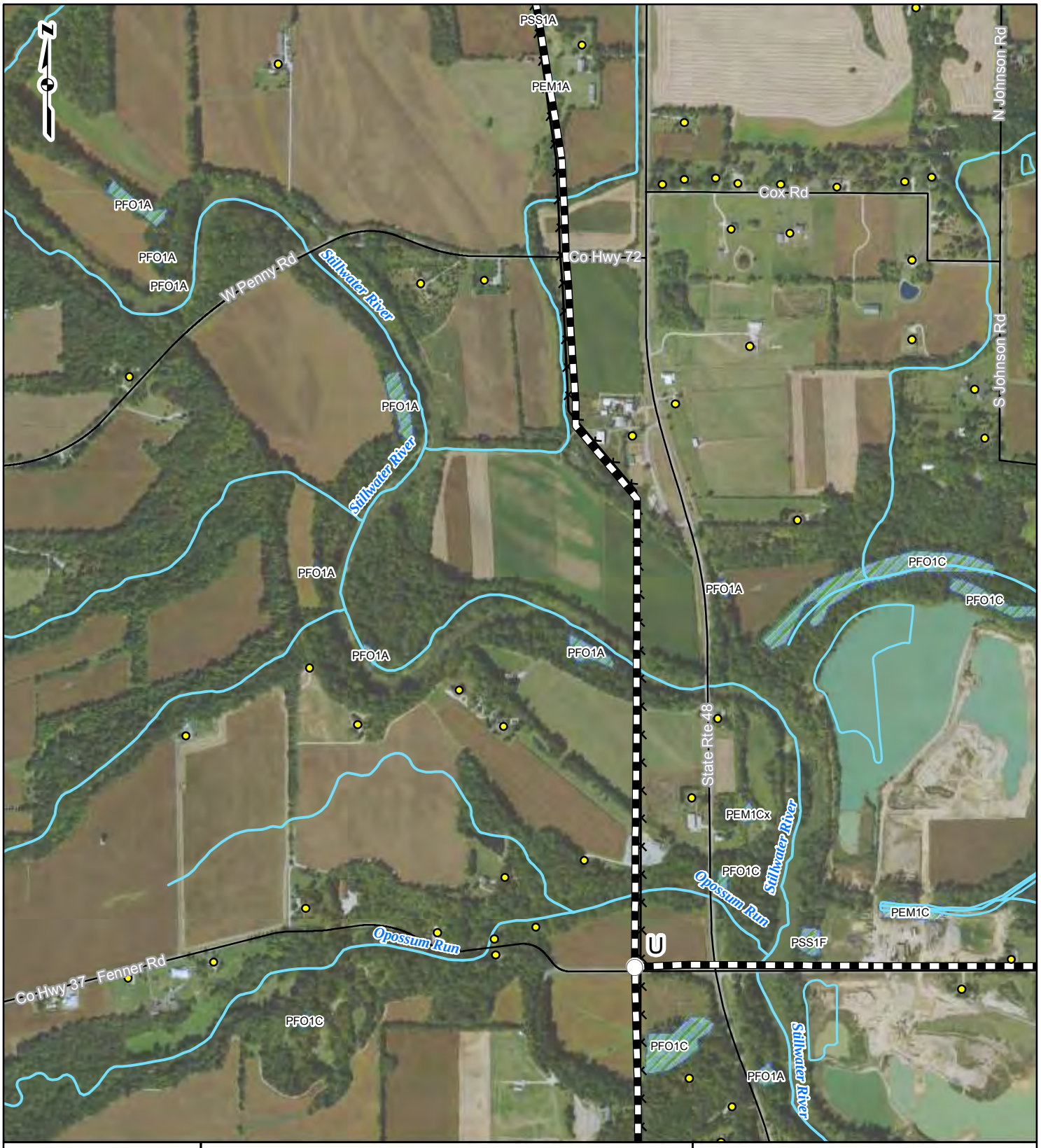

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 12 OF 29

WEST MILTON TO ELDEAN 138kV

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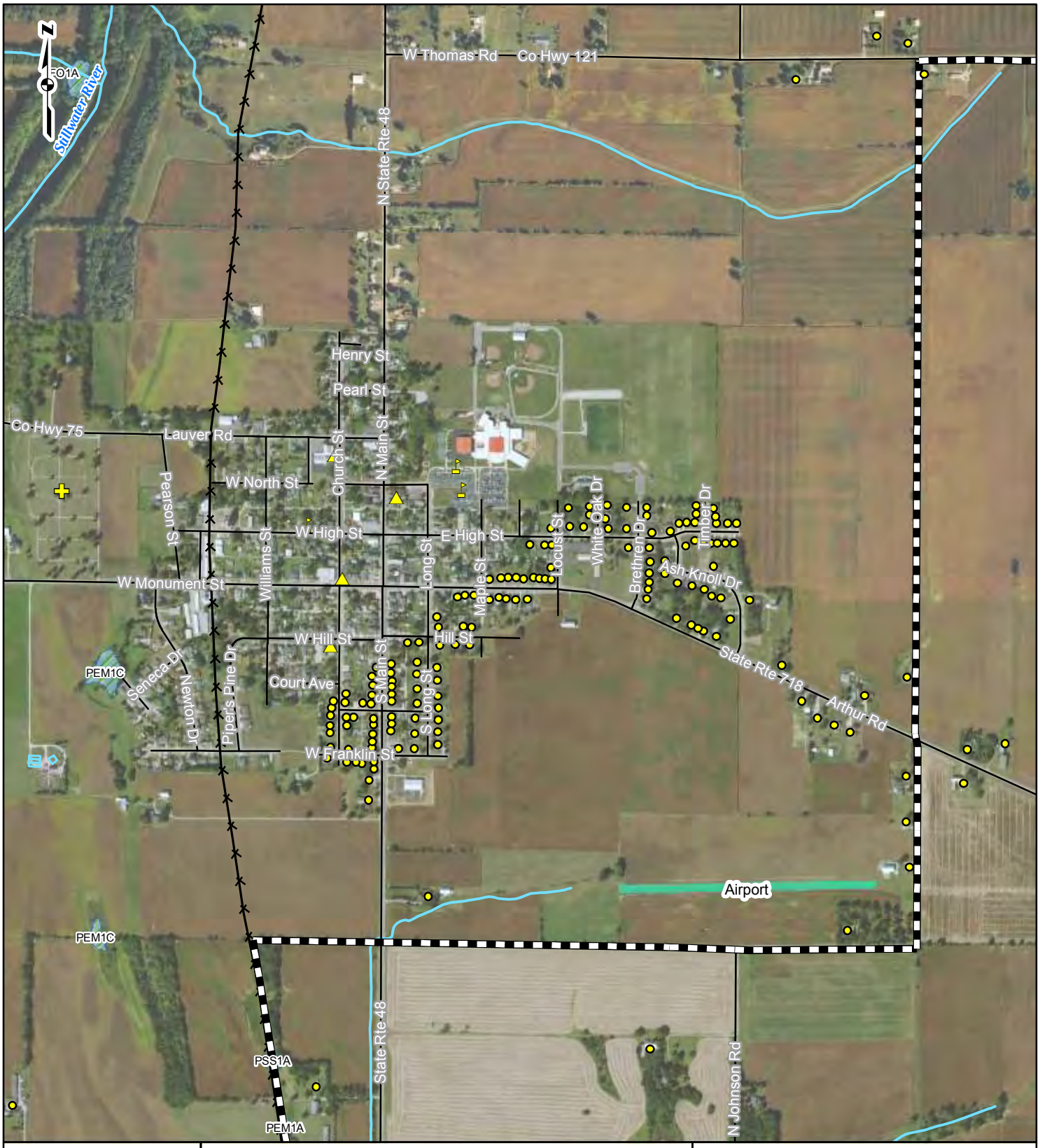

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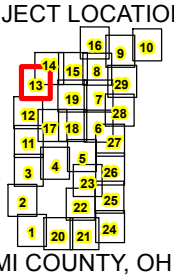

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 13 OF 29

WEST MILTON TO ELDEAN 138kV

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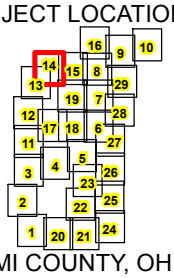
PROJECT LOCATION



MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 14 OF 29

WEST MILTON TO ELDEAN 138kV

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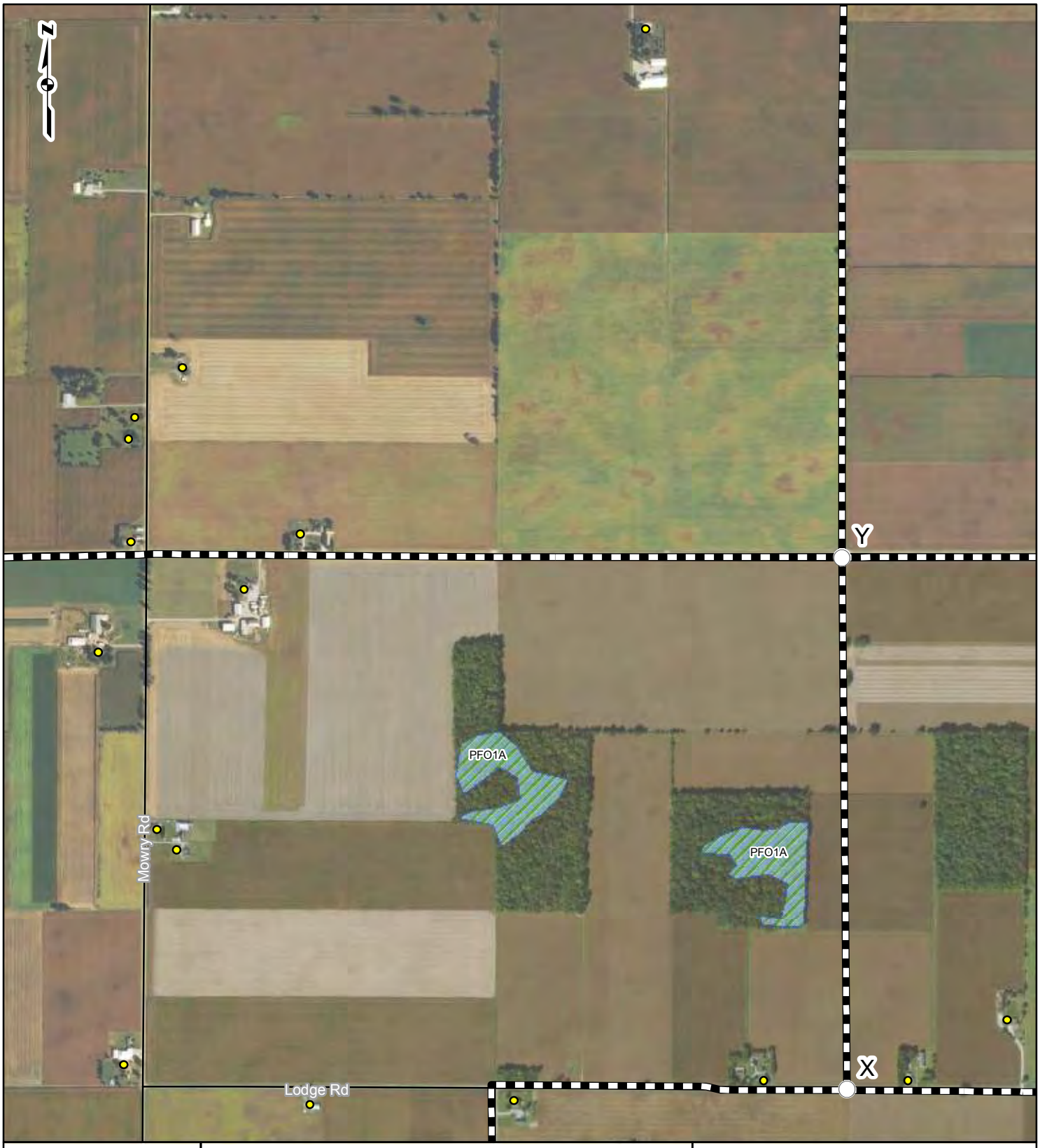

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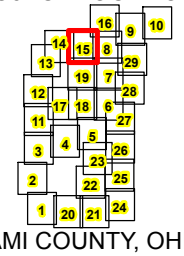

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 15 OF 29

WEST MILTON TO ELDEAN 138kV

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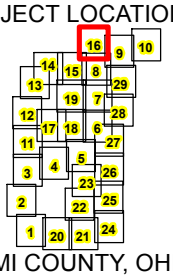
PROJECT LOCATION



MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 16 OF 29

WEST MILTON TO ELDEAN 138kV

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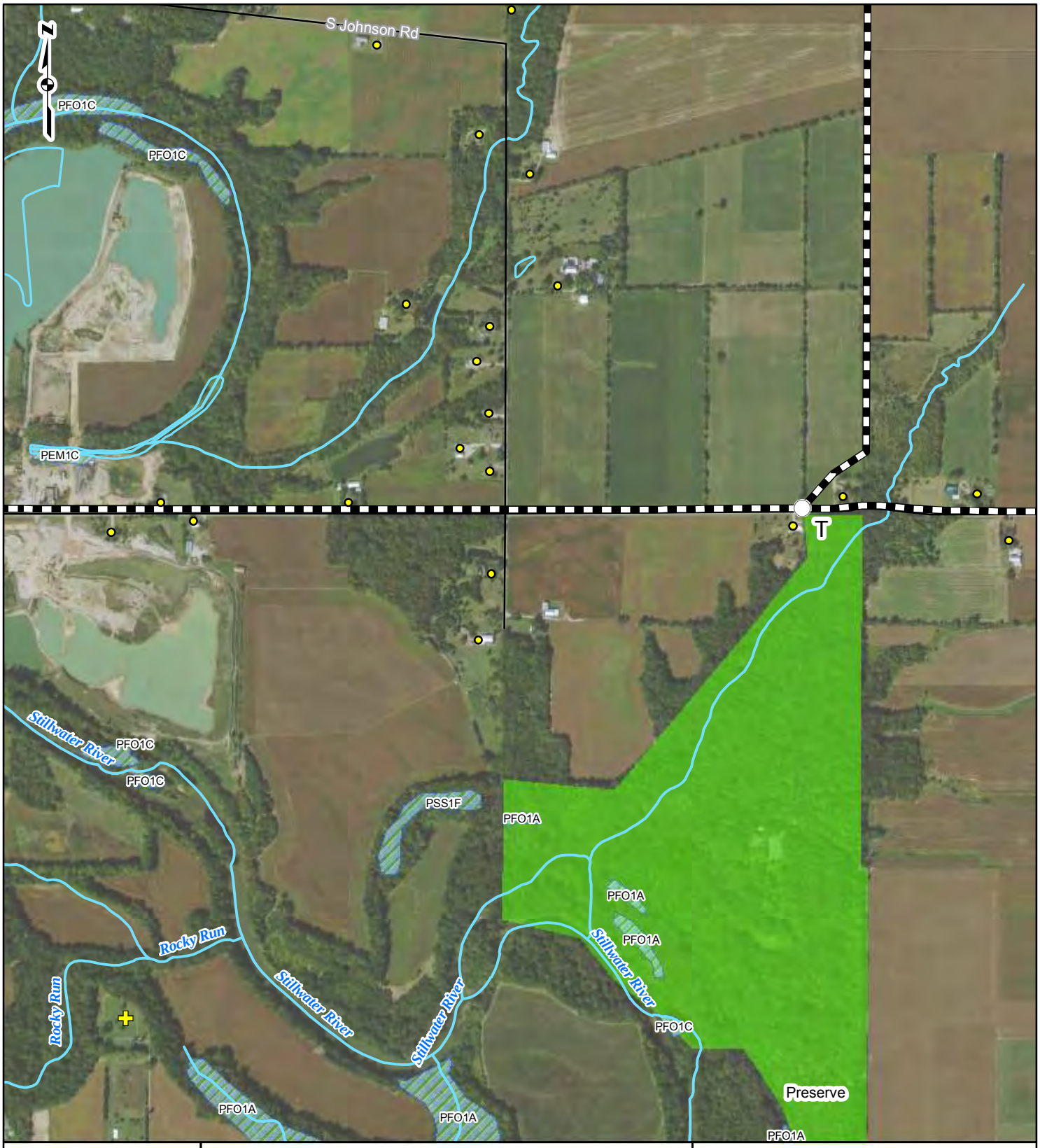

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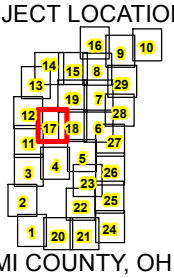

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 17 OF 29

WEST MILTON TO ELDEAN 138kV

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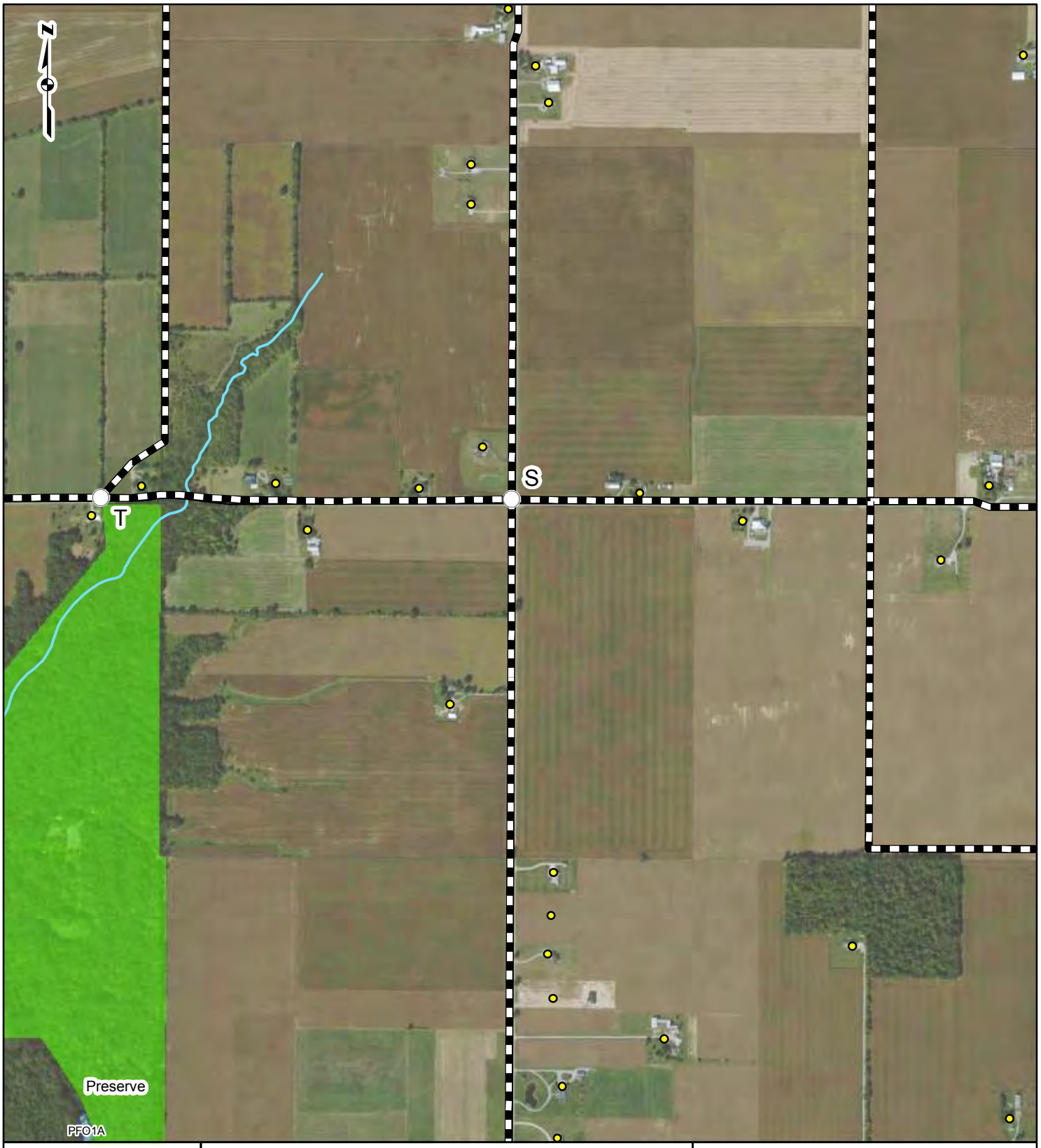

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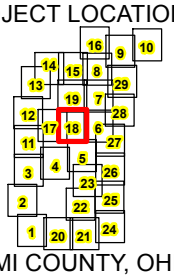

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 18 OF 29

WEST MILTON TO ELDEAN 138kV

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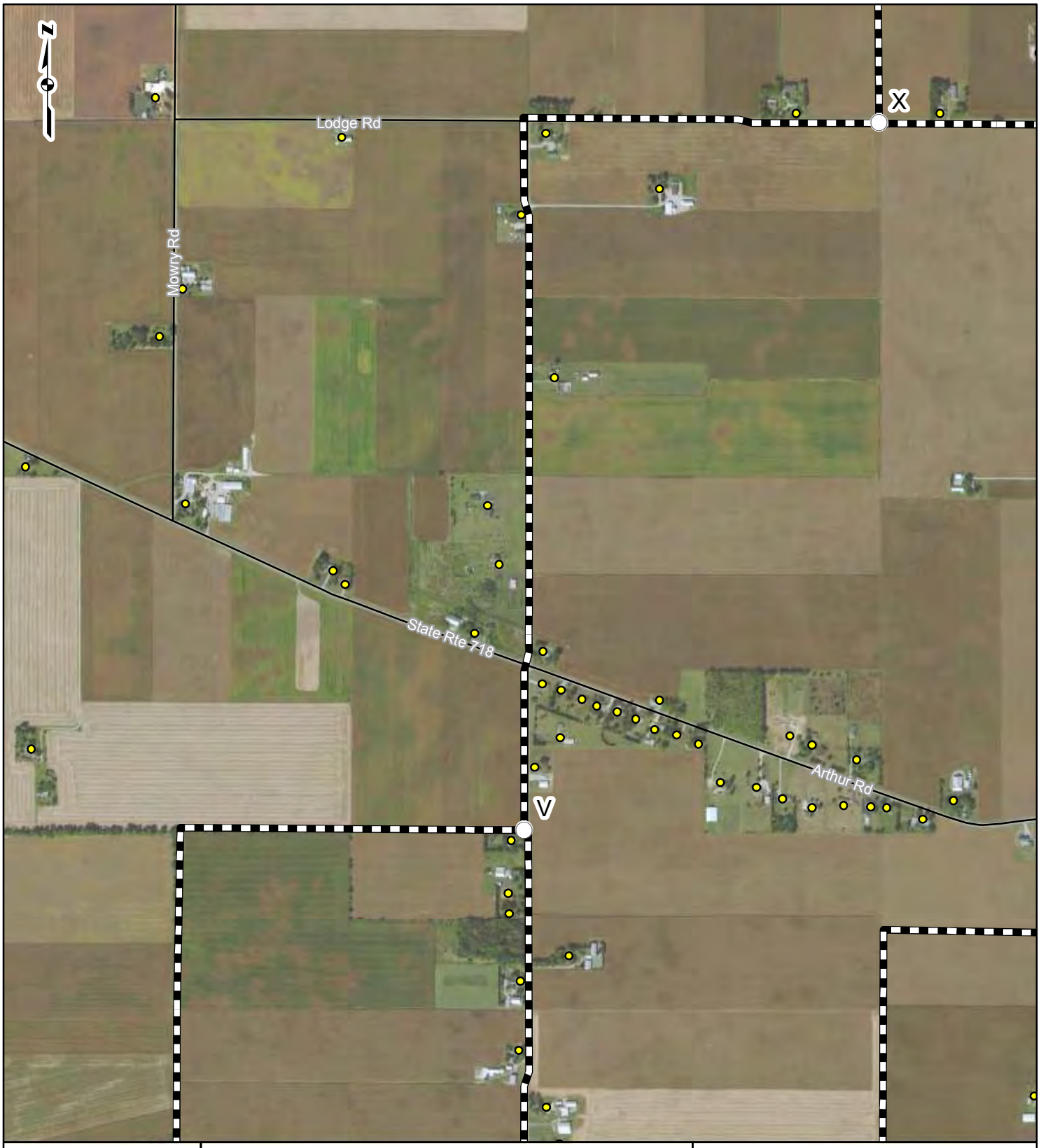

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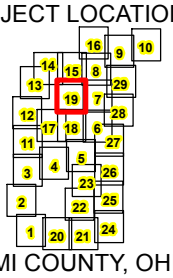

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 19 OF 29

WEST MILTON TO ELDEAN 138kV

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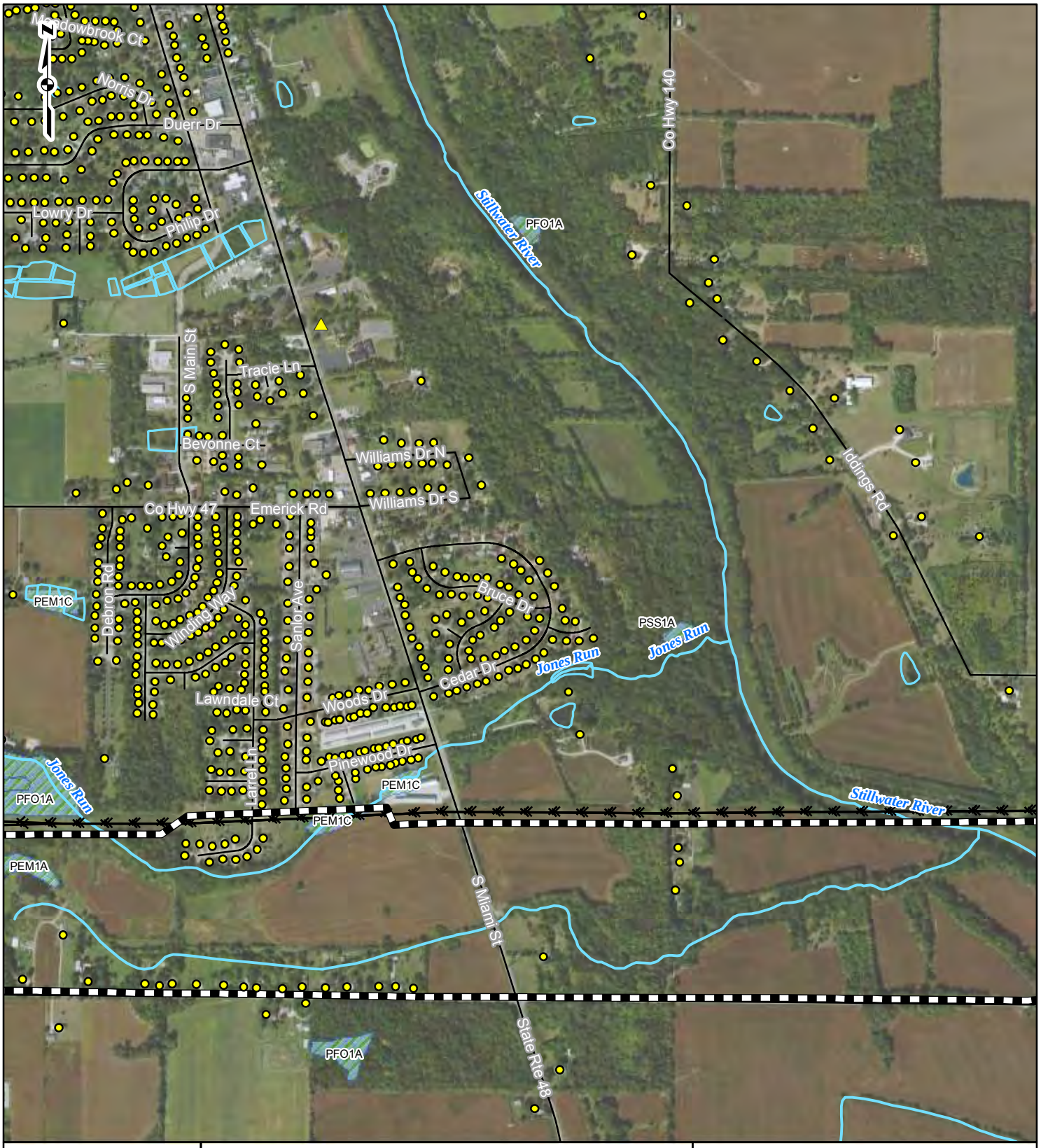

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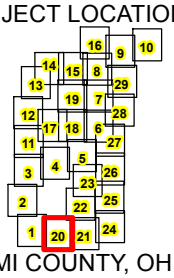

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 20 OF 29

WEST MILTON TO ELDEAN 138kV

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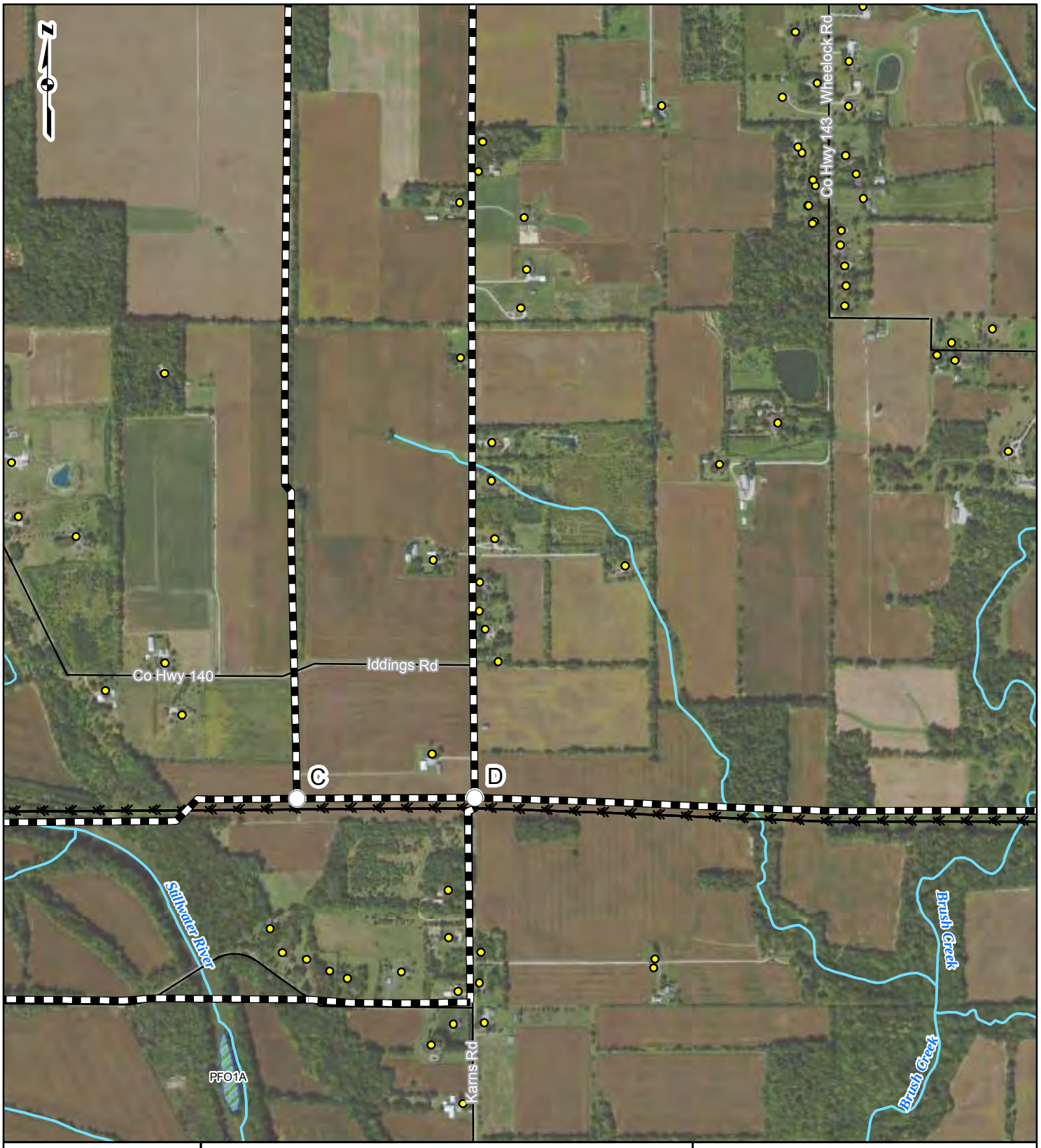

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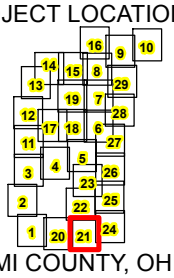

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 21 OF 29

WEST MILTON TO ELDEAN 138kV

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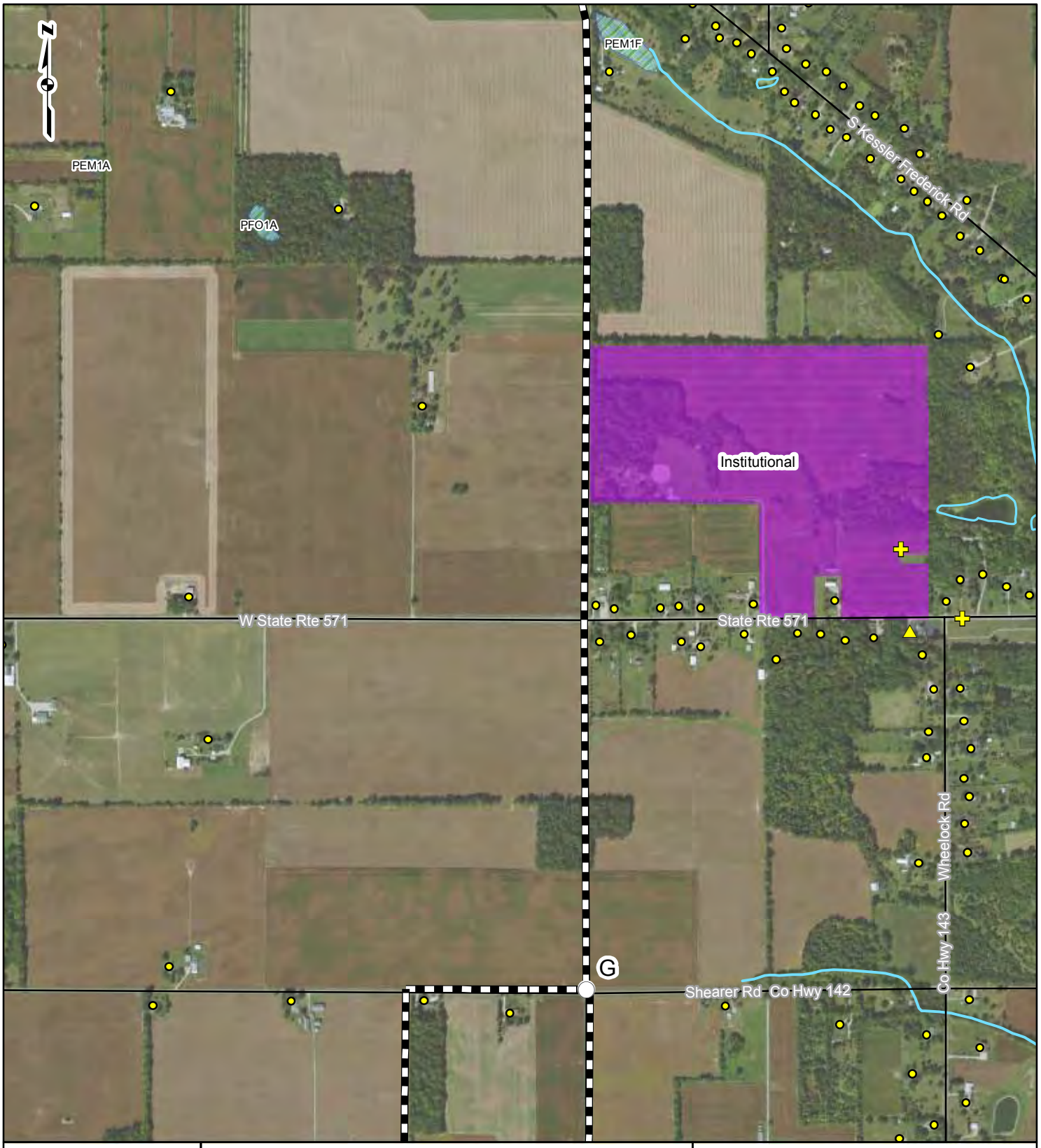

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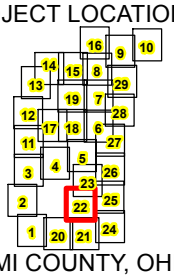

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 22 OF 29

WEST MILTON TO ELDEAN 138kV

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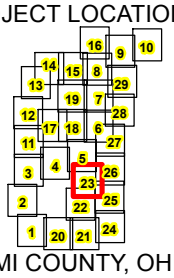

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 23 OF 29

WEST MILTON TO ELDEAN 138kV

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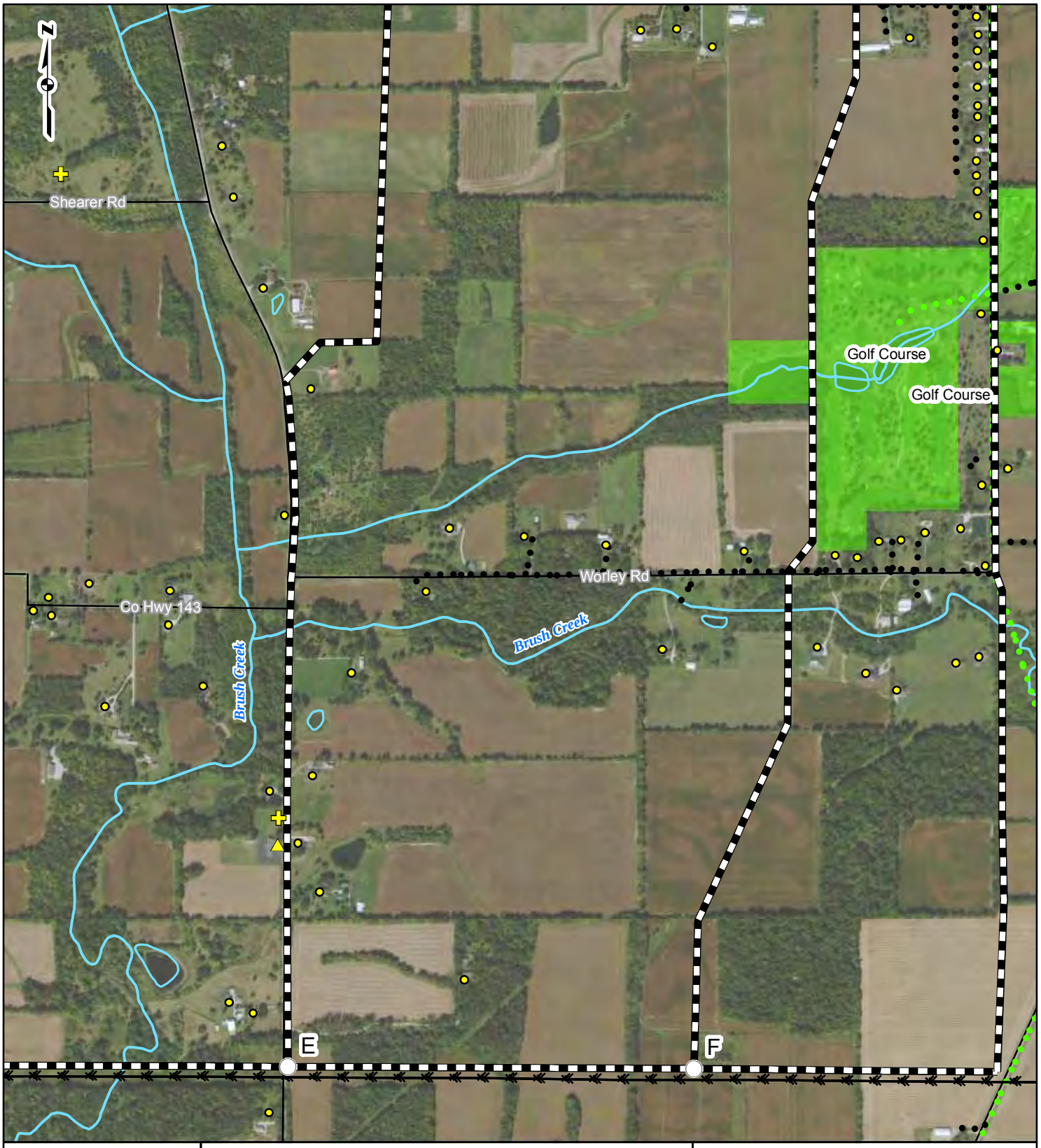

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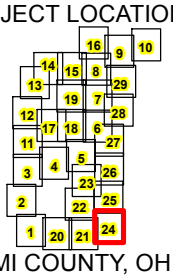

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 24 OF 29

WEST MILTON TO ELDEAN 138kV

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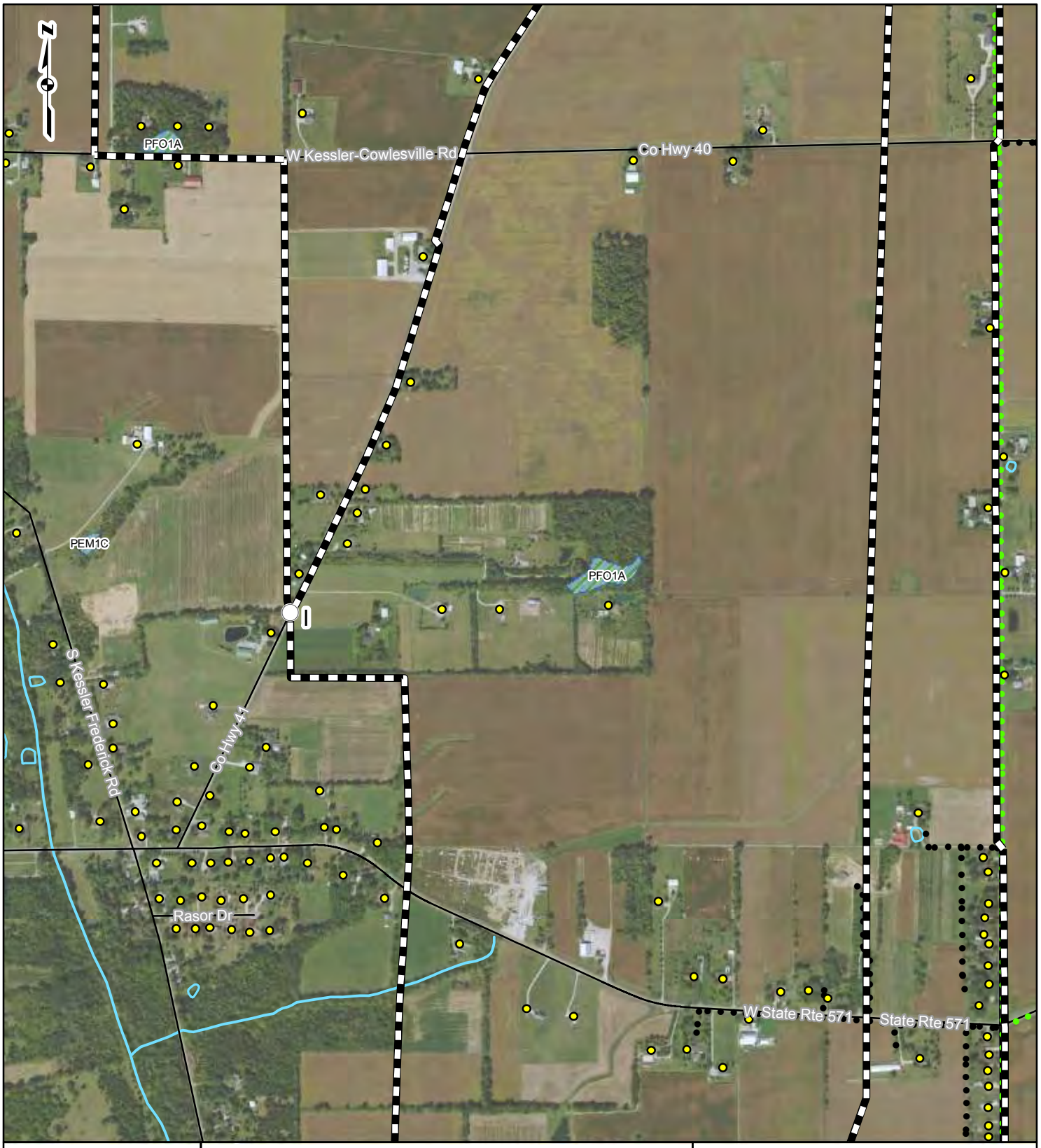
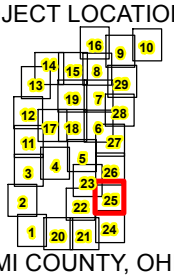


PROJECT LOCATION



MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 25 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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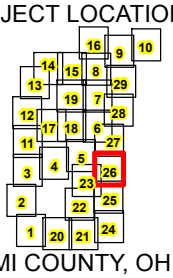

MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School

Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)

Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 26 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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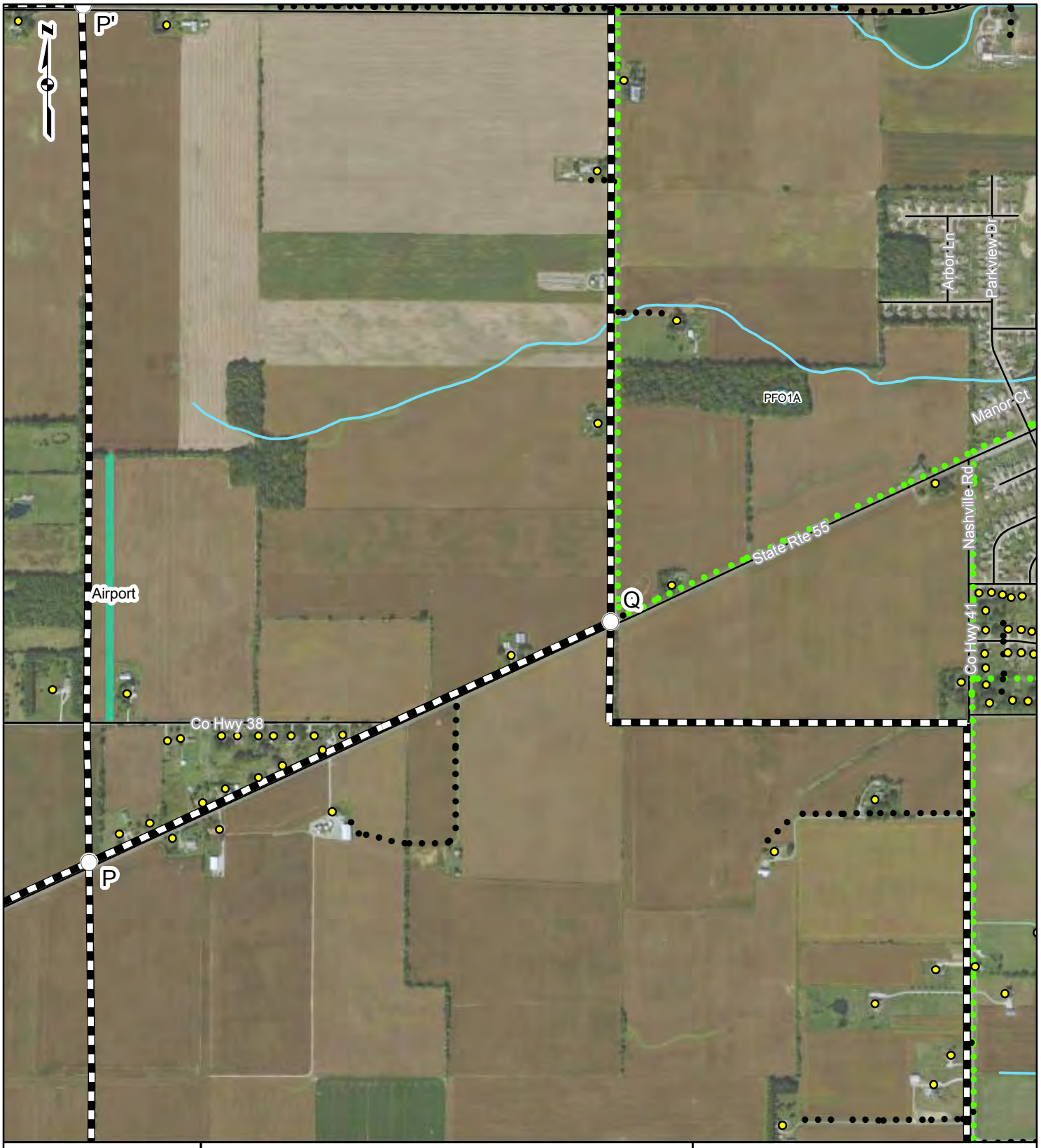

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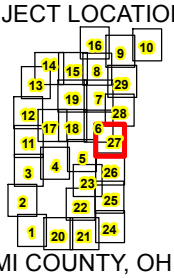

MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 27 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants DAYTON POWER & LIGHT DP&L

DRAWN BY: TDB DATE: 11/16/2015
CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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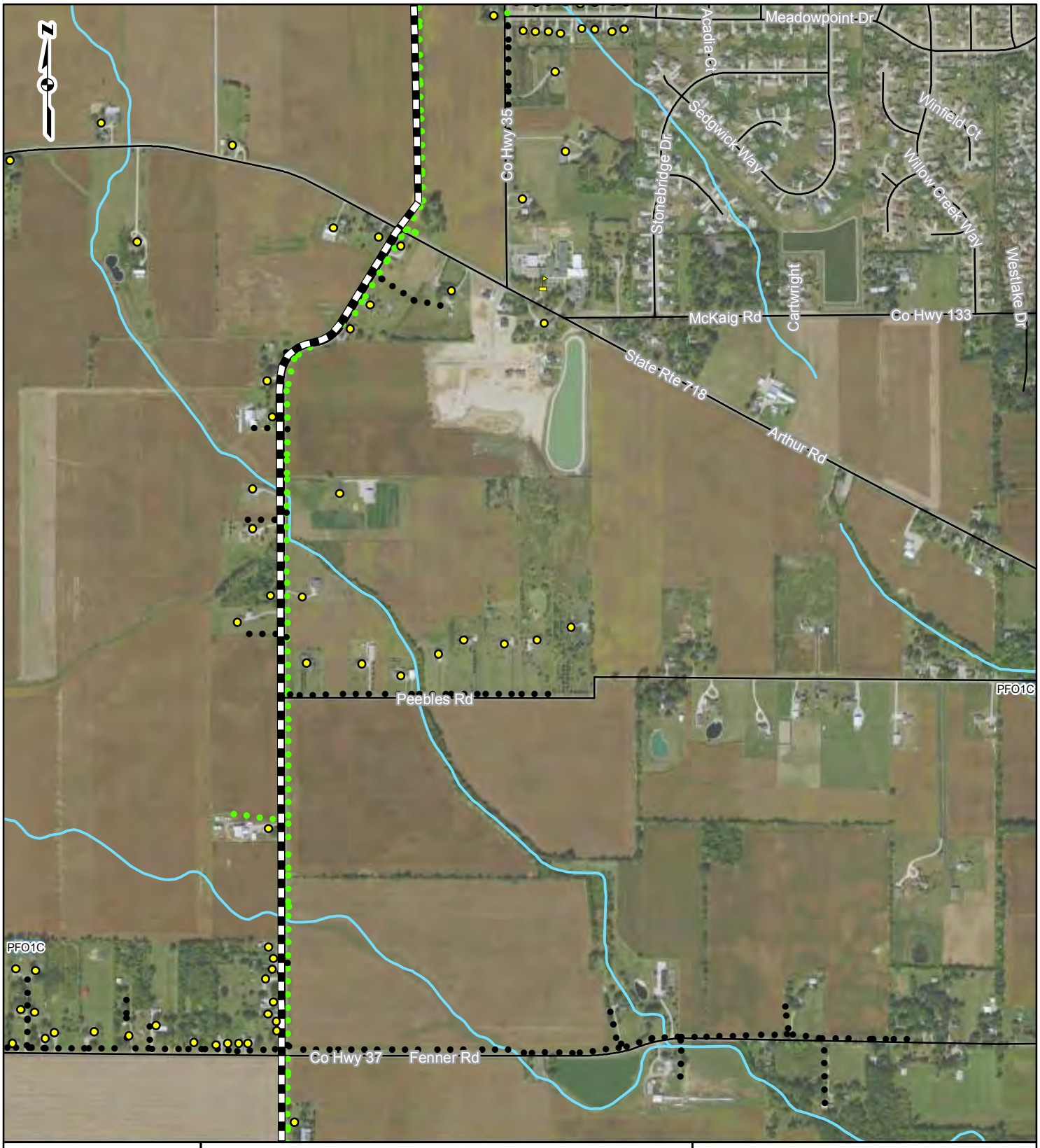
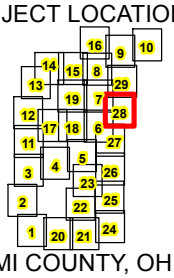


PROJECT LOCATION



MIAMI COUNTY, OHIO

Node
Existing Substation
Cemetery
Church
School
Residence
Proposed Route Alternative
Existing Transmission Line-Approximate
Existing 1-2 Phase (Pioneer Only)
Existing 3-Phase (Pioneer Only)
Road Centerline
NHD Waterway
NHD Waterbody
NWI Wetland
Airport (Private)
Institutional
Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 28 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

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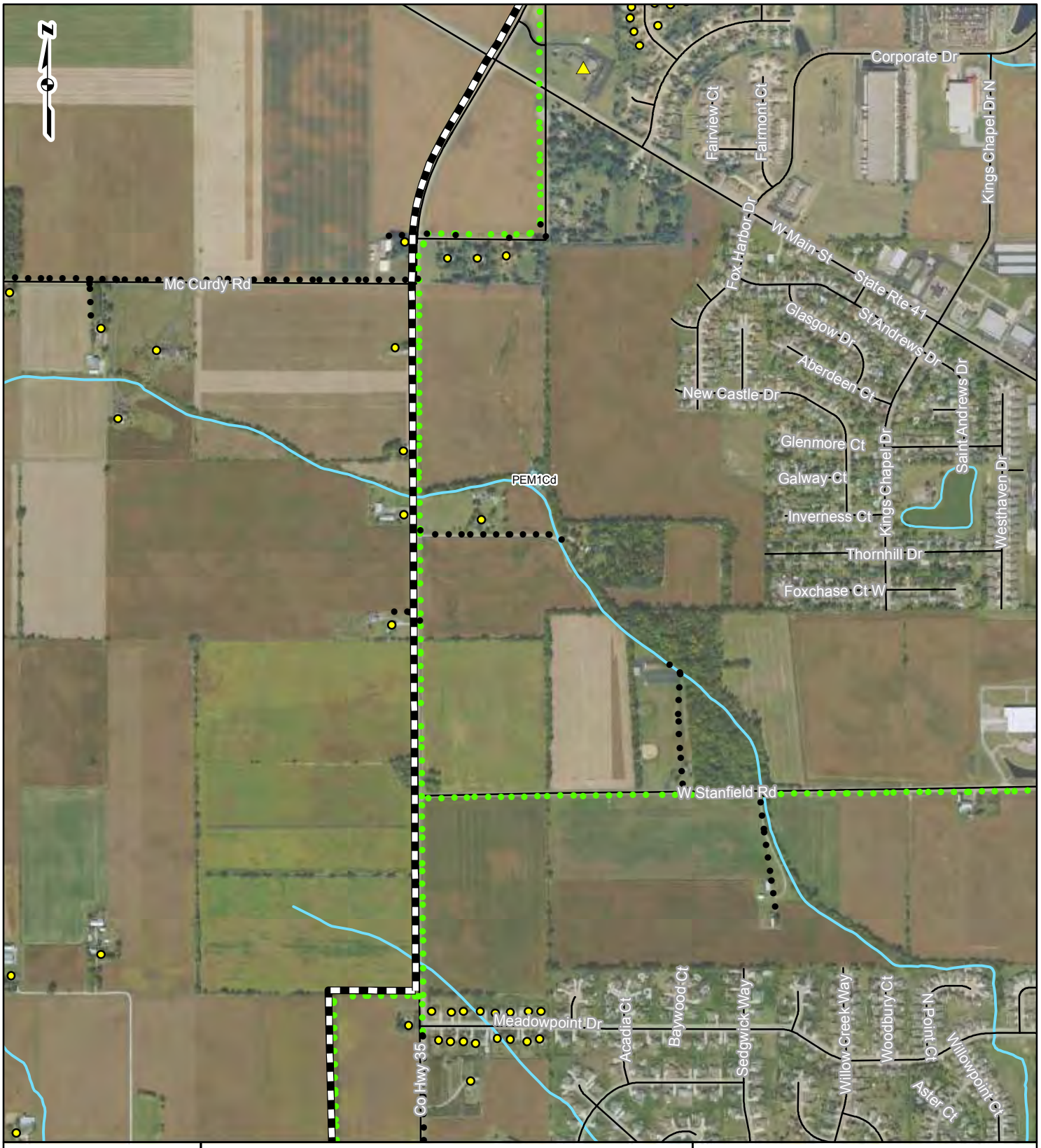
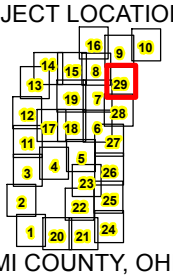


PROJECT LOCATION



MIAMI COUNTY, OHIO

- Node
- Existing Substation
- Cemetery
- Church
- School
- Residence
- Proposed Route Alternative
- Existing Transmission Line-Approximate
- Existing 1-2 Phase (Pioneer Only)
- Existing 3-Phase (Pioneer Only)
- Road Centerline
- NHD Waterway
- NHD Waterbody
- NWI Wetland
- Airport (Private)
- Institutional
- Recreational

0 500 1,000 2,000 Feet

FIGURE 3.5
ROUTE ALTERNATIVES
SHEET 29 OF 29

WEST MILTON TO ELDEAN 138kV

gai consultants

DAYTON POWER & LIGHT

DP&L

DRAWN BY: TDB DATE: 11/16/2015

CHECKED: MAF APPROVED: MAF

REFERENCE: ESRI WORLD IMAGERY, 2012, ACCESSED 11/2015; UGSG NHD, 2012; MIAMI CO., 2013; USFWS, 2010; PIONEER, 2013; DP&L, 2013.

Z:\Energy\2012\G121196.00 - DPL West Milton to Eldean\GIS\PROJECT_FILES\ROUTE_SELECTION\3_5_DPL_WEST_MILTON_ELDEN_138KV_ROUTES_2015_11_16.mxd

APPENDIX 4-2

Route Selection Study Addendum

Route Selection Study Addendum

The Dayton Power and Light Company
West Milton – Eldean
138 kV Transmission Line Project
Miami County, Ohio

GAI Project Number: G121196.01

January 2019

Prepared by: GAI Consultants, Inc.
Indianapolis Office
201 N. Illinois Street, Suit 1700
Indianapolis, Indiana 46204

Prepared for: The Dayton Power and Light Company
1900 Dryden Road
Dayton, Ohio 45439

Route Selection Study Addendum

The Dayton Power and Light Company
West Milton-Eldean
138 kV Transmission Line Project
Miami County, Ohio

GAI Project Number: G121196.01

January 2019

Prepared for:
The Dayton Power and Light Company
1900 Dryden Road
Dayton, Ohio 45439

Prepared by:
GAI Consultants, Inc.
Indianapolis Office
201 N. Illinois Street, Suite 1700
Indianapolis, Indiana 46204

Table of Contents

1.0 Introduction and Purpose

The Dayton Power and Light Company (DP&L) is planning to construct a new 138 kV transmission line to improve the reliability of electric power in the northwest area of the DP&L transmission system. The West Milton – Eldean 138 kV Transmission Line Project (Project) area is in the vicinity of West Milton, Ohio (OH), west of the City of Troy, OH (Figure 1). The new transmission line will be constructed to connect the existing West Milton Substation and the existing Eldean Substation, which are 11 miles apart based on a straight linear path.

Additional information on the Project purpose, objectives, initial route selection study efforts, and previous public open house comments and resulting optimizations have been previously documented. This Route Selection Study (RSS) Addendum documents the third public open house and the resulting route optimizations and/or route adjustments implemented to generate the final Preferred and Alternate Routes presented to OPSB in the application. This RSS Addendum captures route adjustments and public involvement since the Project's last OPSB application submittal in May 2018 under Case No. 14-0469-EL-BTX.

The objective of this RSS Addendum is to document route adjustments during the pre-application phase of the Project following the publication of the initial RSS and continued public input and constraints and opportunity analysis. This RSS Addendum does not include quantitative ranking of the routes.

2.0 Route Adjustment for Optimizing Alignments

Following the selection of the Preferred and Alternate Routes, DP&L responded to certain landowners' requests for meetings to discuss the proposed transmission line alignment on their properties. These requests for changing the alignment, exclusively within an individual landowner's property, were evaluated on a case-by-case basis to determine the impact on ecological features, land use, socioeconomics, and engineering design and constructability. One area on the Preferred Route was determined to be a reasonable request to optimize the alignment of the route, which is described below.

Harter Road Optimization

A request was made of DP&L to adjust the Preferred Route from the previous alignment to remove the line from passing through an agricultural field, albeit along a property line, and to parallel Harter Road and Horseshoe Bend Road. The Alternate Route already parallels the east side of Harter Road, so the route adjustment of the Preferred Route will make the proposed route along Harter Road a common route between State Route 55 and Horseshoe Bend Road. Once the common route heading north along Harter Road reaches Horseshoe Bend Road, the Preferred Route makes a right turn to parallel the south side of Horseshoe Bend Road before heading north and rejoining the Preferred Route along Forest Hill Road. The Harter Road optimization is shown on Figure 2.

3.0 Third Public Meeting Input on Revised Route Alternatives

Following the first two public open house meetings, route adjustments and/or route optimizations were made, and a third public open house was held on November 7, 2018 to solicit written and verbal feedback from landowners on the current Preferred and Alternate Routes at that time. The Preferred and Alternate Routes presented to the public at this open house are shown in Figure 3.

Public comments were received during the meeting as guests verbally provided feedback to GAI Consultants, Inc. (GAI) and DP&L staff. Comment cards were distributed throughout the open house to solicit written comments. Completed comment cards were received at and after the open house, as

well as comments submitted to the OPSB. The majority of the comments focused on four areas of the Project: 1) the area around the existing West Milton Substation, 2) from McCurdy Road north to the existing Eldean Substation, 3) State Route 55, and 4) the routes along and west of Forest Hill Road.

Comments received for the area around the West Milton Substation included concerns regarding additional structures (poles) on their property and the associated easement, preference for the Preferred or Alternate Route over the other, and electromagnetic field (EMF) concerns. Comments received for the area north of McCurdy Road to the existing Eldean Substation included preference for the Preferred or Alternate Route over the other, following property lines rather than going through farmland, request to bury the line, concerns of potential future development in the area whereby the new lines would impede development, preference to place lines along roads, general disagreement with the purpose and need for the Project, being 'boxed-in' by overhead utility lines, stay within existing DP&L easement and/or road easement and not obtaining new easement, and removing hard angles. Comments received for State Route 55 included health and EMF effects, burying lines, having the route go down Calumet Road (majority of comments), preference for placement of line on the south side of State Route 55, and concerns with pole heights and property values as well as easement size. Comments received for routes along and west of Forest Hill Road included preference for Alternate Route and property values and health effects.

4.0 Selection of Preferred and Alternative Routes

Based on the comments received from the third public open house, two route adjustments were made to the Preferred and Alternate Routes to be presented to the OPSB in the application: 1) 138 kV Double Circuit Utilization and, 2) Forest Hill Road Route Preference Switch.

138 kV Double Circuit Utilization

Based on feedback from the third public open house, DP&L explored the ability to double circuit an existing 138 kV line from the West Milton Substation to Davis Road, which parallels the Alternate Route presented at the third open house. Based on that review, DP&L has determined that conversion of the existing single circuit 138 kV line between the West Milton Substation to Davis Road could be double circuited for the Project. The existing structures of the 138 kV line are proposed to be replaced to hold the conductor wires for both circuits. This change will also change DP&L's route preferences. The double circuit 138 kV line will now become the Preferred Route and the prior Preferred Route will now become the Alternate Route. See Figure 4 for a view of the changes that occurred.

Forest Hill Road Route Preference Switch

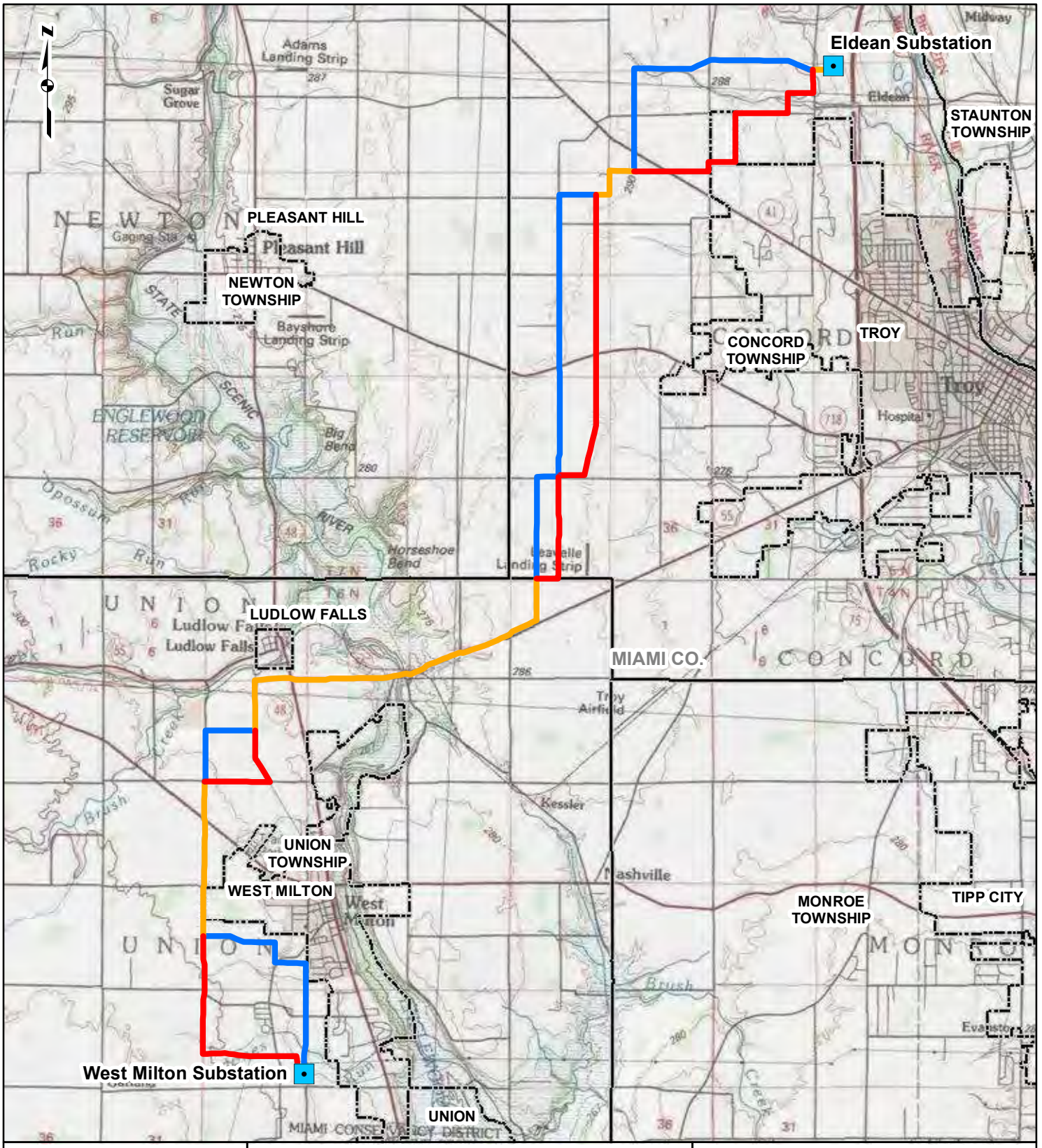
Based on feedback from the third public open house, DP&L determined that it was appropriate to switch the Preferred and Alternate Routes along and west of Forest Hill Road between Horseshoe Bend Road and Fenner Road. See Figure 5 for a view of the changes that occurred.

5.0 Closure

DP&L has held three public houses for this Project, two in 2014 and one in 2018, with solicited comments received during each open house. DP&L has reviewed the comments received from the third open house and reviewed them for applicability to the Project's objectives, as well as known constraints gathered as part of the RSS process. Following each open house, DP&L has made route adjustments to alleviate landowner concerns, two of which were made as a result of comments received form the latest open house. These two changes occurred in two of the four primary areas of concern based on a review and summary of received comments. DP&L believes that where received comments were not addressed in the Preferred and Alternate Routes to be presented to the OPSB in the application, those comments either do not align with the Project's objectives, constraints do not

allow for a change, or specific landowner requests will be discussed during the easement acquisition process following the OPSB's approval of a final route as these optimizations are not expected to affect additional landowners or occur outside of the overall Project study area.

FIGURES



PROJECT LOCATION

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Municipal Boundary
Township Boundary
County Boundary

0 3,500 7,000 14,000 Feet

FIGURE 1

PROJECT OVERVIEW

WEST MILTON - ELDEAN 138 kV

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 1/16/2019

CHECKED: MBW APPROVED: MRW

REFERENCE: USGS 30' X 60' TOPOGRAPHIC QUADRANGLES: PIQUA (1986) DAYTON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 1/16/2019. OHIO DEPARTMENT OF TRANSPORTATION CITIES, TOWNSHIPS, ROADS, 2017.

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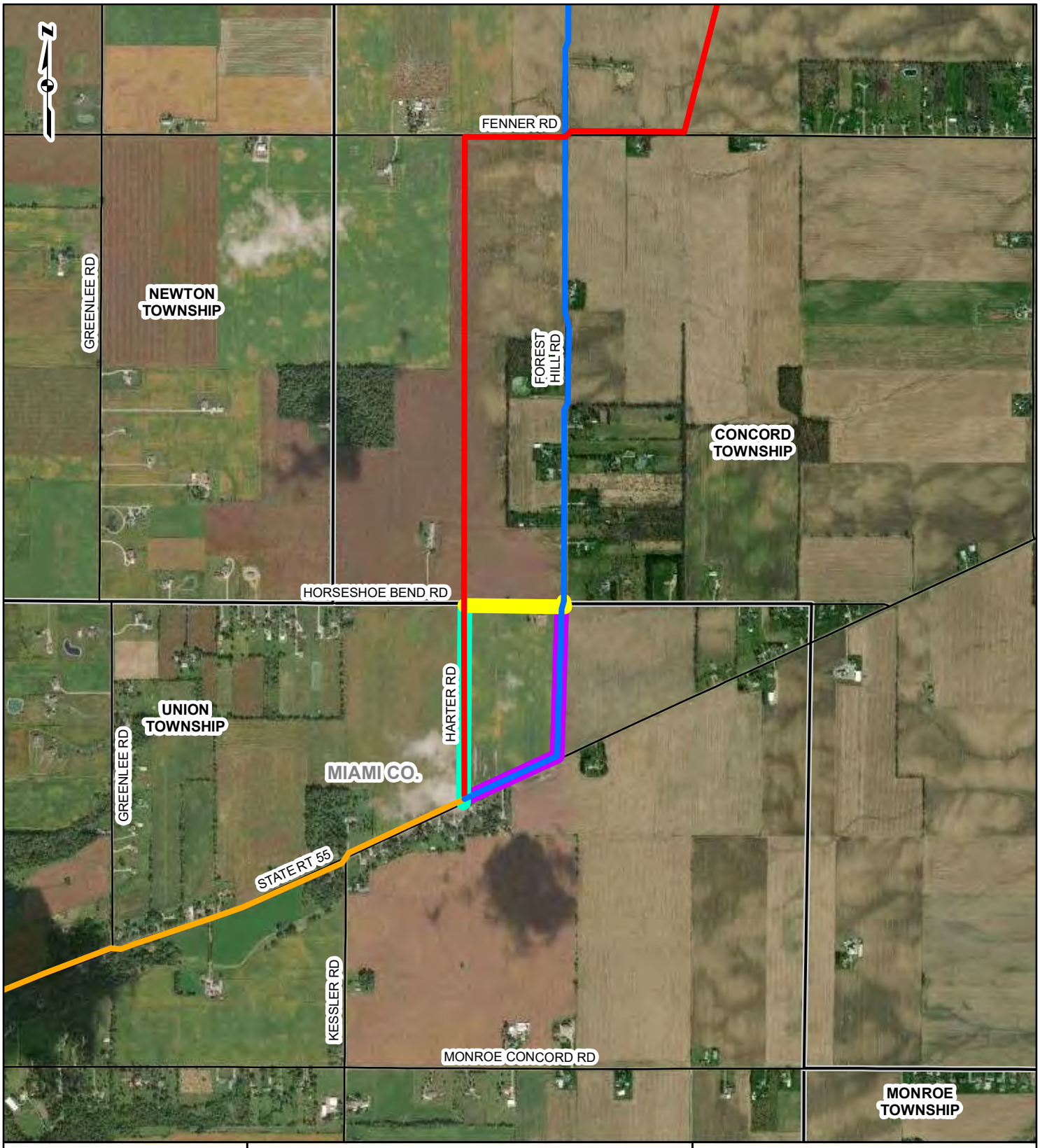

PROJECT LOCATION

MIAMI COUNTY, OHIO

Preferred Route
Common Route
Alternate Route
Harter Road Optimization Alternate
Harter Road Optimization Common
Harter Road Optimization Preferred Route Deletion
Road Centerline
Municipal Boundary
Township Boundary
County Boundary

0 500 1,000 2,000 Feet

FIGURE 2

HARTER ROAD OPTIMIZATION

WEST MILTON - ELDEAN 138 kV

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 1/16/2019

CHECKED: MBW APPROVED: MRW

REFERENCE: ESRI WORLD IMAGERY, 2017, ACCESSED: 1/16/2019.; OHIO DEPARTMENT OF TRANSPORTATION CITIES, TOWNSHIPS, 2017; MIAMI COUNTY ROAD CENTERLINES, 2018.

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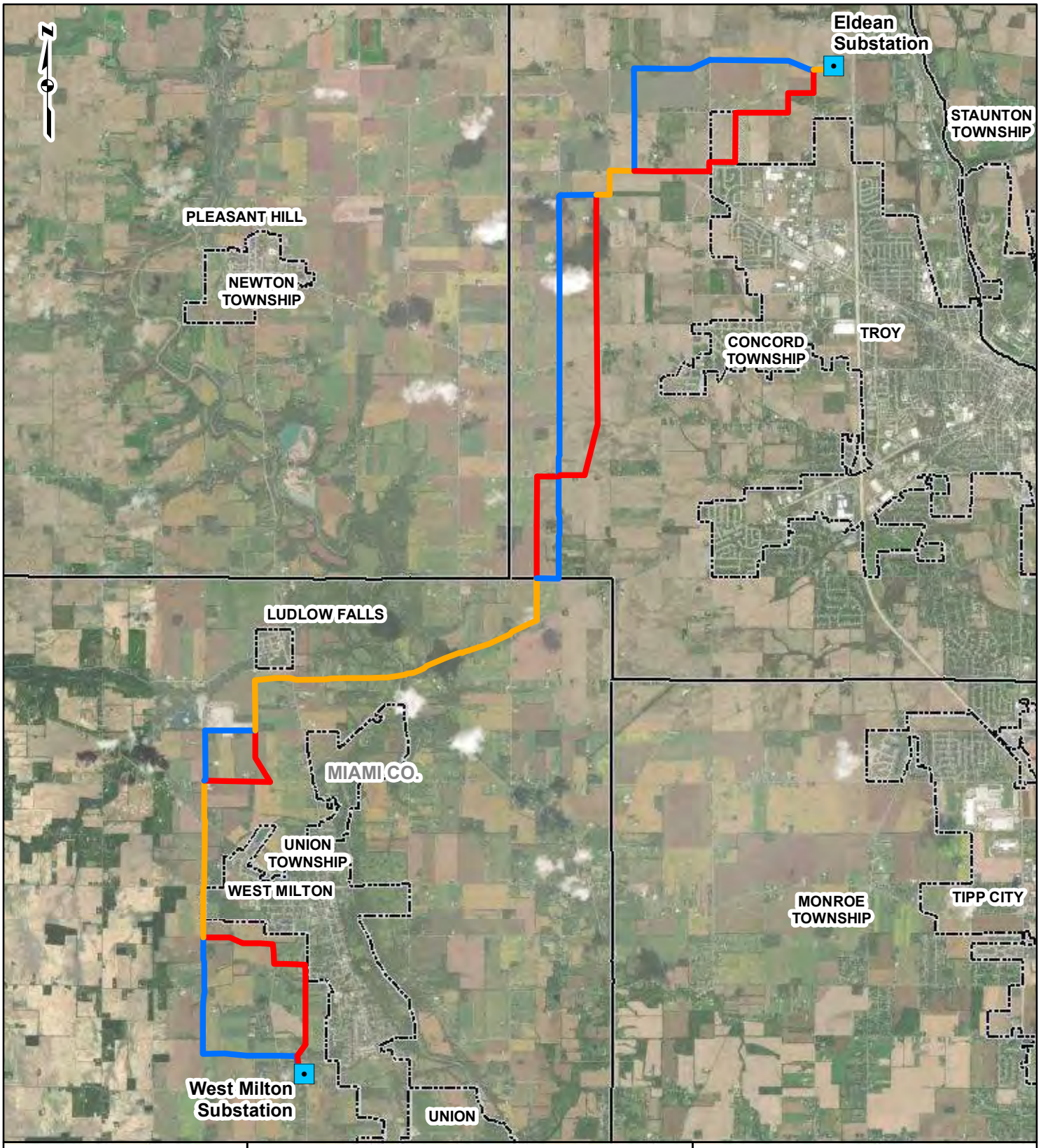

PROJECT LOCATION

MIAMI COUNTY, OHIO

Substation
Preferred Route
Common Route
Alternate Route
Municipal Boundary
Township Boundary
County Boundary

0 3,500 7,000 14,000 Feet

FIGURE 3
PREFERRED and ALTERNATE ROUTES
November 7, 2018 Open House

WEST MILTON - ELDEAN 138 kV
DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 1/16/2019
CHECKED: MBW APPROVED: MRW

REFERENCE: ESRI WORLD IMAGERY, ACCESSED: 1/16/2019; OHIO DEPARTMENT OF TRANSPORTATION CITIES, TOWNSHIPS, ROADS, 2017.

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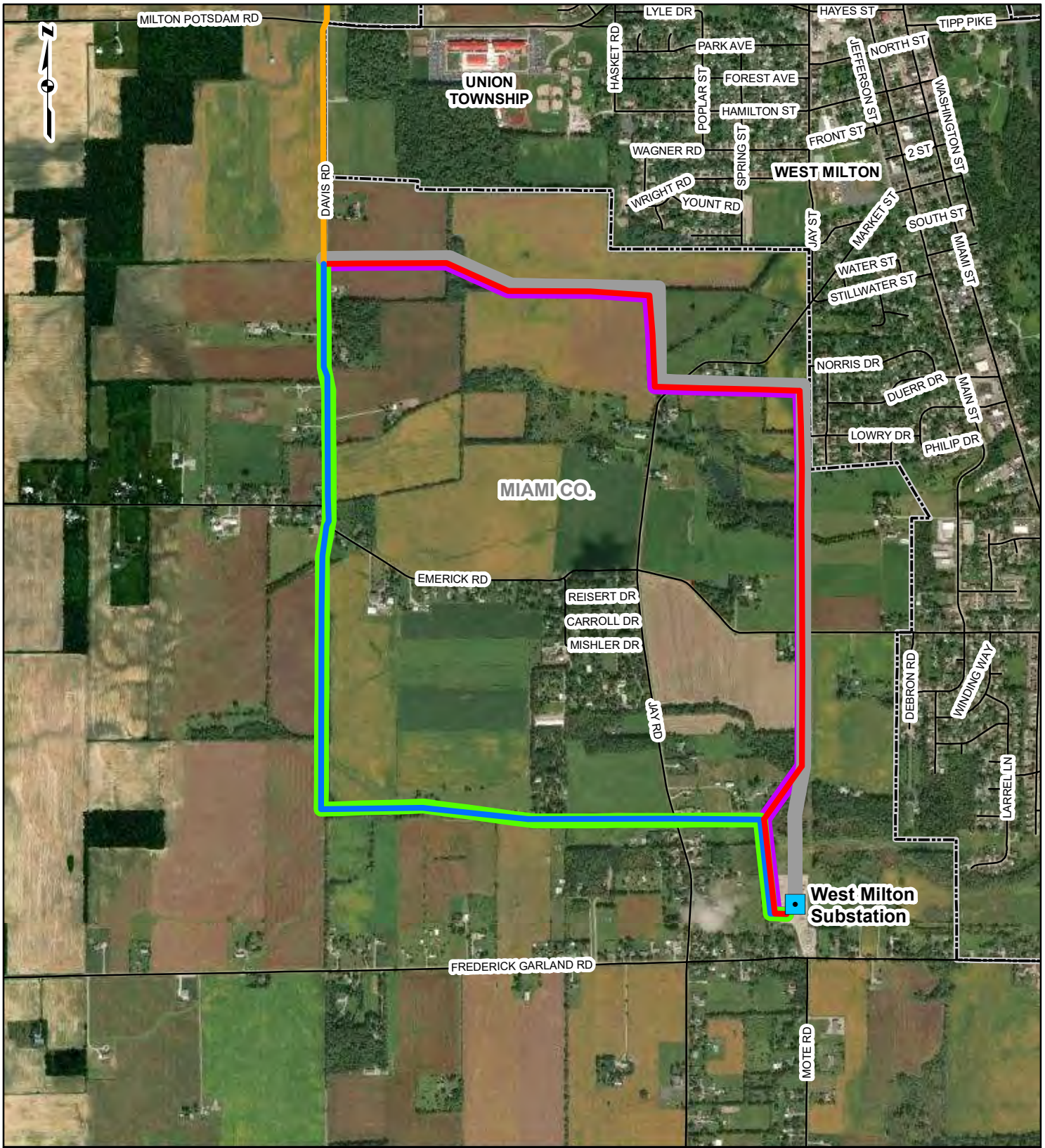

PROJECT LOCATION

MIAMI COUNTY, OHIO

- Substation
- Preferred Route
- Common Route
- Alternate Route
- Double Circuit Preferred Route
- Switched to Alternate Route
- Alternate Route Deletion
- Road Centerline
- Municipal Boundary
- Township Boundary
- County Boundary

0 500 1,000 2,000 Feet

FIGURE 4

138 kV Double Circuit Utilization

WEST MILTON - ELDEAN 138 kV

gai consultants

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 1/16/2019

CHECKED: MBW APPROVED: MRW

REFERENCE: ESRI WORLD IMAGERY, 2017, ACCESSED: 1/16/2019; OHIO DEPARTMENT OF TRANSPORTATION CITIES, TOWNSHIPS, 2017; MIAMI COUNTY ROAD CENTERLINES, 2018.

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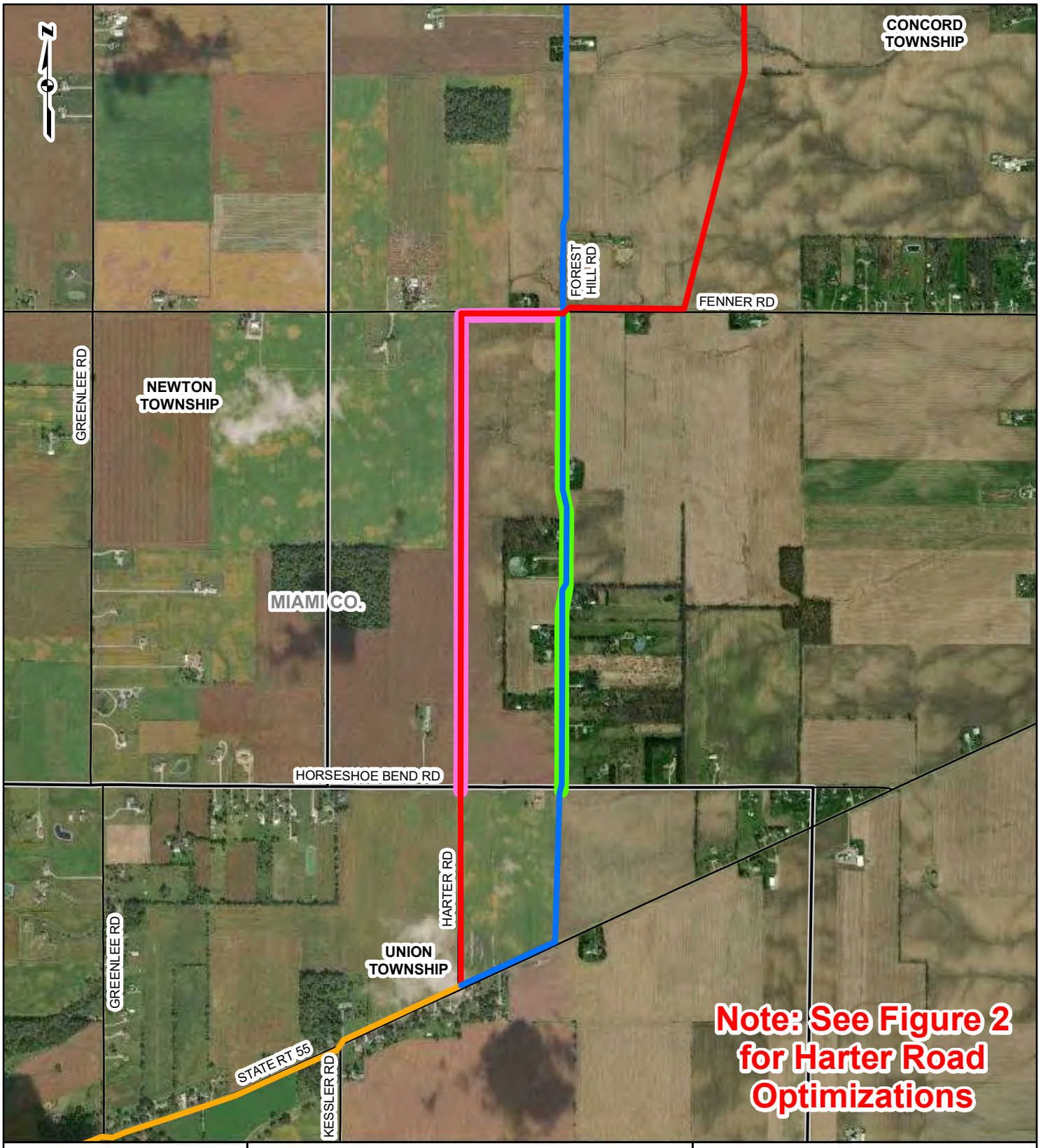

PROJECT LOCATION

MIAMI COUNTY, OHIO

Preferred Route
Common Route
Alternate Route
Switched to Alternate Route
Switched to Preferred Route
Road Centerline
Municipal Boundary
Township Boundary
County Boundary

0 500 1,000 2,000 Feet

FIGURE 5

Forest Hill Road Route Preference Switch

WEST MILTON - ELDEAN 138 kV

DAYTON POWER & LIGHT

DRAWN BY: TDB DATE: 1/16/2019
CHECKED: MBW APPROVED: MRW

REFERENCE: ESRI WORLD IMAGERY, 2017, ACCESSED: 1/16/2019; OHIO DEPARTMENT OF TRANSPORTATION CITIES, TOWNSHIPS, 2017; MIAMI COUNTY ROAD CENTERLINES, 2018.

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APPENDIX 6-1

Public Officials Contacted and Officials to be Served a Copy of the Certified Application

APPENDIX 6-1

Public Officials Contacted and Officials to be Served
Copy of Certificate Application

City of Troy

Mike Beamish
Mayor
100 S. Market Street
Troy, OH 45373
937-335-1725

Martha Baker
President, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Thomas Kendall
First Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

John Terwilliger
Second Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

John Schweser
Third Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Bobby Phillips
Fourth Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

William Twiss
Fifth Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Brock Heath
Sixth Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Todd Severt
At-large, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

William Lutz
At-large, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Robin Oda
At-large, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Village of West Milton

Anthony Miller
Mayor
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Matthew Kline
Municipal Manager
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Scott Fogle
Councilman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Sarah Copp
Chairwoman, Council
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Don Dohrman
Councilman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Karen Grudich
Councilwoman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Jason Land
Councilman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Miami County Board of Commissioners

Gregory Simmons
Vice President
201 West Main St.
Troy, OH 45373
937-440-5910

John Evans
Commissioner
201 West Main St.
Troy, OH 45373
937-440-5910

John O'Brien
Commissioner
201 West Main St.
Troy, OH 45373
937-440-5910

APPENDIX 6-1 (continued)

Concord Township

Thomas N. Mercer
Trustee
2625 Seneca Drive
Troy, OH 45373
937-308-2591

Don Pence
Trustee
2751 Meadowpoint Drive
Troy, Ohio 45373
937-216-4211

William B. Whidden
Trustee
2365 Black Oak Dr.
Troy, Ohio 45373
937-335-0431

Pat Quillen
Fiscal Officer
2306 Black Oak Dr.
Troy, Ohio 45373
937-335-4555

Union Township

Jim L. Albaugh
Trustee
9497 Markley Road
Laura, Ohio 45337
937-698-4480

William G. O'Brien
Trustee
9497 Markley Road
Laura, Ohio 45337
937-698-4480

Philip S. Mote
Trustee
9497 Markley Road
Laura, Ohio 45337
937-698-4480

Marjorie D. Coate
Trustee
9497 Markley Road
Laura, Ohio 45337
937-698-4480

APPENDIX 6-1a

Public Officials Contacted and Officials to be Served a Copy of Certificate Application

APPENDIX 6-1a

Public Officials to be Served
Copy of Certificate Application Amendment

City of Troy

Robin I. Oda
Mayor
100 S. Market Street
Troy, OH 45373
937-339-1221

William Lutz
President, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Jeffrey Whidden
First Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

John Terwilliger
Second Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

John Schweser
Third Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Bobby Phillips
Fourth Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

William Twiss
Fifth Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Jeffrey Schilling
Sixth Ward, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Todd Severt
At-large, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

William Rozell
At-large, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Lynne Snee
At-large, City Council
100 S. Market Street
Troy, OH 45373
937-335-1725

Village of West Milton

Anthony Miller
Mayor
701 S. Miami Street
West Milton, OH 45383
937-698-1500

D. Jeffrey Sheridan
Municipal Manager
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Scott Fogle
Councilman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Sarah Copp
Chairwoman, Council
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Don Dohrman
Councilman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Karen Grudich
Councilwoman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Jason Land
Councilman
701 S. Miami Street
West Milton, OH 45383
937-698-1500

Miami County Board of Commissioners

Gregory Simmons
President
201 West Main St.
Troy, OH 45373
937-440-5910

Ted Mercer
Vice President
201 West Main St.
Troy, OH 45373
937-440-5910

Wade Westfall
Commissioner
201 West Main St.
Troy, OH 45373
937-440-5910

APPENDIX 6-1 (continued)

Concord Township

Thomas N. Mercer
Trustee
2625 Seneca Drive
Troy, OH 45373
937-308-2591

Don Pence
Trustee
2751 Meadowpoint Drive
Troy, Ohio 45373
937-216-4211

Neil Rhoades
Trustee
1150 Horizon West Court
Troy, Ohio 45373
937-335-0431

William Whidden
Fiscal Officer
2365 Black Oak Dr.
Troy, Ohio 45373
937-335-0431

Union Township

Dennis L. Albaugh
Trustee, President
9497 Markley Road
Laura, Ohio 45337
937-698-4480

Philip S. Mote
Trustee, Vice President
9497 Markley Road
Laura, Ohio 45337
937-698-4480

James D. Richard
Trustee
9497 Markley Road
Laura, Ohio 45337
937-698-4480

APPENDIX 6-1a (continued)

Marjorie D. Coate
Trustee, Fiscal Officer
9497 Markley Road
Laura, Ohio 45337
937-698-4480

APPENDIX 7-1

Ohio Historic Preservation Office Correspondence

In reply, please refer to:
2015-MIA-31792

July 15, 2021

Jonathan Glenn
GAI Consultants
385 East Waterfront Drive
Homestead, PA 15120

RE: Cultural Resources Investigation
West Milton to Eldean 138kV Transmission Line Project
Miami County, Ohio

Dear Mr. Glenn:

This letter is in response to information received April 8, 2021 and additional information received June 14, 2021 regarding the proposed West Milton to Eldean 138kV Transmission Line Project located in Miami County, Ohio. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Ohio Revised Code 149.53 and the Ohio Power Siting Board rules for the project. The comments of the SHPO are also made pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800). The SHPO appreciates the opportunity to comment on the project.

GAI Consultants, on behalf of the Dayton Power and Light Company, submitted the *Architectural & Historic Resources Investigation for the West Milton to Eldean 138kV Transmission Line Project Miami County, Ohio*. GAI identified 123 architectural resources, 50 years and older, within the Area of Potential Effects (APE) for the project.

Within the APE, the report recommends that two of the properties are eligible for listing in the National Register of Historic Places (NRHP); the Peck Farm located at 1920 Eldean Road (OHI Ref. MIA0151905) and the Pearson Farm located at 3843 Davis Road (OHI Ref. MIA0210701). The SHPO agrees that the Peck Farm located at 1920 Eldean Road is eligible for inclusion in the NRHP and that the project will not adversely affect the property.

The SHPO agrees with the recommendation and that the proposed transmission line will have no effect on architectural or archaeological resources.

If you have questions, you can contact me dwelling@ohiohistory.org. Thank you for your cooperation.

Sincerely,

Diana Welling,
Department Head & Deputy State Historic Preservation Officer
for Resource Protection & Review
State Historic Preservation Office

Serial:1088957

In refer to
2015-MIA-31792-8

May 7, 2021

William J. Caramana
GAI Consultants, Inc., Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Dear Mr. Caramana:

RE: West Milton-Eldean 138 kV Transmission Line, Miami County, Ohio

This is in response to the receipt, on May 24, 2004, of *Phase I Archaeological Survey, West Milton to Eldean 138 kV Transmission Line Project, Miami County, Ohio.* This project involves 286 structure replacements along a 16.7-mile long corridor in Miami County, Ohio. The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Subsurface testing and intensive visual inspection of the project area resulted in the identification of ten previously unrecorded archaeological sites and the re-identification of 33 MI 073. The newly recorded sites, 33 MI 213-222, are small lithic scatters or isolated find spots typical of short term occupations. These sites are not likely to yield additional information about Ohio prehistory. Based on the information provided, it is my opinion that these properties are not eligible for inclusion in the National Register of Historic Places. Therefore the project will not affect archaeological historic properties. The historic architecture for this undertaking will be addressed in a separate letter. No further coordination for archaeological resources is required unless the project changes or additional archaeological remains are discovered during the course of the project. In such a situation, this office should be contacted as per 36 CFR 800.13.

Please be advised that this is a Section 106 decision. This review decision may not extend to other SHPO programs. If you have any questions, please contact me at (614) 298-2000, or by email at nyoung@ohiohistory.org. Please note the Ohio SHPO now accepts electronic-only submissions for state and/or federal review under Section 106 and ORC 149.53. Please send your submissions to section106@ohiohistory.org. We have also updated our Survey Report Submission Standards.

Sincerely,

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

Jonathan Glenn

From: Diana Welling <dwelling@ohiohistory.org>
Sent: Friday, May 7, 2021 12:20 PM
To: Jonathan Glenn
Cc: Nathan Young
Subject: RE: 2015-MIA-31792-1 West Milton to Eldean, architecture report

Good Afternoon Jonathan,

I have finalized my review and am currently working on drafting our letter response regarding the Architectural Resources Survey for the project.

While I agree with your NRHP and effect recommendations for the Peck Farm at 1920 Eldean Road (OHI MIA0151905) I am going to need to request additional information regarding the Pearson Farm at 3843 Davis Road (OHI MIA0210701). First, the report recommends that the property is eligible for the NRHP under Criterion C, but with the photos provided in the report I cannot really see the architectural details to assess integrity or distinguish architectural style. Also, the report recommends that the proposed project will have no effect on the Pearson Farm but the power line is going to be directly in front of the property? Can you provide additional information/photos so I can have a better understanding on how the no effect recommendation was determined?

Thank you for your cooperation

Diana Welling | Department Head and Deputy State Historic Preservation Officer for Resource Protection & Review
State Historic Preservation Office/Ohio History Connection| 800 E. 17th Ave. Columbus, OH 43211-2474
p. 614.298.2000 | f. 614.298.2037 | dwelling@ohiohistory.org

The Ohio History Connection's mission is to spark discovery of Ohio's stories. Embrace the present, share the past and transform the future.

From: Jonathan Glenn [mailto:j.glenn@gaiconsultants.com]
Sent: Friday, April 30, 2021 4:21 PM
To: Diana Welling <dwelling@ohiohistory.org>
Cc: Nathan Young <nyoung@ohiohistory.org>
Subject: RE: 2015-MIA-31792-1 West Milton to Eldean, architecture report

The new form is MIA0210701 (GAI-96).

Jonathan Glenn, M.A., RPA
Cultural Resources Manager
GAI Consultants, Inc., 385 East Waterfront Drive, Homestead, PA 15120-5005
Office 412.399.5191 **M**obile 412.735.9970 gaiconsultants.com (412-476-2000)

From: Diana Welling <dwelling@ohiohistory.org>
Sent: Thursday, April 29, 2021 6:22 PM

OHIO HISTORY CONNECTION

In reply refer to
2015-MIA-31792-1

July 27, 2015

Jonathan Glenn
GAI Consultants
385 East Waterfront Drive
Homestead, PA 15120-5005

Dear Mr. Glenn:

Re: DP&L West Milton-Eldean 138kV Transmission Line, Union Township, Miami County, Ohio

This is in response to your transmittal of June 8, 2015 concerning the proposed project. The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

The project involves construction of a new 138 kV transmission line in Union Township, Miami County, Ohio. A check of our records shows that the project area has not been surveyed and that a large number of sites have been identified near the project area. Given the presence of sites nearby on similar topography, we recommend that a preliminary archaeological survey be conducted to identify sites in this area.

A survey will include a review of records and documents and a field investigation, generally excavation of small subsurface test units or if the ground surface is visible, surface collection. Frequently, enough information is obtained from the survey that the archaeologists can make recommendations on the National Register eligibility of historic properties or recommend further investigation.

Additionally, any buildings that appear to be over 50 years old should be documented and evaluated for National Register eligibility.

If you need a list of consultants, please call me at (614) 298-2000 or check our website at www.ohiohistory.org/hpconsultants. Thank you for your cooperation.

Sincerely,

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

June 5, 2015

Project G150587.00

Mr. Mark J. Epstein, Department Head
Ohio Historic Preservation Office
800 East 17th Avenue
Columbus, Ohio 43211-2474

Re: Section 106 Review - Project Summary Form
The Dayton Power and Light Company
West Milton – Eldean 138 kV Transmission Line Project
Union and Concord Townships, Miami County

Dear Mr. Epstein:

On behalf of The Dayton Power and Light Company (DP&L), GAI Consultants, Inc. (GAI) is submitting the enclosed *Section 106 Review - Project Summary Form* to initiate consultation for the West Milton – Eldean 138 kV Transmission Line Project, Union and Concord Townships, Miami County, Ohio. Based on DP&L's early planning information, the Project involves the construction of approximately 17 miles of new overhead transmission line right-of-way (ROW) primarily traversing open agricultural settings and frequently paralleling existing road and utility line ROWs. Specific pole locations have not yet been selected and access roads have not yet been designed; however, pole locations will be situated to avoid previously recorded archaeological sites. GAI assumes the project will require installation of approximately 320 tangent structures (single wood poles) and approximately 32 angle structures (single steel poles with concrete foundations).

A review of previously recorded historic properties (including archaeological sites and historic architectural resources) indicates that there are two recorded historic architectural resources and two recorded archaeological sites within the possible ROW; however, they will not be directly impacted by the Area of Potential Effect (APE). Several resources are previously recorded within 0.50 miles of the APE.

DP&L and GAI request your review and comment on the definition of the APE as defined in the enclosed *Section 106 Review - Project Summary Form*, as well as a response as to the need for cultural resources studies. We look forward to successfully completing consultation with your office. We appreciate your assistance in the development of the Project. If you have any questions or concerns, please feel free to contact me at 412-476-2000, extension 1204 or j.glenn@gaiconsultants.com.

Respectfully submitted,
GAI Consultants, Inc.

Jonathan Glenn, M.A., RPA
Cultural Resources Manager

cc: Gregory P. Tokar; Michael A. Frank

Enclosure: *Section 106 Review - Project Summary Form*

APPENDIX 7-3

Phase 1 Archaeology Report (CONFIDENTIAL)

APPENDIX 7-4

Historic Architecture Report (CONFIDENTIAL)

APPENDIX 7-5

Supplemental Historic Architecture Information (CONFIDENTIAL)

APPENDIX 8-1

Wetland, Upland and ORAM Data Forms

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton - Eldean Transmission Line Proje | City/County: Greentown/Howard County | Sampling Date: 10/6/14

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland A - Wet In

Investigator(s): Tyler Rankin/Geoffrey Palmer | Section, Township, Range: S29/T6N/R5E

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

Slope (%): 0 | Lat: 39.939671 | Long: -84.333119 | Datum: NAD 83

Soil Map Unit Name: MoA - Millsdale silty clay loam, 0 to 2 percent slopes | NWI Classification: PEM

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?	Y	**Is the sampled area within a wetland?**	Y
Indicators of wetland hydrology present?	Y	f yes, optional wetland site ID:	Wetland A

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1 *Salix nigra*	5	Y	OBL
2 *Ulmus Americana*	5	Y	FACW
3			
4			
5			
	10	= Total Cover	
Sapling/Shrub stratum (Plot size: 15')			
1 *Cornus alba*	10	Y	FACW
2			
3			
4			
5			
	10	= Total Cover	
Herb stratum (Plot size: 5')			
1 *Phalaris arundinacea*	80	Y	FACW
2 *Typha angustifolia*	15	N	OBL
3 *Impatiens capensis*	5	N	FACW
4 *Apocynum cannabinum*	5	N	FAC
5			
6			
7			
8			
9			
10			
	105	= Total Cover	
Woody vine stratum (Plot size: 15')			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20
FACW species	100	x 2 =	200
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	125 (A)		235 (B)

Prevalence Index = B/A = 1.88

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: Vetland A - Wet I

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*	Loc**	Texture	Remarks
0-4	10 YR 3/2	100	None				Silt Loam	
4-18	Gley 2.5/10Y	80	10 YR 3/6	20	C	M	Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	3
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	6

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton - Eldean Transmission Line Proje | City/County: Greentown/Howard County | Sampling Date: 10/6/14

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland A - Wet Out

Investigator(s): Tyler Rankin/Geoffrey Palmer | Section, Township, Range: S29/T6N/R5E

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

Slope (%): 0 | Lat: 39.939962 | Long: -84.333436 | Datum: NAD 83

Soil Map Unit Name: MoA - Millsdale silty clay loam, 0 to 2 percent slopes | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 15')			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 5')			
1 *Poa annua*	40	Y	FACU
2 *Viola canadensis*	20	Y	FACU
3 *Plantago lanceolata*	20	Y	FACU
4 *Trifolium repens*	20	Y	FACU
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody vine stratum (Plot size: 15')			
1			
2			
	0	= 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: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column totals	100 (A)		400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Wetland A - Wet O

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*	Loc**	Texture	Remarks
0-18	10 YR 4/3	90	10 YR 4/2	10	RM	M	Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton - Eldean Transmission Line Proje | City/County: Greentown/Howard County | Sampling Date: 10/6/14

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland B - Wet In

Investigator(s): Tyler Rankin/Geoffrey Palmer | Section, Township, Range: S3/T6N/R5E

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

Slope (%): 0 | Lat: 39.997935 | Long: -84.303122 | Datum: NAD 83

Soil Map Unit Name: Ee - Eel Silt Loam | NWI Classification: PEM

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y	f yes, optional wetland site ID:	Wetland A
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 15')			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 5')			
1 *Acorus calamus*	40	Y	OBL
2 *Scirpus atrovirens*	20	Y	OBL
3 *Eupatorium perfoliatum*	20	Y	OBL
4 *Impatiens capensis*	10	N	FACW
5			
6			
7			
8			
9			
10			
	90	= Total Cover	
Woody vine stratum (Plot size: 15')			
1			
2			
	0	= 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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	80	x 1 =	80	
FACW species	10	x 2 =	20	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	90	(A)	100	(B)

Prevalence Index = B/A = 1.11

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: Wetland B - Wet I

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*	Loc**	Texture	Remarks
0-5	10 YR 3/1	100	None				Silt Loam	
5-18	Gley 2.5/N	70	10 YR 3/6	20	C	M	Silt Loam	
			10 YR 2/1	10	RM	M	Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	Surface

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton - Eldean Transmission Line Proje | City/County: Greentown/Howard County | Sampling Date: 10/6/14

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland b - Wet Out

Investigator(s): Tyler Rankin/Geoffrey Palmer | Section, Township, Range: S3/T6N/R5E

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

Slope (%): 0 | Lat: 39.996765 | Long: -84.303233 | Datum: NAD 83

Soil Map Unit Name: Ee - Eel silt loam | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 15')			
1 *Acer rubrum*	15	Y	FAC
2 *Robinia pseudoacacia*	10	Y	FACU
3			
4			
5			
	25	= Total Cover	
Herb stratum (Plot size: 5')			
1 *Poa annua*	30	Y	FACU
2 *Viola canadensis*	25	Y	FACU
3 *Plantago lanceolata*	25	Y	FACU
4 *Trifolium repens*	20	Y	FACU
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody vine stratum (Plot size: 15')			
1			
2			
	0	= 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: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 16.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column totals	125 (A)		485 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: /etland b - Wet O

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*	Loc**	Texture	Remarks
0-18	10 YR 4/4	100					Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton - Eldean Transmission Line Proje | City/County: Miami County | Sampling Date: 6/16/15

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland C - Wet In

Investigator(s): Tyler Rankin/Nathan Ehlinger | Section, Township, Range: S7/T5N/R6E

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

Slope (%): 2 | Lat: 40.07827 | Long: -84.245936 | Datum: WGS 84

Soil Map Unit Name: | NWI Classification: PEM

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: Wetland C

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 15')			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5')			
1 *Phalaris arundinacea*	25	Y	FACW
2 *Carex vulpinoidea*	25	Y	FACW
3 *Carex shortiana*	20	Y	FACW
4 *Carex stipata*	15	N	OBL
5 *Scirpus atrovirens*	10	N	OBL
6 *Iris virginica*	5	N	OBL
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 15')			
1			
2			
	0	= 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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	30	x 1 =	30
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: Vetland C - Wet I

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*	Loc**	Texture	Remarks
0-16	10 YR 4/2	80	10 YR 5/6	20	C	M	Silt Loam	
							Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	6

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton - Eldean Transmission Line Proje | City/County: Miami County | Sampling Date: 6/16/15

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland C - Wet out

Investigator(s): Tyler Rankin/Nathan Ehlinger | Section, Township, Range: S7/T5N/R6E

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

Slope (%): 2 | Lat: 40.07835 | Long: -84.246009 | Datum: WGS 84

Soil Map Unit Name: MoA - Millsdale silty clay loam, 0 to 2 percent slopes | NWI Classification: PEM

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Corresponding Upland Data point for Wetland A along alternate route

VEGETATION -- Use scientific names of plants.

		Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum	(Plot size: 30')			
1				
2				
3				
4				
5				
		0	= Total Cover	
Sapling/Shrub stratum	(Plot size: 15')			
1				
2				
3				
4				
5				
		0	= Total Cover	
Herb stratum	(Plot size: 5')			
1	*Schedonorus arundinaceus*	35	Y	FACU
2	*Lolium perenne*	25	Y	FACU
3	*Dactylis glomerata*	25	Y	FACU
4	*Phalaris arundinacea*	15	N	FACW
5				
6				
7				
8				
9				
10				
		100	= Total Cover	
Woody vine stratum	(Plot size: 15')			
1				
2				
		0	= 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: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	0	x 3 =	0	
FACU species	85	x 4 =	340	
UPL species	0	x 5 =	0	
Column totals	100	(A)	370	(B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: /etland C - Wet o

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*	Loc**	Texture	Remarks
0-16	10 YR 4/3	100					Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton-Eldean | City/County: Miami County | Sampling Date: 06/17/2015

Applicant/Owner: Dayton Power & Light | State: Ohio | Sampling Point: Wetland D - Wet In

Investigator(s): Tyler Rankin/Nathan Ehlinger | Section, Township, Range: S29 T6N R5E

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

Slope (%): 2 | Lat: 39.948602 | Long: -84.332415 | Datum: WGS 84

Soil Map Unit Name: BgmA-Blount silt loam, ground moraine, 0 to 2 percent slopes | NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	Y
Is the sampled area within a wetland?	Y
If yes, optional wetland site ID:	Wetland D

Remarks: (Explain alternative procedures here or in a separate report.)

Intermittent stream flows through wetland

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 15')			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5')			
1 *Impatiens capensis*	30	Y	FACW
2 *Symplocarpus foetidus*	15	Y	OBL
3 *Iris pseudacorus*	10	N	OBL
4 *Phalaris arundinacea*	10	N	FACW
5 *Peltandra virginica*	10	N	OBL
6			
7			
8			
9			
10			
	75	= Total Cover	

Woody vine stratum (Plot size: 15')			
1			
2			
	0	= 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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	35	x 1 =	35
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	75 (A)		115 (B)

Prevalence Index = B/A = 1.53

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: Vetland D - Wet I

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*	Loc**	Texture	Remarks
0-6	10YR2/1	100					Muck	
6-16	Gley 1 5/10Y	100					SiSaC	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	2
Water table present?	Yes	X	No		Depth (inches):	4
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: West Milton-Eldean Transmission Line Projec | City/County: Miami County | Sampling Date: 06/17/2015

Applicant/Owner: Dayton Power and Light | State: Ohio | Sampling Point: Wetland D - Wet Out

Investigator(s): Tyler Rankin/Nathan Ehlinger | Section, Township, Range: S29 T6N R5E

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

Slope (%): 3 | Lat: 39.948691 | Long: -84.332295 | Datum: WGS 84

Soil Map Unit Name: MoA- | NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N
Hydric soil present?	N
Indicators of wetland hydrology present?	N

Is the sampled area within a wetland? N

If yes, optional wetland site ID: N/A

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1 *Celtis occidentalis*	20	Y	FAC
2 *Carya ovata*	20	Y	FACU
3			
4			
5			
	40	= Total Cover	

Sapling/Shrub stratum (Plot size: 15')			
1 *Lonicera morrowii*	30	Y	FACU
2 *Prunus serotina*	10	Y	FACU
3 *carya ovata*	10	Y	FACU
4			
5			
	50	= Total Cover	

Herb stratum (Plot size: 5')			
1 *Parthenocissus quinquefolia*	30	Y	FACU
2 *Ageratina altissima*	15	Y	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	45	= Total Cover	

Woody vine stratum (Plot size: 15')			
1			
2			
	0	= 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: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 14.29% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	115	x 4 =	460
UPL species	0	x 5 =	0
Column totals	135 (A)		520 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: Vetland D - Out

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*	Loc**	Texture	Remarks
0-16	10YR4/2	100					SiC	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: West Milton - Eldean | City/County: Miami County | Sampling Date: 4/24/2019

Applicant/Owner: Dayton Power and Light | State: OH | Sampling Point: WDP-E

Investigator(s): T. Rankin/B. Rolfes | Section, Township, Range: n/a

Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave

Slope (%): 0 | Lat: 40.083391 | Long: -84.237887 | Datum: NAD83

Soil Map Unit Name: OdA - Ockley silt loam, 0 to 2 percent slopes | NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology No 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 ____	

Remarks:
Wetland E is an emergent wetland created by grading and drainage around the Eldean substation

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Salix nigra*	8	Yes	OBL
2.			
3.			
4.			
5.			
	8 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Typha latifolia*	50	Yes	OBL
2. *Juncus tenuis*	20	Yes	FAC
3. *Juncus effusus*	15	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85 =Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	73	x 1 =	73
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	93 (A)		133 (B)

Prevalence Index = B/A = 1.43

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

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

SOIL

Sampling Point: WDP-E

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					Mucky Loam/Clay	
2-16	10YR 4/2	60	10YR 2/2	30	RM	M	Loamy/Clayey	
			10YR 5/6	10	C	PL/M		Prominent redox concentrations

[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)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X 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)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 2
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:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: West Milton - Eldean | City/County: Miami County | Sampling Date: 4/24/2019

Applicant/Owner: Dayton Power and Light | State: OH | Sampling Point: UDP-E

Investigator(s): T. Rankin/B. Rolfes | Section, Township, Range: n/a

Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): none

Slope (%): 5 | Lat: 40.083461 | Long: -84.237834 | Datum: NAD83

Soil Map Unit Name: OdA - Ockley silt loam, 0 to 2 percent slopes | NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology No 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 ____	No X	

Remarks:
UDP-E is the Corresponding Upland Data Point for Wetland E

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Trifolium repens*	25	Yes	FACU
2. *Poa pratensis*	25	Yes	FAC
3. *Plantago lanceolata*	15	Yes	FACU
4. *Festuca rubra*	15	Yes	FACU
5. *Toxicodendron radicans*	10	No	FAC
6. *Erigeron annuus*	10	No	FACU
7.			
8.			
9.			
10.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	100 (A)		365 (B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

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

SOIL

Sampling Point: UDP-E

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100					Loamy/Clayey	

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): 0
Water Table Present?	Yes ___	No X	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): 0

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: West Milton - Eldean | City/County: Miami County | Sampling Date: 4/24/2019

Applicant/Owner: Dayton Power and Light | State: OH | Sampling Point: WDP-F1

Investigator(s): T. Rankin/B. Rolfes | Section, Township, Range: n/a

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): Concave

Slope (%): 0 | Lat: 39.938972 | Long: -84.332052 | Datum: NAD83

Soil Map Unit Name: MoA - Morris gravelly silt loam, 0 to 3 percent slopes | NWI classification: PEM1A

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

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

Are Vegetation N, Soil N, or Hydrology No 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 ____	

Remarks:
WDP-F1 represents the PEM (emergent) portion of Wetland F

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	65	Yes	FACW
2. *Packera glabella*	10	No	FACW
3. *Typha latifolia*	10	No	OBL
4. *Equisetum arvense*	10	No	FAC
5. *Symplocarpus foetidus*	5	No	OBL
6.			
7.			
8.			
9.			
10.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	75	x 2 =	150
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		195 (B)

Prevalence Index = B/A = 1.95

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.

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

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

SOIL

Sampling Point: WDP-F1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-16	10YR 2/1	90	10YR 3/6	10	C	M	Mucky Loam/Clay	Prominent redox concentrations

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- X Loamy Mucky Mineral (F1)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ 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)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes	X	No ___	Depth (inches):	4
Water Table Present?	Yes	X	No ___	Depth (inches):	3
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:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: West Milton - Eldean | City/County: Miami County | Sampling Date: 4/24/2019

Applicant/Owner: Dayton Power and Light | State: OH | Sampling Point: WDP-F2

Investigator(s): T. Rankin/B. Rolfes | Section, Township, Range: n/a

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): Concave

Slope (%): 0 | Lat: 39.939537 | Long: -84.332141 | Datum: NAD83

Soil Map Unit Name: Ln - Lindside silt loam | NWI classification: PEM1A

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

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

Are Vegetation N, Soil N, or Hydrology No 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 ____	

Remarks:
WDP-F2 represents the PSS (scrub shrub) portion of Wetland F

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus alba*	20	Yes	FACW
2. *Salix nigra*	15	Yes	OBL
3.			
4.			
5.			
	35 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus*	30	Yes	OBL
2. *Packera glabella*	15	Yes	FACW
3. *Phalaris arundinacea*	10	No	FACW
4. *Lemna minor*	10	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	65 =Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		145 (B)

Prevalence Index = B/A = 1.45

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.

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

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

SOIL

Sampling Point: WDP-F2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-16	10YR 2/1	90	10YR 3/6	10	C	M	Mucky Loam/Clay	Prominent redox concentrations

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- X Loamy Mucky Mineral (F1)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- X True Aquatic Plants (B14)
- ___ 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)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 8		
Water Table Present?	Yes X	No ___	Depth (inches): 4		
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:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: West Milton - Eldean | City/County: Miami County | Sampling Date: 4/24/2019

Applicant/Owner: Dayton Power and Light | State: OH | Sampling Point: WDP-F3

Investigator(s): T. Rankin/B. Rolfes | Section, Township, Range: n/a

Landform (hillside, terrace, etc.): floodplain | Local relief (concave, convex, none): Concave

Slope (%): 0 | Lat: 39.939613 | Long: -84.331846 | Datum: NAD83

Soil Map Unit Name: Ln - Lindside silt loam | NWI classification: PEM1A

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

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

Are Vegetation N, Soil N, or Hydrology No 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 ____	

Remarks:
WDP-F3 represents the PFO (forested) portion of Wetland F

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2. *Acer negundo*	15	Yes	FAC
3.			
4.			
5.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus alba*	20	Yes	FACW
2. *Lonicera maackii*	15	Yes	UPL
3.			
4.			
5.			
	35	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus*	20	Yes	OBL
2. *Packera glabella*	15	Yes	FACW
3. *Carex lacustris*	10	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	45	=Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
		=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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	65	x 2 =	130
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	15	x 5 =	75
Column Totals:	125 (A)		280 (B)

Prevalence Index = B/A = 2.24

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

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

SOIL

Sampling Point: WDP-F3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-16	10YR 2/1	90	10YR 3/6	10	C	M	Mucky Loam/Clay	Prominent redox concentrations

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- X Loamy Mucky Mineral (F1)
- ___ 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

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)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ 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)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches): 4		
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:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: West Milton - Eldean | City/County: Miami County | Sampling Date: 4/24/2019

Applicant/Owner: Dayton Power and Light | State: OH | Sampling Point: UDP-F

Investigator(s): T. Rankin/B. Rolfes | Section, Township, Range: n/a

Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): none

Slope (%): 5 | Lat: 39.939230 | Long: -84.332447 | Datum: NAD83

Soil Map Unit Name: MoA - Morris gravely silt loam, 0 to 3 percent slopes | NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology No 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	

Remarks:
UDP-F is the Corresponding Upland Data Point for Wetland F

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera maackii*	15	Yes	UPL
2.			
3.			
4.			
5.			
	15 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Trifolium repens*	20	Yes	FACU
2. *Poa pratensis*	30	Yes	FAC
3. *Plantago lanceolata*	10	No	FACU
4. *Festuca rubra*	20	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	80 =Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	50	x 4 =	200
UPL species	15	x 5 =	75
Column Totals:	95 (A)		365 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

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

SOIL

Sampling Point: UDP-F

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/4	100					Loamy/Clayey	

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): 0
Water Table Present?	Yes ____	No X	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): 0

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: DPL West Milton - Eldean 138 kV Line City/County: Miami County Sampling Date: 10/7/2020

Applicant/Owner: The Dayton Power and Light Company State: OH Sampling Point: WDP-G

Investigator(s): B. Rolfes Section, Township, Range:

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

Slope (%): <1 Lat: 39.989991 Long: -84.351233 Datum: WGS 1984

Soil Map Unit Name: Millsdale silt loam, 0 to 2 percent slopes (MnA) NWI classification: N/A

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	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Salix nigra*	5	Yes	OBL
2.			
3.			
4.			
5.			
	5 =Total Cover		
Herb Stratum (Plot size:)			
1. *Typha angustifolia*	75	Yes	OBL
2. Juncus tenuis	5	No	FACW
3. *Cyperus esculentus*	5	No	
4. *Bidens frondosa*	5	No	FACW
5. *Echinochloa crus-galli*	3	No	FACW
6. *Eleocharis palustris*	2	No	OBL
7.			
8.			
9.			
10.			
	95 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0[1]

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

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

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

SOIL

Sampling Point: WDP-G

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5YR 5/2	60	5YR 5/6	10	C	M	Loamy/Clayey	Distinct Redox Concentrations
	10YR 3/1	30			RM			
3 - 12	Gley 2.5/10Y	100				M	Loamy/Clayey	

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- X 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]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock/Gravel

Depth (inches): 12

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

Remarks:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

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)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? Yes X No ___ Depth (inches): 6

(includes capillary fringe)

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

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: DPL West Milton - Eldean 138 kV Line City/County: Miami County Sampling Date: 10/7/2020

Applicant/Owner: The Dayton Power and Light Company State: OH Sampling Point: UDP-G

Investigator(s): B. Rolfes Section, Township, Range:

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

Slope (%): 0 Lat: 39.990044 Long: -84.351144 Datum: WGS 1984

Soil Map Unit Name: Millsdale silt loam, 0 to 2 percent slopes (MnA) NWI classification: N/A

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 No X

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	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size:)			
1. *Soledago altissima*	45	Yes	UPL
2. *Symphyotrichum ericoides*	15	Yes	
3. *Cirsium vulgare*	10	No	FACU
4. *Trifolium pratense*	10	No	FACU
5. *Echinochloa crus-galli*	5	No	FACW
6. Poa annua	5	No	FACU
7.			
8.			
9.			
10.			
	90	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 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
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	45	x 5 =	225
Column Totals:	75 (A)		335 (B)

Prevalence Index = B/A = 4.47

Hydrophytic Vegetation Indicators:

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

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

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

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

SOIL

Sampling Point: UDP-G

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	7.5YR 5/4	100					Loamy/Clayey	Extremely Dry

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

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

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

Remarks:

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland A	Rater(s): T. Rankin	Date: 10/16/14

Metric 1. Wetland Area (size).

2 (max 6 pts.) | 2 (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)

Metric 2. Upland buffers and surrounding land use.

8 (max 14 pts.) | 10 (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), shrub land, 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)

Metric 3. Hydrology.

17 (max 30 pts.) | 27 (subtotal)

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

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [x] 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)
- [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)
- [ ] 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

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

Metric 4. Habitat Alteration and Development.

8.5 (max 20 pts.) | 35.5 (subtotal)

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

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

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

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [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)
- [ ] 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
- [x] dredging
- [ ] farming
- [ ] nutrient enrichment

35.5 subtotal this page

last revised 1 February 2001 jjm

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland A	Rater(s): T. Rankin	Date: 10/6/14

35.5
subtotal first page

Metric 5. Special Wetlands.

0	0
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)

Metric 6. Plant communities, interspersion, microtopography.

7	42.5
max 20 pts.	subtotal

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

- [ ] Aquatic bed
- [2] Emergent
- [2] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

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

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

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

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

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

- [1] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [ ] 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

42.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland B	Rater(s): T. Rankin	Date: 10/6/14

Metric 1. Wetland Area (size).

max 6 pts. | subtotal: 1 | 1

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.

max 14 pts. | subtotal: 7 | 8

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), shrub land, 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.

max 30 pts. | subtotal: 10 | 18

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)
- [ ] 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)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] 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
- [ ] other_____

Metric 4. Habitat Alteration and Development.

max 20 pts. | subtotal: 16 | 34

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)
- [x] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

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

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

Check all disturbances observed

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

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subtotal this page

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ORAM v. 5.0 Field Form Quantitative Rating

Site: Wetland 6	Rater(s): T. Rankin	Date: 10/6/14

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Metric 5. Special Wetlands.

0 (max 10 pts.) | 34 (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.

4 (max 20 pts.) | 38 (subtotal)

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

- [ ] Aquatic bed
- [2] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

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

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

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

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

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

- [1] Vegetated hummucks/tussucks
- [ ] Coarse woody debris >15cm (6in)
- [ ] Standing dead >25cm (10in) dbh
- [ ] 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

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End of Quantitative Rating. Complete Categorization Worksheets.

Site: Wetland C	**Rater(s):** Tyler Rankin	**Date:** 6/16/15

Metric 1. Wetland Area (size).

0 (max 6 pts.) | 0 (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)

Metric 2. Upland buffers and surrounding land use.

7 (max 14 pts.) | 7 (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)
- [ ] LOW. Old field (>10 years), shrub land, 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)

Metric 3. Hydrology.

13 (max 30 pts.) | 20 (subtotal)

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

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [x] 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)
- [ ] 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
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

7 (max 20 pts.) | 27 (subtotal)

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

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

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

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [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)
- [ ] Recent or no recovery (1)

Check all disturbances observed

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

27 (subtotal this page)

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Site: WETLAND C	**Rater(s):** Tyler Rankin	**Date:** 6/16/15

27
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 27 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.

0 max 20 pts. | 27 subtotal

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

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

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

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [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
- [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

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End of Quantitative Rating. Complete Categorization Worksheets.

Site: WETLAND D	Rater(s): Nathan Ehlinger	Date: 6/17/15

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subtotal first page

0 max 10 pts. | 43 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. | 45 subtotal

Metric 6. Plant communities, interspersion, microtopography.

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

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

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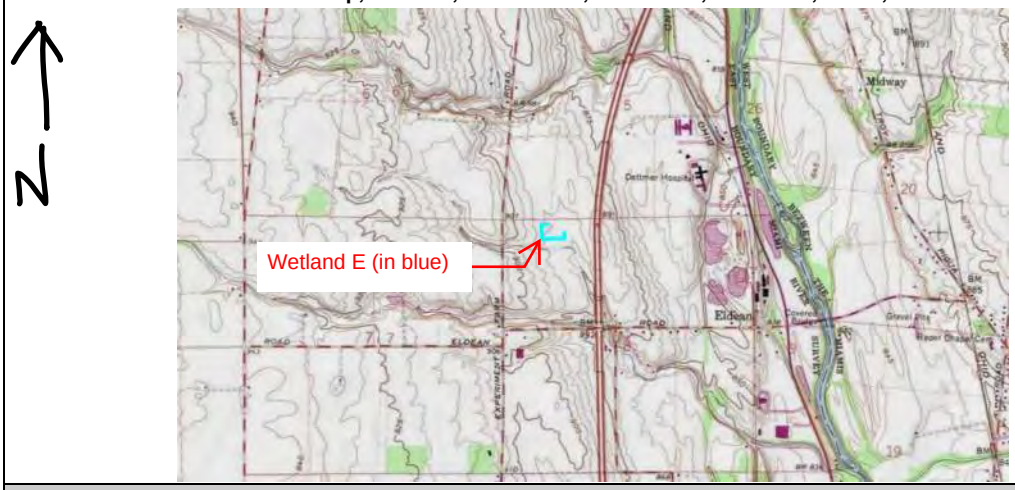
End of Quantitative Rating. Complete Categorization Worksheets.

Background Information

Name:	Tyler Rankin, Brad Rolfes
Date:	April 24, 2019
Affiliation:	GAI Consultants, Inc.
Address:	1830 Airport Exchange Bvld., Suite 220, Erlanger, KY 41018
Phone Number:	859-212-0226
e-mail address:	t.rankin@gaiconsultants.com
Name of Wetland:	Wetland E
Vegetation Communit(ies):	Palustrine Emergent
HGM Class(es):	Depressional

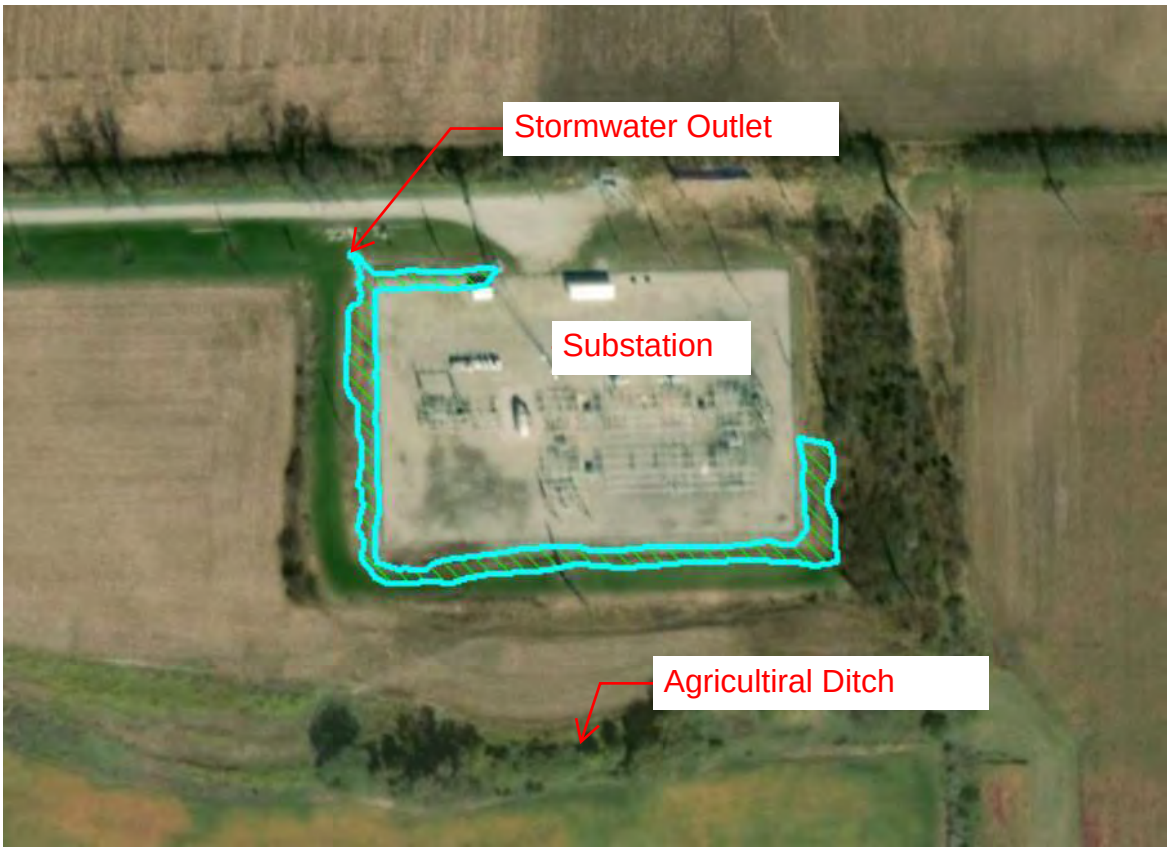
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate	40.08283, -84.237372
USGS Quad Name	Troy
County	Miami
Township	Concord
Section and Subsection	N/A
Hydrologic Unit Code	050800010705
Site Visit	4/24/2019
National Wetland Inventory Map	N/A
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	

Name of Wetland: Wetland E	
Wetland Size (acres, hectares):	0.495 ac

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Wetland E is a Palustrine Emergent (PEM) wetland, surrounding an existing substation, near the city of Troy, in Miami County, OH . This wetland was created as a result of a grading and storm water management for the substation construction. The vast majority of the wetland holds standing water between 1" - 5". Aquatic vegetation, flora and fauna were observed on site - the primary species vegetation observed was Broad Leaf Cattail (*Typha latifolia*). Surrounding land use of the wetland is agricultural, rural residential, and upland forest.

Final score : 14	**Category:** 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	(NO) Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	(NO) Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	(NO) Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	(NO) Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	(NO) Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	(NO) Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	(NO) Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	(NO) Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	(NO) Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	(NO) Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	(NO) Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	(NO) Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	(NO) Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	(NO) Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	(NO) Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	(NO) Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: DPL W. Milton - Eldean (Wetland E)	Rater(s): TER, BJR	Date: 4/24/2019

Metric 1. Wetland Area (size).

max 6 pts.	subtotal
2	2

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)

Metric 2. Upland buffers and surrounding land use.

max 14 pts.	subtotal
1	3

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), shrub land, 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.

max 30 pts.	subtotal
5	8

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

Metric 4. Habitat Alteration and Development.

max 20 pts.	subtotal
4	12

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)
- [ ] 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
- [X] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

subtotal this page
12

last revised 1 February 2001 jjm

Site: DPL W. Milton - Eldean (Wetland E)	Rater(s): TER, BJR	Date: 4/24/2019

12
subtotal first page

0 (max 10 pts.) | 12 (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.) | 14 (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
- [ ] 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
- [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

14

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	5	
	Metric 4. Habitat	4	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	2	
	TOTAL SCORE	14	Category based on score breakpoints Category 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	(NO)	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	(NO)	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	(NO)	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	(YES) Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	(NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	(NO) Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

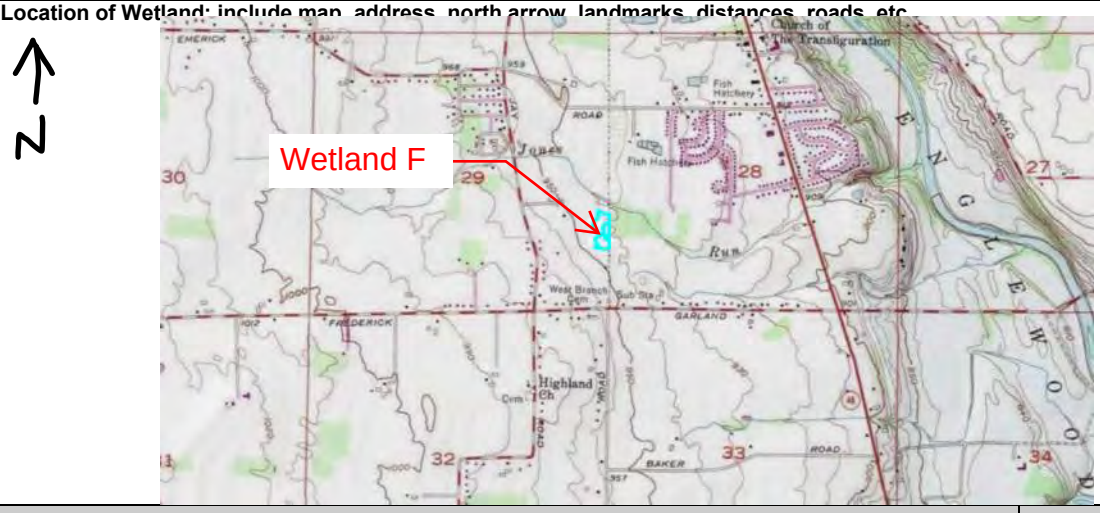
Choose one	(Category 1)	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	Tyler Rankin, Brad Rolfes
Date:	April 24, 2019
Affiliation:	GAI Consultants, Inc.
Address:	1830 Airport Exchange Bvld., Suite 220, Erlanger, KY 41018
Phone Number:	859-212-0226
e-mail address:	t.rankin@gaiconsultants.com
Name of Wetland:	Wetland F
Vegetation Communit(ies):	PEM/PSS/PFO
HGM Class(es):	Depressional

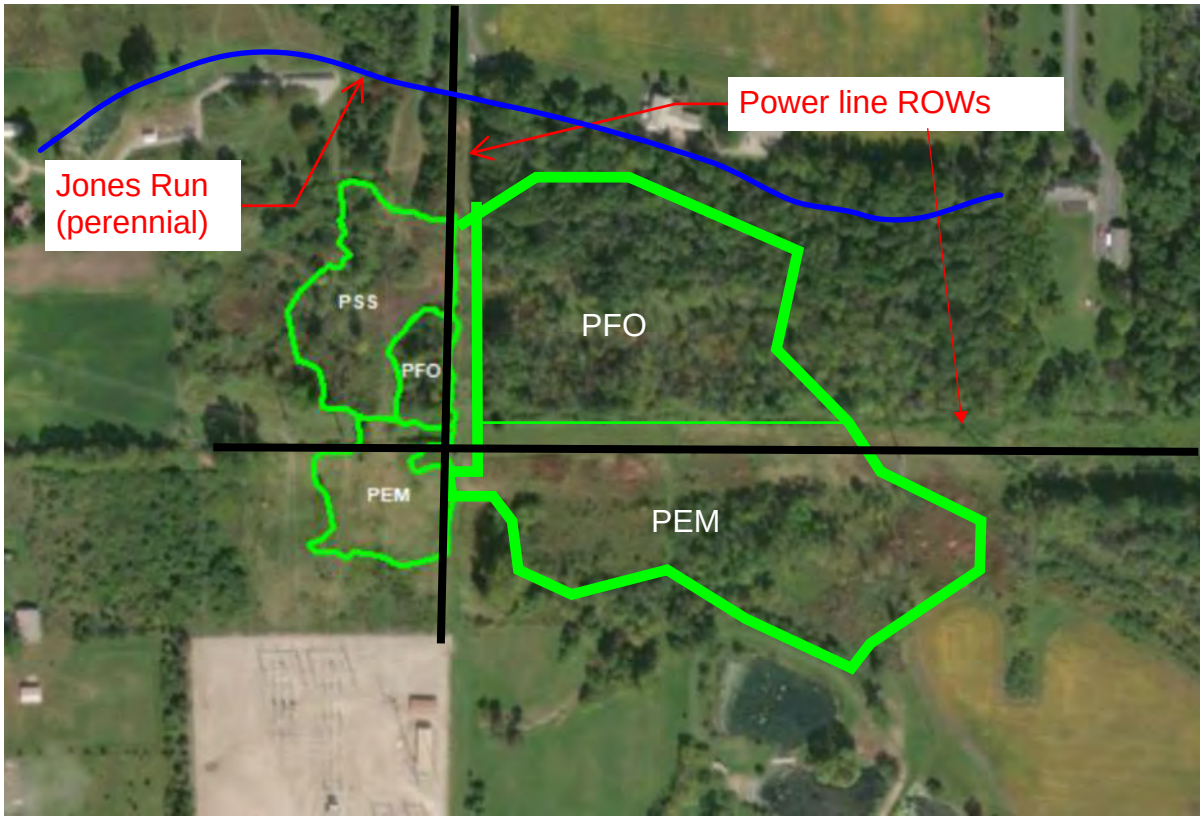
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate	39.939905, -84.332170
USGS Quad Name	West Milton
County	Miami
Township	Union
Section and Subsection	N/A
Hydrologic Unit Code	050800011404
Site Visit	April 24, 2019
National Wetland Inventory Map	PEM1C
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	

Name of Wetland: Wetland F	
Wetland Size (acres, hectares):	approx. 7 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

Wetland F is a Palustrine Emergent (PEM), Palustrine Forested (PFO), and Scrub Scrub (PSS) wetland complex, located due north of an existing substation, near the city of West Milton, in Miami County, OH . The vast majority of the wetland holds standing water between 1" - 1'. The wetland is located within the floodplain of Jones Run. Aquatic vegetation, flora and fauna were observed on site - the primary species vegetation observed was reed canarygrass (*Phalaris arundinacea*), skunk cabbage (*Symplocarpus foetidus*), and black willow (*Salix nigra*) among others, which were not as prevalent. Surrounding land use of the wetland is agricultural, maintained transmission line ROW, rural residential.

Final score :	54	**Category:**	2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	X	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	(NO) Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	(NO) Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	(NO) Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	(NO) Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	(NO) Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	(NO) Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	(NO) Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	(NO) Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	(NO) Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	(NO) Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	(NO) Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	(NO) Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	(NO) Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	(NO) Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	(NO) Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	(NO) Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: DPL W. Milton - Eldean (Wetland F)	Rater(s): TER, BJR	Date: 4/24/2019

Metric 1. Wetland Area (size).

3	3
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)

Metric 2. Upland buffers and surrounding land use.

8	11
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), shrub land, 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)

Metric 3. Hydrology.

24.5	35.5
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)
- [X] 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)
- [X] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

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

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

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

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

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

- [X] 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)
- [X] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

12.5	48
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)
- [X] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

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

- [ ] None or none apparent (9)
- [X] Recovered (6)
- [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
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

48
subtotal this page

last revised 1 February 2001 jjm

Site: DPL W. Milton - Eldean (Wetland F)	Rater(s): TER, BJR	Date: 4/24/2019

48
subtotal first page

0 | 48
max 10 pts. | subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

8 | 54
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
- [2] Emergent
- [2] Shrub
- [1] Forest
- [0] Mudflats
- [0] Open water
- [ ] Other_____

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

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

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

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [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
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

0

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

54

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES (NO)	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3	
	Metric 2. Buffers and surrounding land use	8	
	Metric 3. Hydrology	24.5	
	Metric 4. Habitat	12.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	8	
	TOTAL SCORE	54	Category based on score breakpoints Category 2

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	(NO)	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	(NO)	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	(NO)	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	(YES) Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	(NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	(NO) Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

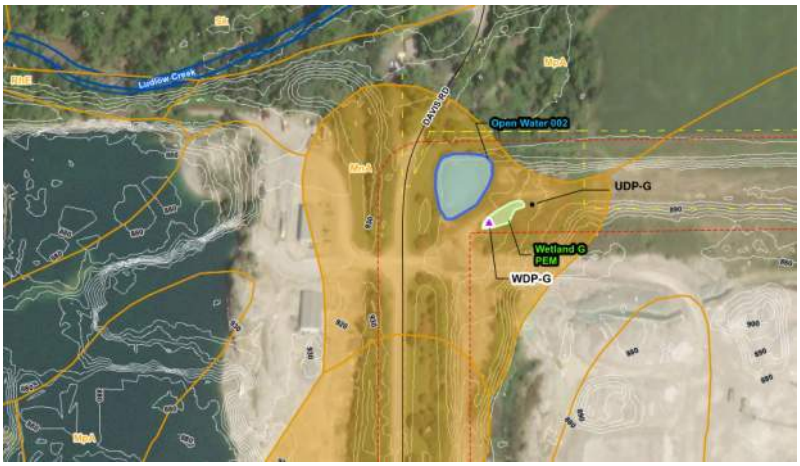
Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name:	[redacted]
Date:	[redacted]
Affiliation	[redacted]
Address:	[redacted]
Phone Nu	[redacted]
e-mail address	[redacted]
Name of W	[redacted]
Vegetation Communit(ies):	[redacted]
HGM Class(es):	[redacted]

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate	[redacted]
USGS Quad Name	[redacted]
County	[redacted]
Township	[redacted]
Section and Subsection	[redacted]
Hydrologic Unit Code	[redacted]
Site Visit	[redacted]
National Wetland Inventory Map	[redacted]
Ohio Wetland Inventory Map	[redacted]
Soil Survey	[redacted]
Delineation report/map	[redacted]

Name of Wetland: [redacted]	
Wetland Size (acres, hectares):	[redacted]

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Comments, Narrative Discussion, Justification of Category Changes:

[redacted]

Final score : [redacted]	**Category:** [redacted]

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	[redacted]	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	[redacted]	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	[redacted]	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	[redacted]	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	[redacted]	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	[redacted]	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site:	Rater(s):	Date:

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)
- ☐ <0.1 acres (0.04ha) (0 pts)

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)
- ☐ NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

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

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

Metric 3. Hydrology.

max 30 pts. subtotal

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

- ☐ High pH groundwater (5)
- ☐ groundwater (3)
- ☐ pitation (1)
- ☐ onal/Intermittent surface water (3)
- ☐ nial 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)
- ☐ (<15.7in) (1)

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

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

3e. s to natural hydrologic regime. Score one or double check ge.

- ☐ None or none apparent (12)
- ☐ vered (7)
- ☐ vering (3)
- ☐ t or no recovery (1)

Check all disturbances observed

- ☐ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ water input
- ☐ source (nonstormwater)
- ☐ grading
- ☐ ed/RR track
- ☐ ng
- ☐ _____

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)
- ☐ vering (2)
- ☐ t or no recovery (1)

4b. elopment. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ (3)
- ☐ o fair (2)
- ☐ (1)

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

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☐ vering (3)
- ☐ t or no recovery (1)

Check all disturbances observed

- ☐ mowing
- ☐ grazing
- ☐ clearcutting
- ☐ selective cutting
- ☐ woody debris removal
- ☐ toxic pollutants
- ☐ shrub/sapling removal
- ☐ ceous/aquatic bed removal
- ☐ entation
- ☐ ing
- ☐ ng
- ☐ nutrient enrichment

subt

last revised 1 February 2001 jjm

Site: [redacted] **Rater(s):** [redacted] **Date:** [redacted]

[redacted] subtotal

[redacted] Metric 5. Special Wetlands.

[redacted] 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)
- [ ] [redacted]ory 1 Wetland. See Question 1 Qualitative Rating (-10)

[redacted] Plant communities, interspersion, microtopography.

[redacted] max 20 pts. subtotal

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

- [ ] [redacted]ic bed
- [ ] [redacted]gent
- [ ] [redacted]t
- [ ] [redacted]ats
- [ ] [redacted] water

6b. [redacted]plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] [redacted]1)
- [ ] [redacted](0)

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

- [ ] [redacted]sive >75% cover (-5)
- [ ] [redacted]rate 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.

- [ ] [redacted]ated hummucks/tussucks
- [ ] [redacted]e woody debris >15cm (6in)
- [ ] [redacted]ing dead >25cm (10in) dbh
- [ ] [redacted]ibian 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

[redacted]

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES (NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES (NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES (NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES (NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	(YES) NO	If yes, Category 1.
	Question 6. Bogs	YES (NO)	If yes, Category 3.
	Question 7. Fens	YES (NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES (NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES (NO)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES (NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES (NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	[redacted]	
	Metric 2. Buffers and surrounding land use	[redacted]	
	Metric 3. Hydrology	[redacted]	
	Metric 4. Habitat	[redacted]	
	Metric 5. Special Wetland Communities	[redacted]	
	Metric 6. Plant communities, interspersion, microtopography	[redacted]	
	TOTAL SCORE	[redacted]	Category based on score breakpoints [redacted]

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	(NO)	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	(NO)	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	(NO)	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	(YES) Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	(NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	(NO) Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	(Category 1)	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX 8-2

Stream QHEI and HHEI Data Forms

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : **36**

SITE NAME/LOCATION: Stream 1

SITE NUMBER: | RIVER BASIN: Great Miami | DRAINAGE AREA (mi²): 0.25

LENGTH OF STREAM REACH (ft): 126 | LAT.: 39.95103 | LONG.: -84.35072 | RIVER CODE: | RIVER MILE:

DATE: 10/06/14 | SCORER: TER | COMMENTS: Channelized Drainage Ditch

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0%	☑	SILT [3 pt]	50%
☐	BOULDER (>256 mm) [16 pts]	0%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐	BEDROCK [16 pt]	0%	☐	FINE DETRITUS [3 pts]	0%
☐	COBBLE (65-256 mm) [12 pts]	10%	☐	CLAY or HARDPAN [0 pt]	0%
☑	GRAVEL (2-64 mm) [9 pts]	20%	☐	MUCK [0 pts]	0%
☐	SAND (<2 mm) [6 pts]	20%	☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 10.00% **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

16

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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 [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☑	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: | **MAXIMUM POOL DEPTH (centimeters):** 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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: | **AVERAGE BANKFULL WIDTH (meters):** 2.10

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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Narrow <5m	☐	☐	Residential, Park, New Field	☑	☑	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Channelized drainage ditch within Ag fields

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

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☑ 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: **Stillwater River** Distance from Evaluated Stream **1.79**

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

USGS Quadrangle Name: **West Milton** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Miami** Township / City: **Union**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **10/06/14** Quantity: **0.03**

Photograph Information: **See Photograph Appendix**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **50%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

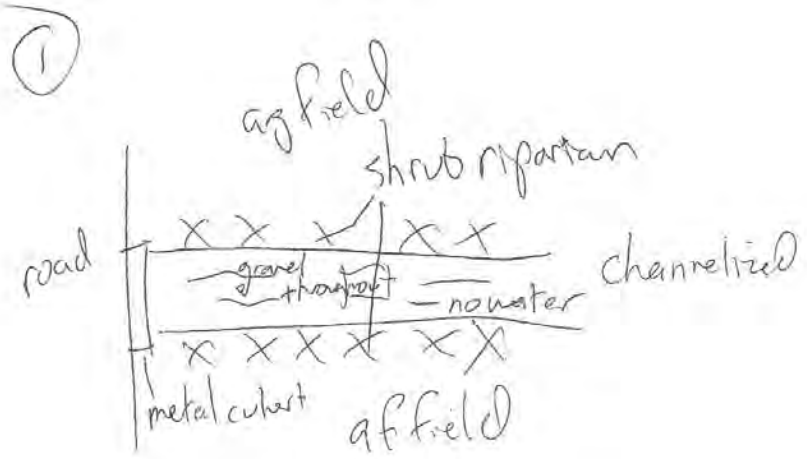
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

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 →



Save as pdf Reset Form

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : **50**

SITE NAME/LOCATION: Stream 2

SITE NUMBER: | RIVER BASIN: Great Miami | DRAINAGE AREA (mi²): 0.25

LENGTH OF STREAM REACH (ft): 106 | LAT.: 39.96731 | LONG.: -84.35123 | RIVER CODE: | RIVER MILE:

DATE: 10/06/14 | SCORER: TER | COMMENTS: Channelized Drainage Ditch

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0%	☐	SILT [3 pt]	10%
☐	BOULDER (>256 mm) [16 pts]	0%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐	BEDROCK [16 pt]	0%	☐	FINE DETRITUS [3 pts]	0%
☑	COBBLE (65-256 mm) [12 pts]	30%	☐	CLAY or HARDPAN [0 pt]	0%
☑	GRAVEL (2-64 mm) [9 pts]	40%	☐	MUCK [0 pts]	0%
☐	SAND (<2 mm) [6 pts]	20%	☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 30.00% **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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 [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☑	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: | **MAXIMUM POOL DEPTH (centimeters):** 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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: | **AVERAGE BANKFULL WIDTH (meters):** 3.50

Bankfull Width Max=30

25

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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☑	Moderate 5-10m	☐	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☑	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Channelized drainage ditch along side

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: **Stillwater River** Distance from Evaluated Stream **1.61**

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

USGS Quadrangle Name: **West Milton** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Miami** Township / City: **Union**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **10/06/14** Quantity: **0.03**

Photograph Information: **See Photograph Appendix**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **20%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

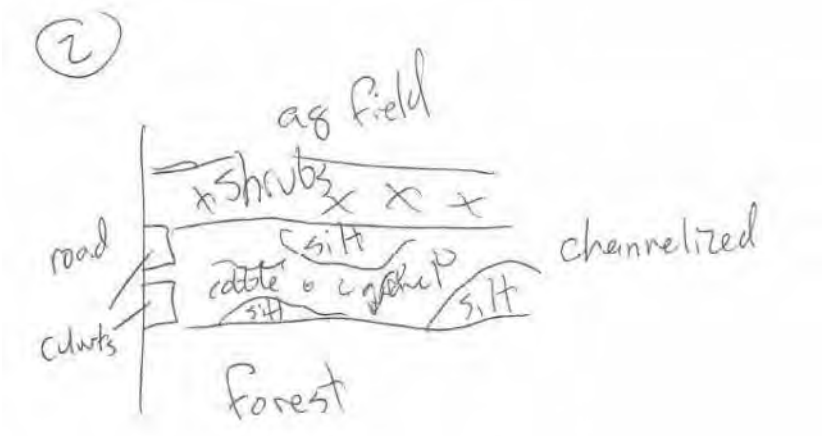
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

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 →



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Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : **45**

SITE NAME/LOCATION: Stream 3

SITE NUMBER: | RIVER BASIN: Great Miami | DRAINAGE AREA (mi²): 0.15

LENGTH OF STREAM REACH (ft): 200 | LAT.: 39.99503 | LONG.: -84.31362 | RIVER CODE: | RIVER MILE:

DATE: 10/06/14 | SCORER: TER | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0%	☐	SILT [3 pt]	10%
☐	BOULDER (>256 mm) [16 pts]	0%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐	BEDROCK [16 pt]	0%	☐	FINE DETRITUS [3 pts]	0%
☑	COBBLE (65-256 mm) [12 pts]	40%	☐	CLAY or HARDPAN [0 pt]	0%
☑	GRAVEL (2-64 mm) [9 pts]	30%	☐	MUCK [0 pts]	0%
☐	SAND (<2 mm) [6 pts]	20%	☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 40.00% **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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 [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☑	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: | **MAXIMUM POOL DEPTH (centimeters):** 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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: | **AVERAGE BANKFULL WIDTH (meters):** 3.50

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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: culerted stream coming from drain tiles

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: **Stillwater River** Distance from Evaluated Stream **0.09**

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

USGS Quadrangle Name: **West Milton** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Miami** Township / City: **Union**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **10/06/14** Quantity: **0.03**

Photograph Information: **See Photograph Appendix**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **20%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

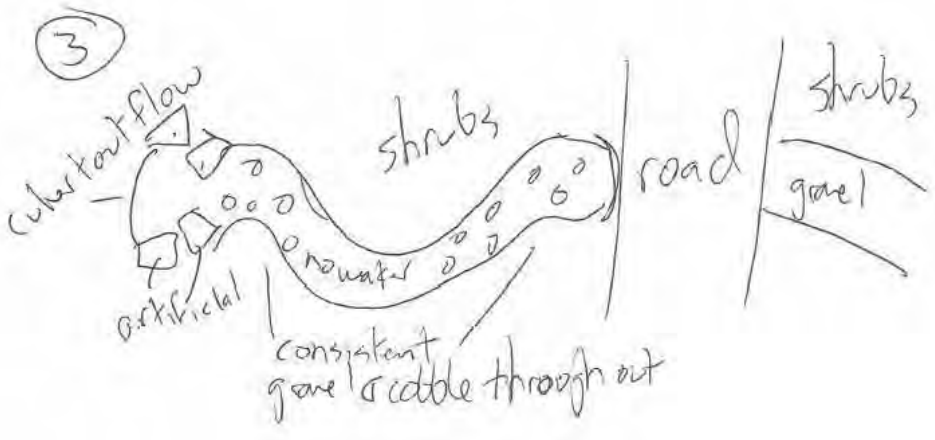
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

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 →



Save as pdf Reset Form

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 70

SITE NAME/LOCATION: Stream 4

SITE NUMBER: | RIVER BASIN: Great Miami | DRAINAGE AREA (mi²): 0.50

LENGTH OF STREAM REACH (ft): 200 | LAT.: 39.99781 | LONG.: -84.30382 | RIVER CODE: | RIVER MILE:

DATE: 10/06/14 | SCORER: TER | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0%	☐ ☐	SILT [3 pt]	10%
☐ ☐	BOULDER (>256 mm) [16 pts]	0%	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐ ☐	BEDROCK [16 pt]	0%	☐ ☐	FINE DETRITUS [3 pts]	0%
☐ ☑	COBBLE (65-256 mm) [12 pts]	30%	☐ ☐	CLAY or HARDPAN [0 pt]	0%
☑ ☐	GRAVEL (2-64 mm) [9 pts]	50%	☐ ☐	MUCK [0 pts]	0%
☐ ☐	SAND (<2 mm) [6 pts]	10%	☐ ☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 30.00% (A) | Substrate Percentage Check | (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 21 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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 [5 pts]
☑	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH (centimeters):** 20

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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH (meters):** 2.80

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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☑	☐	Wide >10m	☐	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☑	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☑	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

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

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ 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: **Stillwater River** Distance from Evaluated Stream **0.61**

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

USGS Quadrangle Name: **West Milton** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Miami** Township / City: **Union**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **10/06/14** Quantity: **0.03**

Photograph Information: **See Photograph Appendix**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **20%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

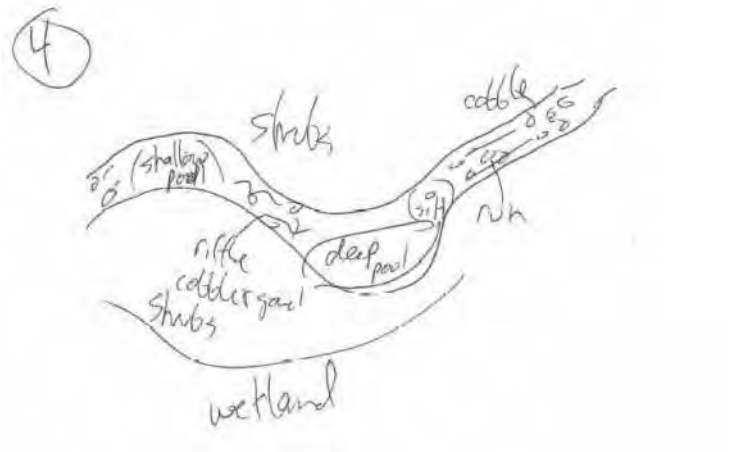
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

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 →



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Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 69

Stream & Location: Stream 5 RM: _ _ _._ Date: 10/ 6 / 14

Stillwater River

Scorers Full Name & Affiliation:

River Code: _ _ _ - _ _ _ - _ _ _ STORET #: _ _ _ _ _ _ Lat./ Long.: (NAD 83 - decimal °) 39.99456/-84.31584 Office verified location ■

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]	5	5	☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]	10	10	☐ ☐ DETRITUS [3]		
■ ☐ COBBLE [8]	30	30	☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]	5	5	☐ ■ SILT [2]	30	30
☐ ☐ SAND [6]	20	20	☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

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

Check ONE (*Or 2 & average*)

ORIGIN
☐ LIMESTONE [1]
■ TILLS [1]
☐ WETLANDS [0]
☐ HARDPAN [0]
☐ SANDSTONE [0]
☐ RIP/RAP [0]
☐ LACUSTURINE [0]
☐ SHALE [-1]
☐ COAL FINES [-2]

EMBEDDEDNESS

SILT
☐ HEAVY [-2]
☐ MODERATE [-1]
■ NORMAL [0]
☐ FREE [1]
☐ EXTENSIVE [-2]
☐ MODERATE [-1]
■ NORMAL [0]
☐ NONE [1]

Substrate 13 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.

_	UNDERCUT BANKS [1]	3	POOLS > 70cm [2]	_	OXBOWS, BACKWATERS [1]
3	OVERHANGING VEGETATION [1]	1	ROOTWADS [1]	2	AQUATIC MACROPHYTES [1]
_	SHALLOWS (IN SLOW WATER) [1]	1	BOULDERS [1]	2	LOGS OR WOODY DEBRIS [1]
2	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: 15

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
☐ HIGH [4]
☐ MODERATE [3]
☐ LOW [2]
■ NONE [1]

DEVELOPMENT
☐ EXCELLENT [7]
☐ GOOD [5]
■ FAIR [3]
☐ POOR [1]

CHANNELIZATION
☐ NONE [6]
☐ RECOVERED [4]
■ RECOVERING [3]
☐ RECENT OR NO RECOVERY [1]

STABILITY
☐ HIGH [3]
■ MODERATE [2]
☐ LOW [1]

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
residential and agricultural land uses beyond 100m

Riparian Maximum 10: 8

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]
☐ VERY FAST [1]
■ FAST [1]
■ MODERATE [1]
■ 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)

Comments

Pool / Current Maximum 12: 10

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]
☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
■ MAXIMUM > 50cm [2]
☐ MAXIMUM < 50cm [1]

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

RIFFLE / RUN EMBEDDEDNESS
☐ NONE [2]
☐ LOW [1]
■ MODERATE [0]
☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8: 5

6] GRADIENT (8 ft/mi)

DRAINAGE AREA (601 mi²)

☐ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 20 %GLIDE:
%RUN: 60 %RIFFLE: 20

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

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 1st _____ cm

2nd _____ cm

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

C] RECREATION

POOL: AREA ☐ >100ft² DEPTH ☐ >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

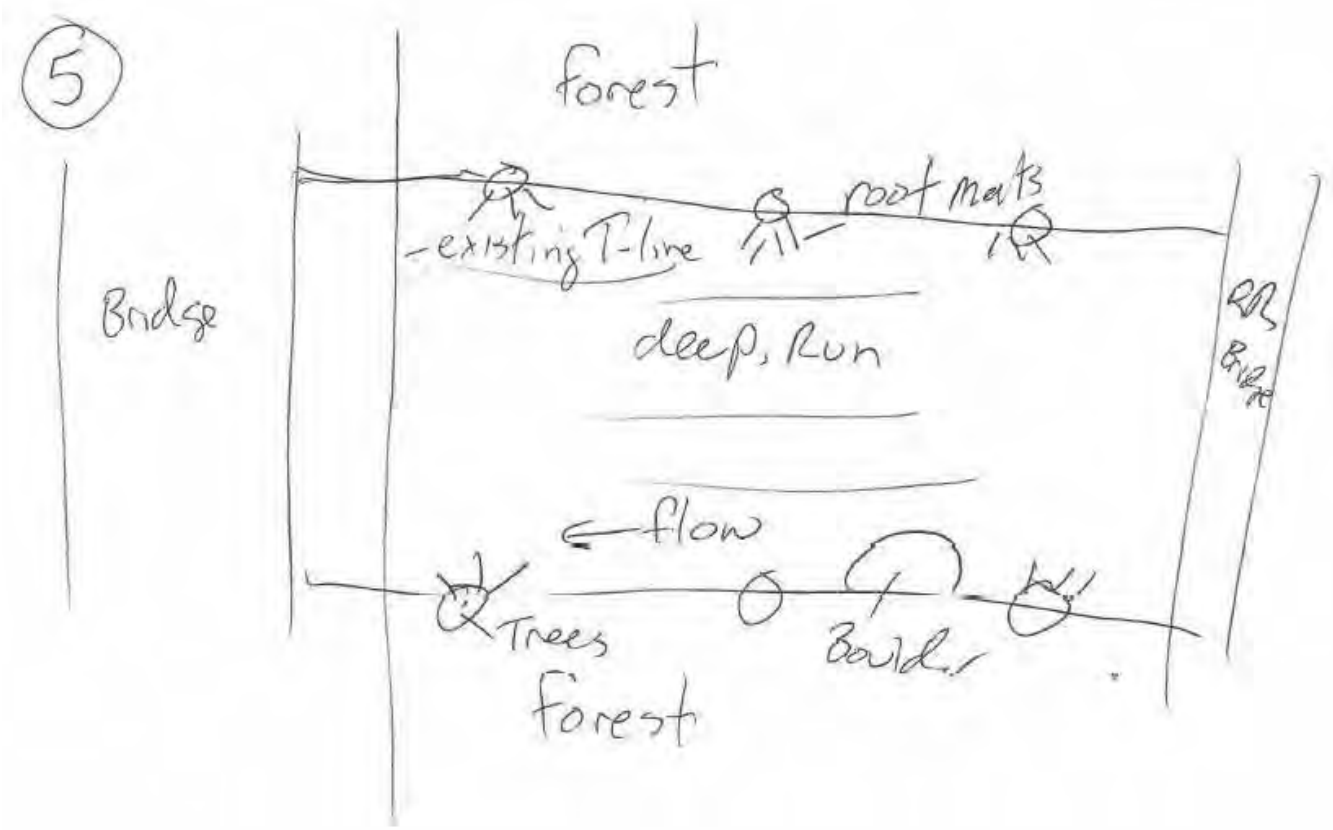
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width
- $\bar{x}$ depth
- 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:



Ohio EPA — Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 57.5

Stream & Location: Stream 5-00 (Stream 6) **RM:** ___ **Date:** 06/17/[redacted]15

DPL West Milton - Elder **Scorers Full Name & Affiliation:** Nathan Ehlinger POWER Eng.

River Code: ___ **STORET #:** ___ **Lat./Long.:** (NAD 83 - decimal) 39.9486 / 84.3322 Office verified location ☐

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]	—	20	☐ ☐ MUCK [2]	—	—
☒ ☒ GRAVEL [7]	20	70	☐ ☐ SILT [2]	5	0
☒ ☐ SAND [6]	75	10	☐ ☐ ARTIFICIAL [0]	—	—
☐ ☐ BEDROCK [5]	—	—			

(Score natural substrates; ignore sludge from point-sources)

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

Check ONE (Or 2 & average)

ORIGIN	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]	

SILT / EMBEDDEDNESS

Comments

Substrate 15 — 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]
1 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]
0 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: 5

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: 12

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)
☐ ☐ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☒ ☒ FOREST, SWAMP [3]
☒ ☒ MODERATE [2]	☒ ☒ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]
	☐ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]
	☐ ☐ NONE [0]	☒ ☒ OPEN PASTURE, ROWCROP [0]

☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ MINING / CONSTRUCTION [0]

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

Comments

Riparian Maximum 10: 6.5

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: 7

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: 5

6] GRADIENT
(10 ft/mi) ☐ VERY LOW - LOW [2-4] ☒ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (4.5 mi²)

%POOL: 15 %GLIDE: 35 %RUN: 25 %RIFFLE: 25

Gradient Maximum 10: 7

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

250 Feet / 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 pass _____ cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Stream reach observed is partially in open pasture with remainder in forested area

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

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

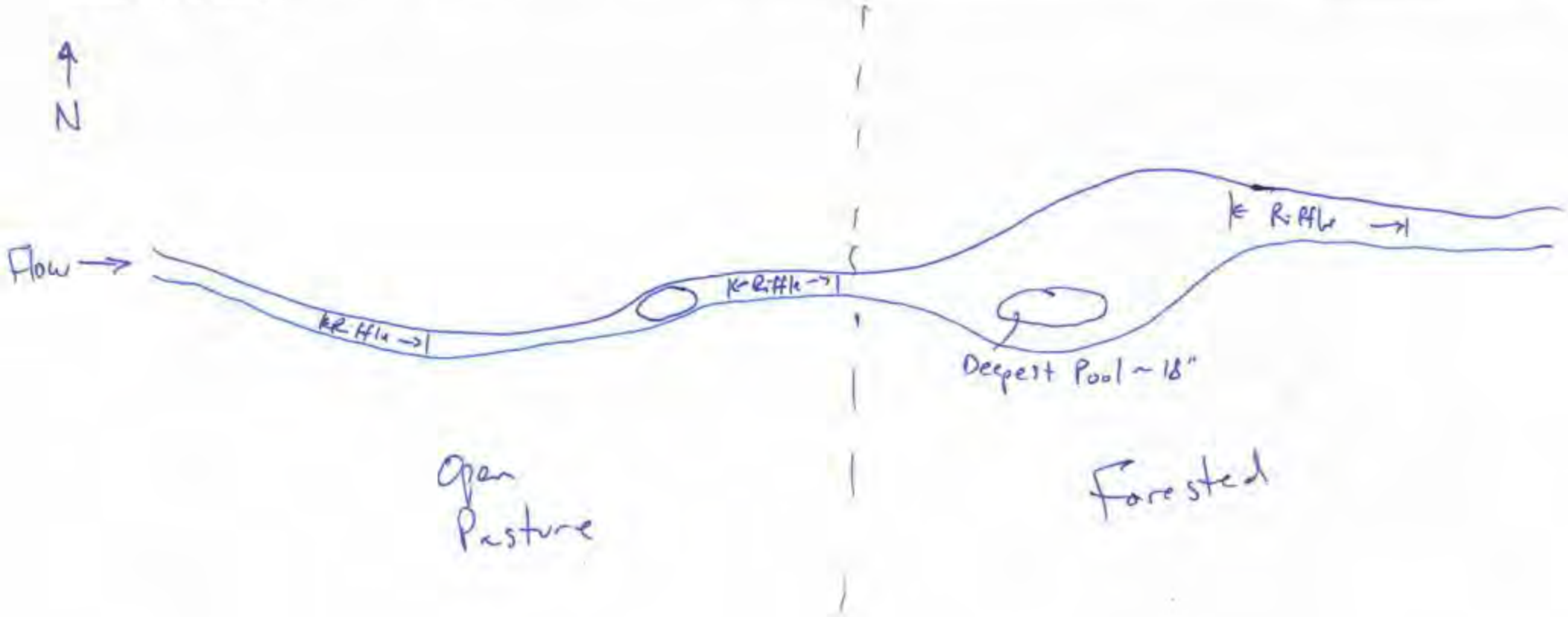
E] ISSUES

WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width
- $\bar{x}$ depth
- 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:



Ohio EPA — Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 37

Stream & Location: Stream 5-06-A - Siegel Property **RM:** ___ **Date:** 9/19/2015

Misc. DPel - west Milton-Elem. **Scorers Full Name & Affiliation:** Tyler Bonta, Powell Engineering

River Code: - - **STORET #:** **Lat./Long.:** 40.0621 / 84.2716 (DMS to decimal) Office verified location ■

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]	15	20	☐☐ MUCK [2]		
☑☐ GRAVEL [7]	40	50	☐☑ SILT [2]	45	30
☐☐ SAND [6]			☐☐ ARTIFICIAL [0]		
☐☐ BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)		

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

Check ONE (Or 2 & average)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [2]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIPYRAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☑ NORMAL [0]
- ☐ FREE [1]
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☑ NORMAL [0]
- ☐ NONE [1]

SILT / EMBEDDEDNESS

Substrate: 10 (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.

___ UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
2 OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
___ SHALLOWS (IN SLOW WATER) [1]	___ 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: 6

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

SINUOSITY
- ☐ HIGH [4]
- ☐ MODERATE [3]
- ☑ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ☐ FAIR [3]
- ☑ POOR [1]

CHANNELIZATION
- ☐ NONE [6]
- ☐ RECOVERED [4]
- ☑ RECOVERING [3]
- ☑ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☑ MODERATE [2]
- ☐ LOW [1]

Comments

Channel Maximum 20: 8

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]
- ☑☐ MODERATE [2]
- ☐☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L / R)
- ☐☐ WIDE > 50m [4]
- ☐☐ MODERATE 10-50m [3]
- ☑☐ NARROW 5-10m [2]
- ☐☐ 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]
- ☑☑ OPEN PASTURE, ROWCROP [0]
- ☐☐ CONSERVATION TILLAGE [1]
- ☐☐ URBAN OR INDUSTRIAL [0]
- ☐☐ MINING / CONSTRUCTION [0]

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

Comments

Riparian Maximum 10: 4

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]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ☐ 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)

Comments: no flow, isolated pools

Pool / Current Maximum 12: 1

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: ☑ NO RIFFLE [metric=0]

Check ONE (Or 2 & average).

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

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

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments: currently no riffles flowing, riffles do exist in high water conditions

Riffle / Run Maximum 8: 0

6] GRADIENT
9.1 ft/mi ☐ VERY LOW - LOW [2-4] ☑ MODERATE [5-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA 11.75 mi²

%POOL: 30 %GLIDE: - %RUN: 40 %RIFFLE: 30

Gradient Maximum 10: 8

A] SAMPLED REACH
Check ALL that apply

METHOD
- ☐ BOAT
- ☑ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE (1st / sample pass / 2nd)
- ☐ HIGH ☐
- ☐ UP ☐
- ☐ NORMAL ☐
- ☑ LOW ☐
- ☐ DRY ☐

DISTANCE
- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☑ 0.12 Km
- ☐ OTHER

meters

CLARITY (1st / sample pass / 2nd)
- ☐ < 20 cm ☐
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ☑ > 70 cm (CTS) ☐
- ☐ SECCHI DEPTH ☐

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

pass — 1st _____ cm; 2nd _____ cm

Comment RE: Reach consistency/ Is reach typical of stream?, Regression/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

Stream is a channelized drainage feature which has continuous flow only a few months out of the year. Stream was mostly dry with a few isolated pools at time of evaluation. Agricultural drainage tiles observed along stream banks.

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: ☐ >1000ft² ☐ >3ft

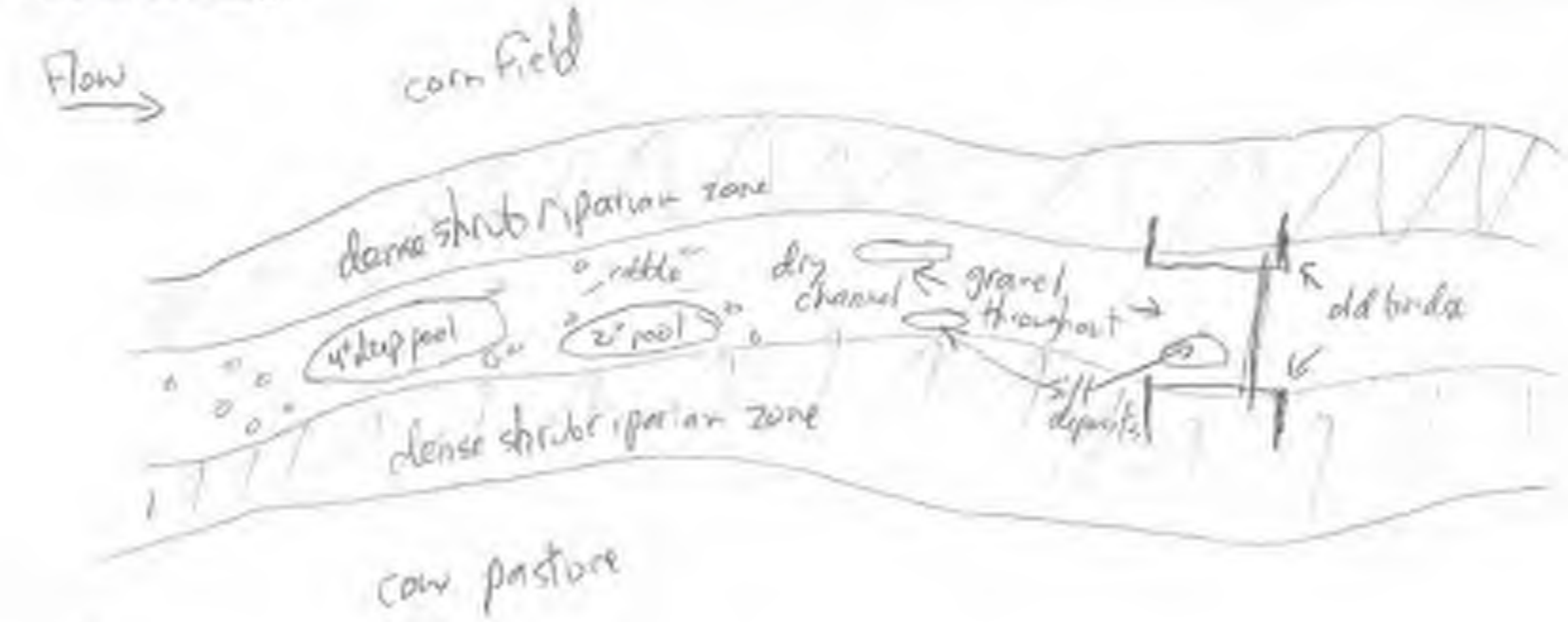
D] MAINTENANCE Circle some & COMMENT
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED CUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / 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 H_2O / TILE / H_2O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- x̄ width
- x̄ depth
- max. depth
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 48.5

Stream & Location: Stream S-06-B [redacted] **RM:** ___ **Date:** 10/21/15

Scorers Full Name & Affiliation: Nathan Ehlinger POWER

DP&L West Milton-Elderon

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** (NAD 83 - decimal °) 40.05219 184.2060 Office verified location ☐

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]	10	15	☐ ☐ MUCK [2]	___	___
☑ ☐ GRAVEL [7]	20	45	☐ ☐ SILT [2]	35	20
☐ ☑ SAND [6]	35	20	☐ ☐ 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 (Check ONE (Or 2 & average))
☐ LIMESTONE [1] ☑ TILLS [1] ☐ WETLANDS [0] ☐ HARDPAN [0] ☐ SANDSTONE [0] ☐ RIP/RAP [0] ☐ LACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]

QUALITY
SILT: ☐ HEAVY [-2] ☐ MODERATE [-1] ☑ NORMAL [0] ☐ FREE [1]
EMBEDDEDNESS: ☐ EXTENSIVE [-2] ☐ MODERATE [-1] ☑ NORMAL [0] ☐ NONE [1]

Substrate Maximum 20: **14**

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.

1 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]
1 OVERHANGING VEGETATION [1]	1 ROOTWADS [1]	0 AQUATIC MACROPHYTES [1]
0 SHALLOWS (IN SLOW WATER) [1]	1 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]
0 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: **11**

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

EROSION (L / R)	RIPARIAN WIDTH (L / R)	FLOOD PLAIN QUALITY (L / R)
☐ ☐ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☒ ☒ FOREST, SWAMP [3]
☑ ☒ MODERATE [2]	☐ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]
☐ ☐ HEAVY / SEVERE [1]	☑ ☒ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]
	☐ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]
	☐ ☐ NONE [0]	☒ ☒ OPEN PASTURE, ROWCROP [0]

☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ MINING / CONSTRUCTION [0]

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

Comments

Riparian Maximum 10: **5.5**

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 Isolated Pools

Pool / Current Maximum 12: **1**

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 No flow in riffle locations

Riffle / Run Maximum 8: **0**

6] GRADIENT (9.1 ft/mi)
DRAINAGE AREA (1.75 mi²)

☐ VERY LOW - LOW [2-4] ☑ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

%POOL: 15 %GLIDE: 25 %RUN: 40 %RIFFLE: 20

Gradient Maximum 10: **8**

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☑ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

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

DISTANCE

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

_____ meters

CLARITY

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

1st _____ cm

2nd _____ cm

CANOPY

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

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

Comment RE: Reach consistency/ is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Channelized stream with few isolated pools in survey area.

Drainage tile outlets observed on downstream left bank.

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

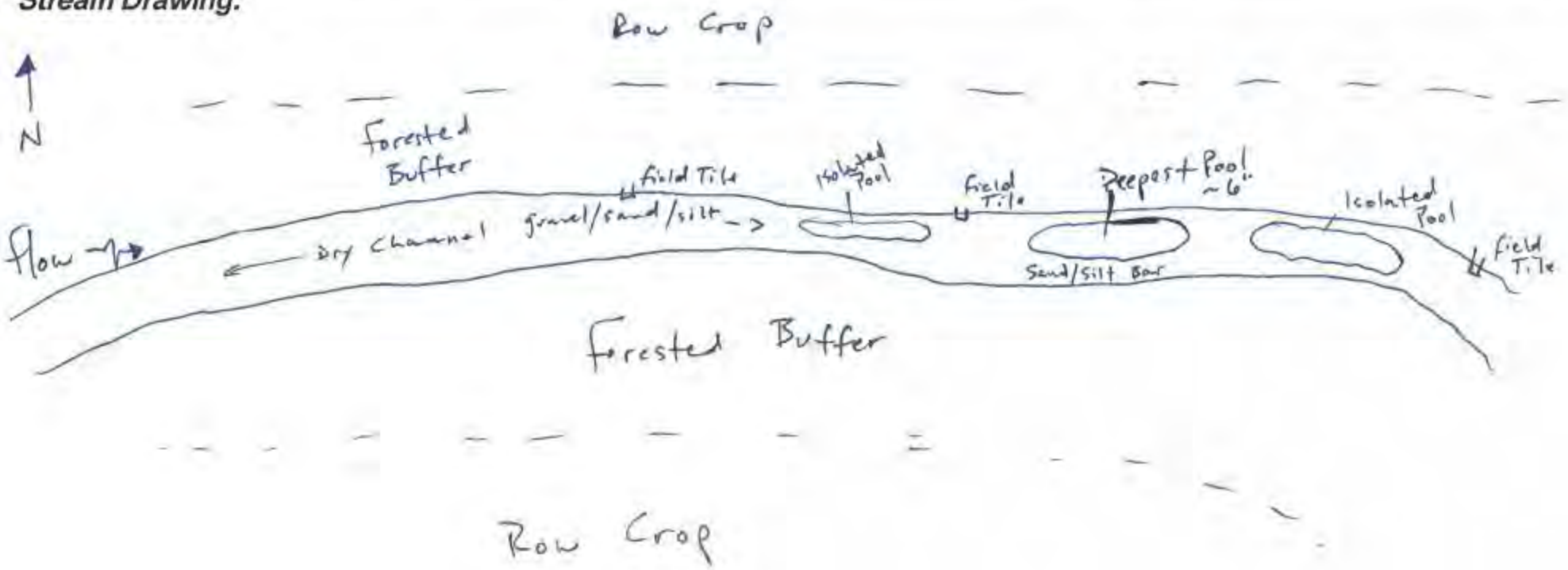
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width
- $\bar{x}$ depth
- 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:



Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION DPL West Milton-Elden n

S-002 (Stream 7) _____ RIVER BASIN _____ DRAINAGE AREA (mi²) 0.25

LENGTH OF STREAM REACH (ft) 125 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 6/17/15 SCORER NLE COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. **SUBSTRATE** (Estimate percent of every type of substrate 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]	0	☒	SILT [3 pt]	47
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	3
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☐	COBBLE (65-256 mm) [12 pts]	0	☐	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	5	☐	MUCK [0 pts]	15
☒	SAND (<2 mm) [6 pts]	30	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 9 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 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 ft)* 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]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): ☐

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]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☒	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ 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)

October 24, 2002 Revision

S-002

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): N Date of last precipitation: 6/17/15 Quantity: 0.47

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

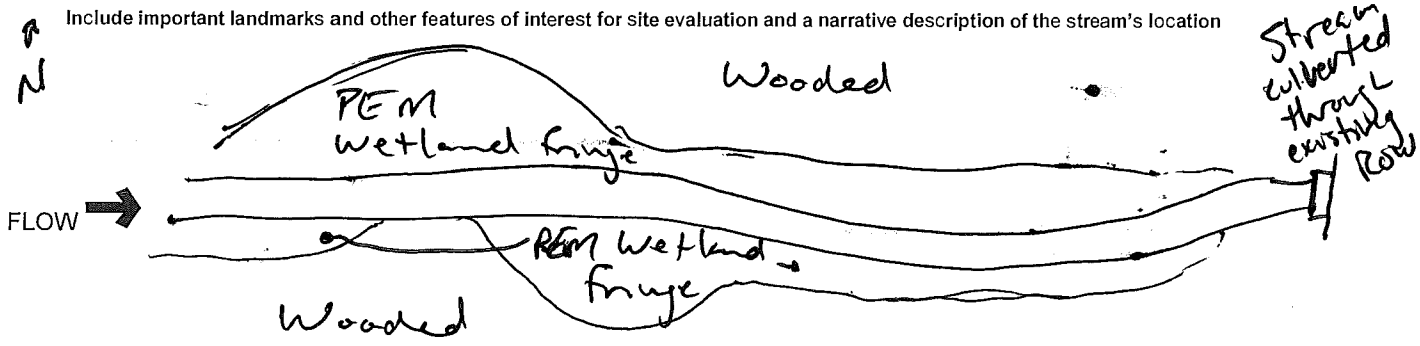
Fish Observed? (Y/N) N Voucher? (Y/N)_____ Salamanders Observed? (Y/N) N Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)_____

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



Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 65

SITE NAME/LOCATION DPL West Mr. Ito-Eldean

S-003 (Stream 8) UMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) 1.1

LENGTH OF STREAM REACH (ft) 200 LAT. 39.950572 LONG. -84.332263 RIVER CODE _____ RIVER MILE _____

DATE 6/17/15 SCORER NLE COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0	☐ ☐	SILT [3 pt]	5
☐ ☐	BOULDER (>256 mm) [16 pts]	0	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	3
☐ ☐	BEDROCK [16 pt]	0	☐ ☐	FINE DETRITUS [3 pts]	0
☐ ☐	COBBLE (65-256 mm) [12 pts]	21	☐ ☐	CLAY or HARDPAN [0 pt]	0
☒ ☐	GRAVEL (2-64 mm) [9 pts]	47	☐ ☐	MUCK [0 pts]	0
☐ ☑	SAND (<2 mm) [6 pts]	24	☐ ☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 21 (A) 15 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 20

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 54

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]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☑ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 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 L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

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

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS Intermittent

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

- ☐ None
- ☑ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >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)

October 24, 2002 Revision

S-003

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): N Date of last precipitation: 6/17/15 Quantity: 0.47

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 5

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:_____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain:_____

_____

Additional comments/description of pollution impacts:_____

_____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N)_____ Salamanders Observed? (Y/N) N Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)____

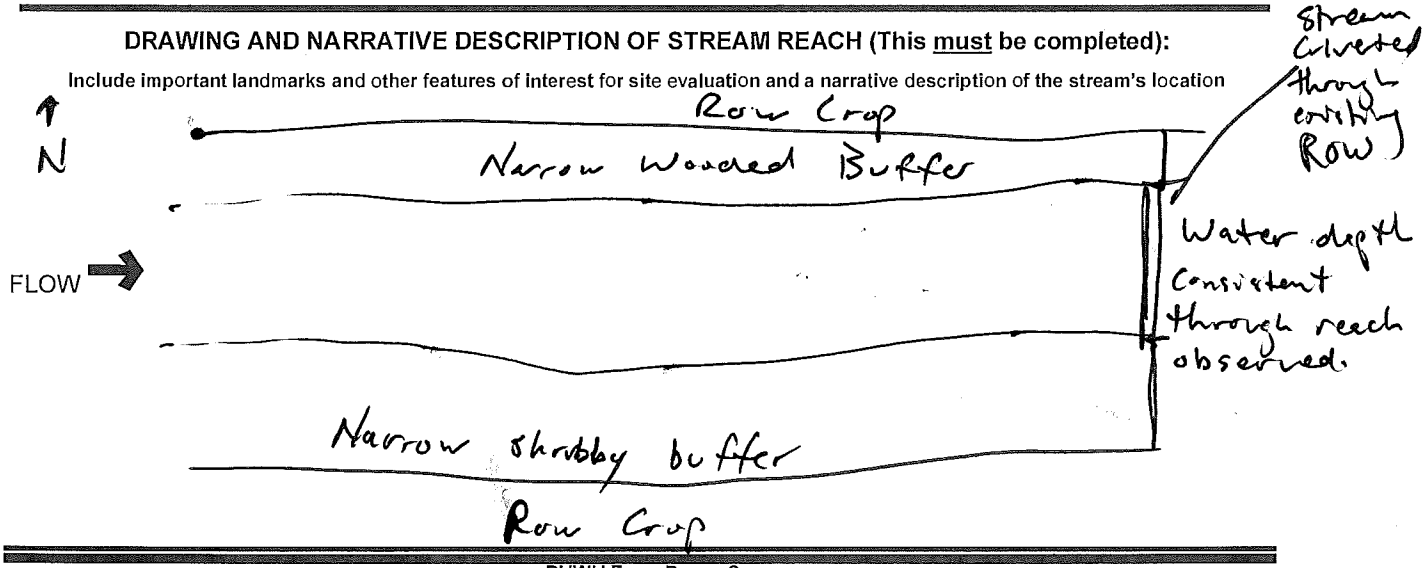
Comments Regarding Biology:_____

_____

_____

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



Ohio EPA — Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 52.5

Stream & Location: Stream 9 - Jones Run — DP&L Westville — Elder — **RM:** — **Date:** 6/15/15

Scorers Full Name & Affiliation: Tyler Rankin

River Code: — **STORET #:** — **Lat./Long.:** 39.9413 / 84.3327 (DMS) (decimal) — Office verified location ☐

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]	3	10	☐ MUCK [2]		
☑ GRAVEL [7]	32	62	☑ SILT [2]	50	2
☐ SAND [6]	15	26	☐ ARTIFICIAL [0]		
☐ BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)		

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

Check ONE (Or 2 & average)

ORIGIN	QUALITY
☐ LIMESTONE [1]	☐ HEAVY [-2]
☑ TILLS [1]	☐ MODERATE [-1]
☐ WETLANDS [0]	☑ NORMAL [0]
☐ HARDPAN [0]	☐ FREE [1]
☐ SANDSTONE [2]	☐ EXTENSIVE [-2]
☐ RIPRAP [0]	☐ MODERATE [-1]
☐ LACUSTURINE [0]	☑ NORMAL [0]
☐ SHALE [-1]	☐ NONE [1]
☐ COAL FINES [-2]	

SILT — EMBEDDEDNESS

Substrate Maximum 20: **10**

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.

___ UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
2 OVERHANGING VEGETATION [1]	1 ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
1 SHALLOWS (IN SLOW WATER) [1]	___ BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT Check ONE (Or 2 & average)

☐ EXTENSIVE >75% [11]
☑ MODERATE 25-75% [7]
☑ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Cover Maximum 20: **9**

Comments

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]	

Channel Maximum 20: **12**

Comments

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)
☑ ☑ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☐ ☐ FOREST, SWAMP [3]
☐ ☐ MODERATE [2]	☑ ☑ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☑ ☑ RESIDENTIAL, PARK, NEW FIELD [1]
	☐ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]
	☐ ☐ NONE [0]	☐ ☐ OPEN PASTURE, ROWCROP [0]

☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ MINING / CONSTRUCTION [0]

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

Riparian Maximum 10: **6.5**

Comments

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]
☐ VERY FAST [1]
☐ FAST [1]
☑ MODERATE [1]
☑ 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)

Pool / Current Maximum 12: **4**

Comments

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 [0] (metric=0)		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0] ☐ EXTENSIVE [-1]

Riffle / Run Maximum 8: **3**

Comments

6] GRADIENT 1.36 ft/mi
DRAINAGE AREA 1.35 mi²

☐ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☑ HIGH - VERY HIGH [10-6]

%POOL: 15 %GLIDE: 0
%RUN: 40 %RIFFLE: 45

Gradient Maximum 10: **8**

A] SAMPLED REACH
Check ALL that apply

METHOD
- ☐ BOAT
- ☑ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE
(1st –sample pass– 2nd)
- ☐ HIGH ☐
- ☐ UP ☐
- ☑ NORMAL ☐
- ☐ LOW ☐
- ☐ DRY ☐

DISTANCE
- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☑ 0.12 Km
- ☐ OTHER

_____ meters

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

1st _____ cm
2nd _____ cm

CANOPY
- ☐ > 85%- OPEN
- ☐ 65%-<85%
- ☒ 30%-<65%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

C] RECREATION AREA DEPTH
POOL: ☐ >100ft² ☐ >3ft

Comment RE: Reach consistency' is reach typical of stream?, Recreation/Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

Reach evaluated is consistent with stream. Dredged + newly constructed drainage channels observed flowing into stream.

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

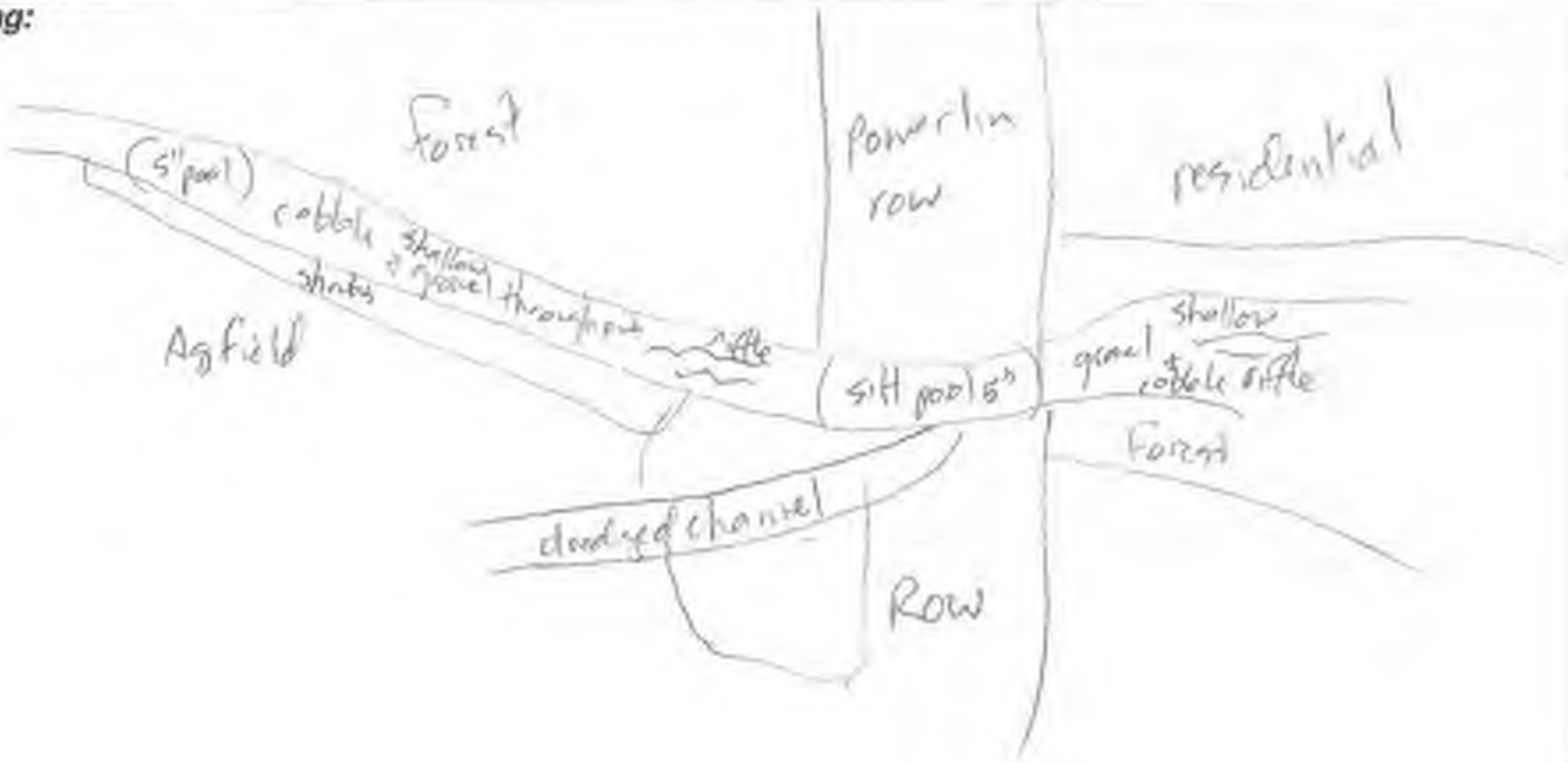
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

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 H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- X width
- X depth
- max. depth
- X bankfull width
- bankfull X depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : **64**

SITE NAME/LOCATION: Stream 10

SITE NUMBER: | RIVER BASIN: Great Miami | DRAINAGE AREA (mi²): 0.25

LENGTH OF STREAM REACH (ft): 200 | LAT.: 39.94102 | LONG.: -84.33214 | RIVER CODE: | RIVER MILE:

DATE: 07/17/15 | SCORER: TER | COMMENTS: Channelized Drainage Ditch

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0%	☐ ☐	SILT [3 pt]	5%
☐ ☐	BOULDER (>256 mm) [16 pts]	0%	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐ ☐	BEDROCK [16 pt]	0%	☐ ☐	FINE DETRITUS [3 pts]	0%
☐ ☐	COBBLE (65-256 mm) [12 pts]	10%	☐ ☐	CLAY or HARDPAN [0 pt]	0%
☑ ☐	GRAVEL (2-64 mm) [9 pts]	55%	☐ ☐	MUCK [0 pts]	0%
☐ ☑	SAND (<2 mm) [6 pts]	30%	☐ ☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 10.00% (A)

Substrate Percentage Check: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40: 19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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 [5 pts]
☑	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: 6" Max Pool Depth **MAXIMUM POOL DEPTH (centimeters):** 17

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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: 8', 7.5', 7' **AVERAGE BANKFULL WIDTH (meters):** 2.30

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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Dredged channel

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

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS: Intermittent

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

☑ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >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: **Jones Run** Distance from Evaluated Stream **0.00**

☐ 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: **West Milton** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Miami** Township / City: **Union**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **07/13/15** Quantity: **0.10**

Photograph Information: **See Photograph Appendix**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **90%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

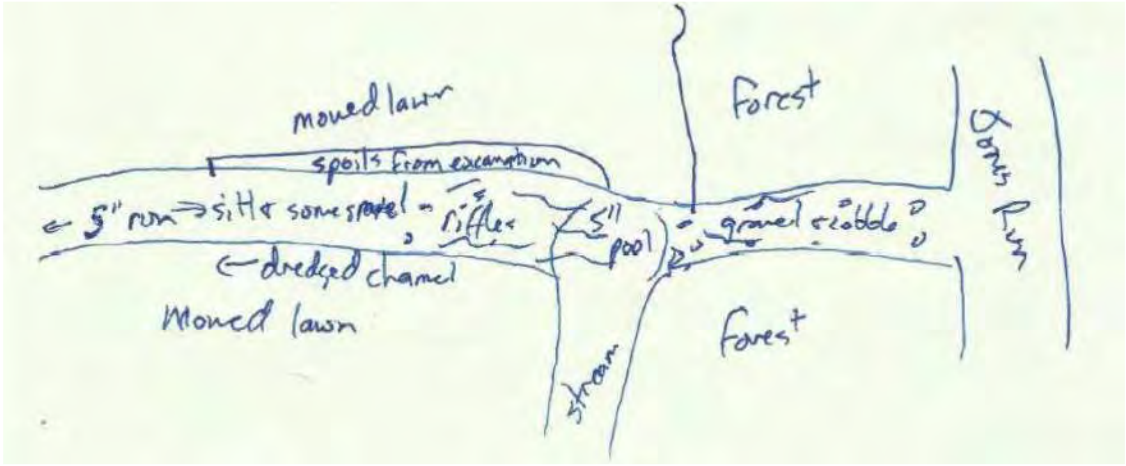
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

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 →



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Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 53

SITE NAME/LOCATION: Stream 11

SITE NUMBER: | RIVER BASIN: Great Miami | DRAINAGE AREA (mi²): 0.22

LENGTH OF STREAM REACH (ft): 200 | LAT.: 39.94108 | LONG.: -84.33250 | RIVER CODE: | RIVER MILE:

DATE: 07/17/15 | SCORER: TER | COMMENTS: Channelized Drainage Ditch

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

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

1. SUBSTRATE (Estimate percent of every type of substrate 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]	0%	☑☐	SILT [3 pt]	40%
☐☐	BOULDER (>256 mm) [16 pts]	0%	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐☐	BEDROCK [16 pt]	0%	☐☐	FINE DETRITUS [3 pts]	0%
☐☐	COBBLE (65-256 mm) [12 pts]	5%	☐☐	CLAY or HARDPAN [0 pt]	0%
☐☑	GRAVEL (2-64 mm) [9 pts]	30%	☐☐	MUCK [0 pts]	5%
☐☐	SAND (<2 mm) [6 pts]	15%	☐☐	ARTIFICIAL [3 pts]	5%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 5.00% (A)

Substrate Percentage Check: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** 6

HHEI Metric Points

Substrate Max = 40

18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** 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 [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: 3" Max Pool Depth **MAXIMUM POOL DEPTH (centimeters):** 7

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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: 8', 7.5', 7' **AVERAGE BANKFULL WIDTH (meters):** 2.30

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	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS: Dredged channel

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

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS: Intermittent

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

☑ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >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: **Jones Run** Distance from Evaluated Stream **0.00**

☐ 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: **West Milton** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Miami** Township / City: **Union**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **07/13/15** Quantity: **0.10**

Photograph Information: **See Photograph Appendix**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **90%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

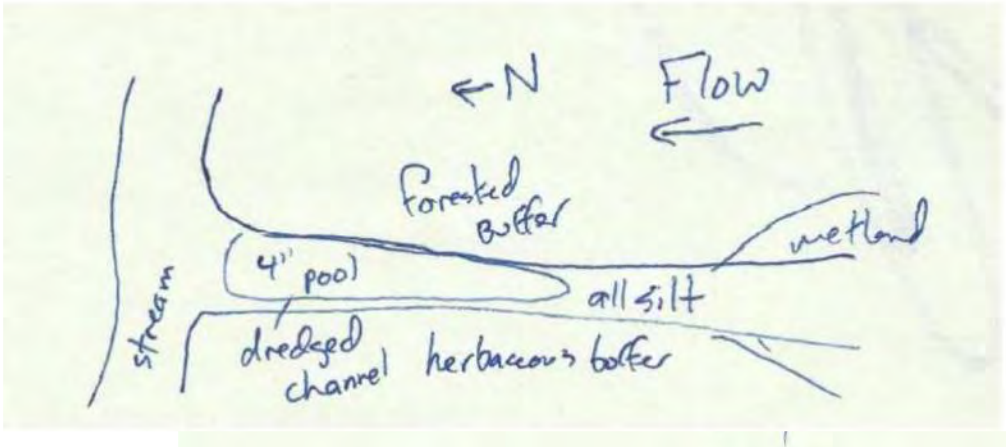
Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

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



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APPENDIX 8-3

Aquatic Resource Photographs

Stream 1: Downstream, Looking East

Stream 1: Upstream, Looking West

Stream 2: Downstream, Looking East

Stream 3: Upstream, Looking North

Stream 3: Downstream, Looking South

Stream 4: Upstream, Looking East

Stream 4: Downstream, Looking West

Stream 5: Upstream, Looking North

Stream 5: Downstream, Looking South

Stream 6: Downstream, Looking East

Stream 6: Upstream, Looking West

Stream 7: Downstream, Looking East

Stream 7: Upstream, Looking West

Stream 8: Upstream, Looking West

Stream 8: Downstream, Looking East

Stream 9: Upstream, Looking West

Stream 9: Downstream, Looking East

Stream 10: Downstream, Looking East

Stream 10: Upstream, Looking West

Stream 11: Upstream, Looking South

Stream 11: Downstream, Looking North

Wetland A: Looking South

Wetland B: Looking East

Wetland B: Looking North

Wetland C: Looking Southwest

Wetland C: Looking West

Wetland D: Looking West

Wetland D: Looking East

Wetland E: Looking Southwest

Wetland E: Looking West

Wetland F: PEM portion, Looking North

Wetland F: PFO portion, Looking West

Wetland F: PSS portion, Looking West

Wetland G: Looking East

Wetland G: Looking Northeast

Open Water 001: Looking North

Open Water 002: Looking West

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/7/2021 3:02:27 PM

in

Case No(s). 21-0897-EL-BTX

Summary: Certificate Amended, Environmental Compatibility and Public Need for the West Milton-Eldean 138kV Transmission Line Project electronically filed by Ms. Sarah Howdeshelt on behalf of The Dayton Power and Light Company