
*Application for Certificate of Environmental
Compatibility and Public Need
(Supplemental Information)*

C314V Central Corridor Pipeline Extension Project

OPSB Case No. 16-0253-GA-BTX

Prepared for



Submitted to

Ohio Power Siting Board

May 2017

ch2m.SM

BEFORE THE OHIO POWER SITING BOARD
Certificate Application for Gas Pipeline Facilities

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BEFORE THE OHIO POWER SITING BOARD**Certificate Application for Gas Pipeline Facilities****Supplemental Information for the C314V Central Corridor Pipeline Extension Project****INTRODUCTION**

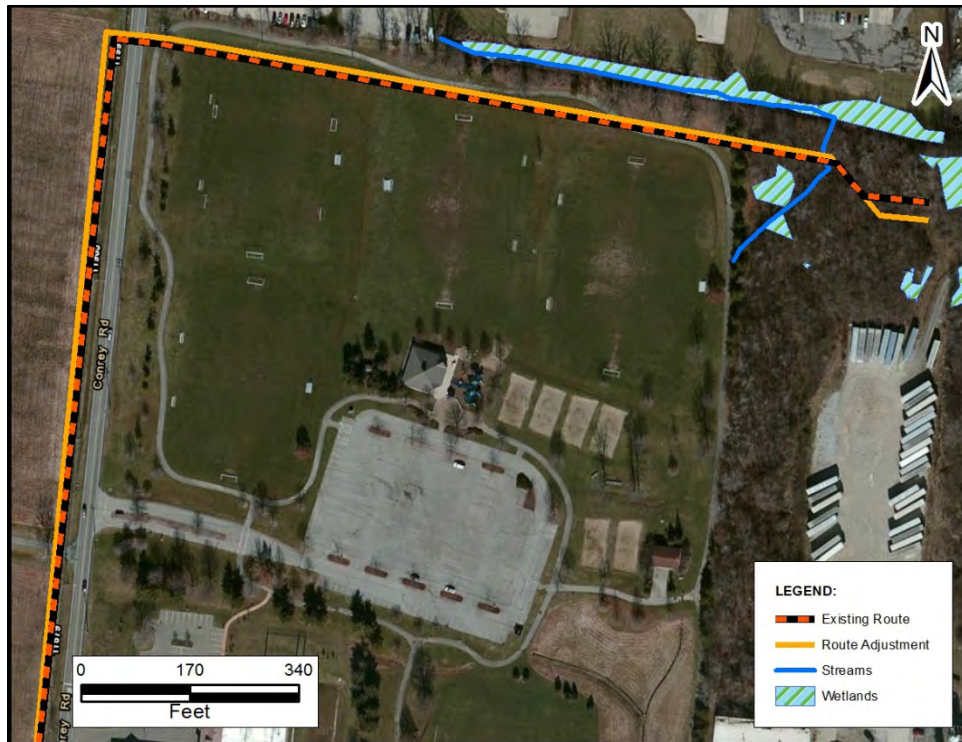
Duke Energy Ohio, Inc., (Duke Energy Ohio) submitted an amended Application with the Ohio Power Siting Board (OPSB) on January 20, 2017 for the C314V Central Corridor Pipeline Extension Project (Project). Since that filing date, Duke Energy Ohio has made engineering adjustments to the Preferred Route alignment and therefore has prepared this supplemental information submittal summarizing the modifications and revisions to specific sections of the Certificate Application. No new property owners are affected by these route adjustments.

Duke Energy Ohio has made engineering route adjustments at one location on the Preferred/Alternate Route common section and seven locations on the Preferred Route since filing the amended Application. The changes to the common route section is limited to the northern section of Conrey Road and the alignment to the east into the proposed Highpoint Park Regulation Station. The various route adjustments were necessary for avoidance of existing utility infrastructure, improved construction efficiency, and two requests from property owners. The eight route adjustments are illustrated and described in greater detail in the following 10 pages.

The changes to the various Certificate Application criteria and quantities resulting from these eight proposed route adjustments were identified, recalculated, and evaluated. The Certificate Application sections that were affected by the route adjustments are included in this supplemental information submittal. Subsections not affected by the proposed adjustments and alignment changes and not included in this supplemental filing are still applicable based upon the January 20, 2017 application submittal.

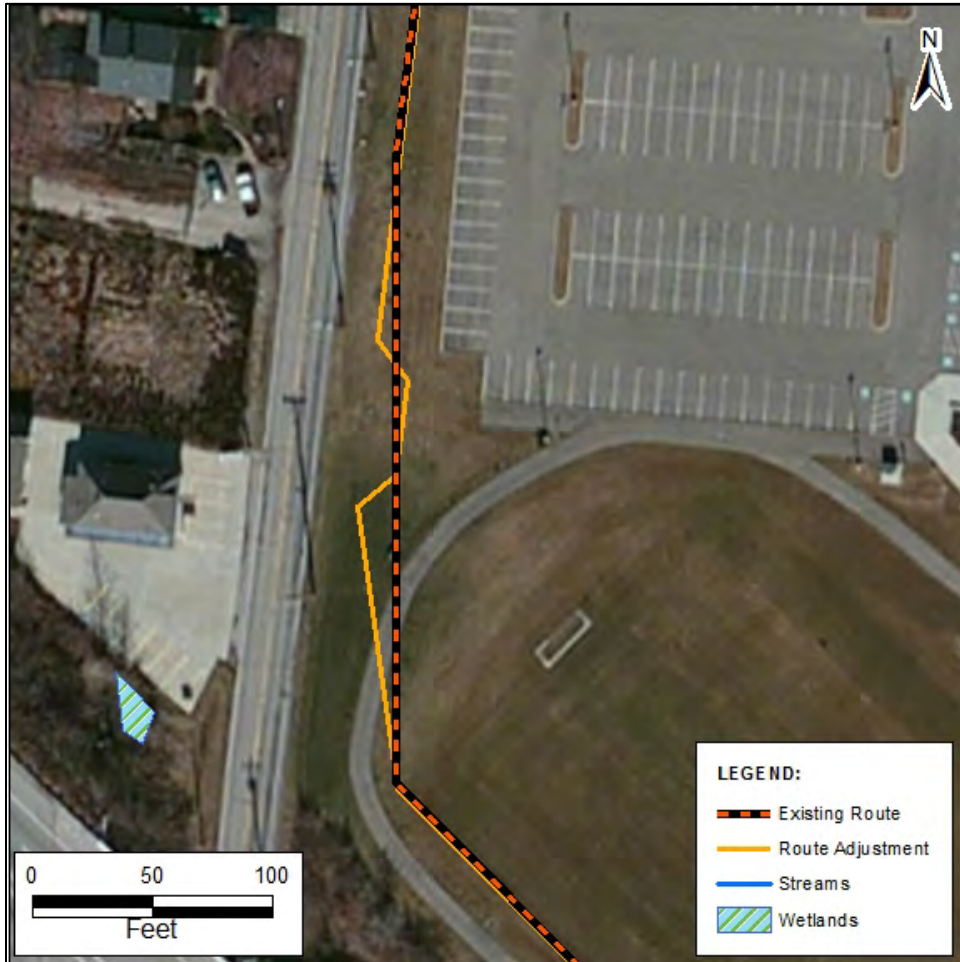
Adjustment 1: The first area of route adjustments is at the start of the Project where the Preferred Route (and Alternate Route as well because of the two routes having common alignments in this area) runs west out of the High Point Park Regulation Station then runs south along Conrey Road. The maximum shift is 13 feet to the north and west from the original alignment. This engineering modification was made for increased distance from existing utilities and to affect a smaller area within the recreation fields of Francis RecArea Park.

Exhibit 1: Map Illustration of Adjustment 1 of the Project.



Adjustment 2: The second area of route adjustments is in the northern part of the Project north of Interstate 275 (I-275) and east of Deerfield Road. The maximum shift in the alignment is approximately 15 feet west and is required to avoid an existing water manhole.

Exhibit 2: Map Illustration of Adjustment 2 of the Project.



Adjustment 3: The third area of route adjustments is in the northern part of the Project south of I-275 and east of Deerfield Road. The maximum shift in the alignment is approximately 35 feet west based on a landowner’s request concerning their existing use of the property.

Exhibit 3: Map Illustration of Adjustment 3 of the Project.



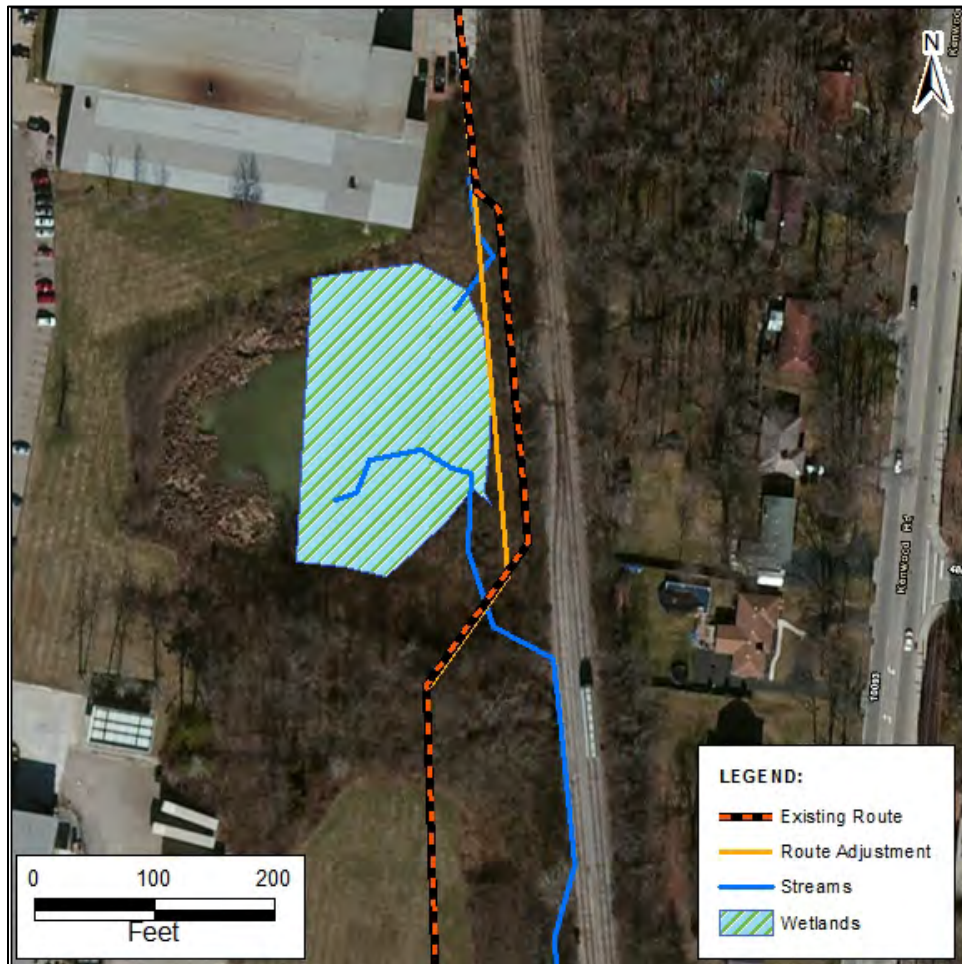
Adjustment 4: The fourth area of route adjustments is in the northern part of the Project between Creek Road and Pfeiffer Road, west of I-71. The maximum shift in the alignment is approximately 65 feet east and is required because of existing utilities in the area. The route adjustment also provides more space between the delineated streams and the pipeline.

Exhibit 4: Map Illustration of Adjustment 4 of the Project.



Adjustment 5: The fifth area of route adjustments is in the middle of the Project west of Alliance Road between Carver Road and Cincinnati Eye Institute Drive. The maximum shift in the alignment is approximately 20 feet west and is required because of limited space between the railroad property and area needed to install the pipeline.

Exhibit 5: Map Illustration of Adjustment 5 of the Project.



Adjustment 6: The sixth area of route adjustments is in the middle of the Project between Myrtle Avenue and Kugler Mill Road. The maximum shift in the alignment is approximately 20 feet west towards the edge of the parking lot based on a landowner’s request because of future development plans in the area. This route adjustment will provide more clearance from the commercial buildings along Blue Ash Road but decreases clearance from the residential buildings located west of the route to approximately 30 feet.

Exhibit 6: Map Illustration of Adjustment 6 of the Project.



Adjustment 7: The seventh area of route adjustments is located at the Kenwood County Club. Numerous alignment changes have been made along the eastern edge and southern end of the golf course, which will allow for improved feasibility of construction work and avoidance of conflicts with golf course operations (refer to Exhibits 7a, 7b, and 7c). As indicated in Exhibit 7a, the route has been adjusted near the entrance to the golf course because of limited space between the golf course maintenance building, tee box, and fairway. This route adjustment allows for more space for construction and the pipeline is now located next to a proposed laydown yard. The route adjustment shown in the upper right corner of Exhibit 7c is needed for better crossing locations of the delineated streams as well as increased space between the streams and the pipeline. The maximum shift in the alignment for the seventh area of route adjustment is approximately 120 feet.

Exhibit 7a: Map Illustration of Adjustment 7 of the Project.



Exhibit 7b: Map Illustration of Adjustment 7 of the Project.

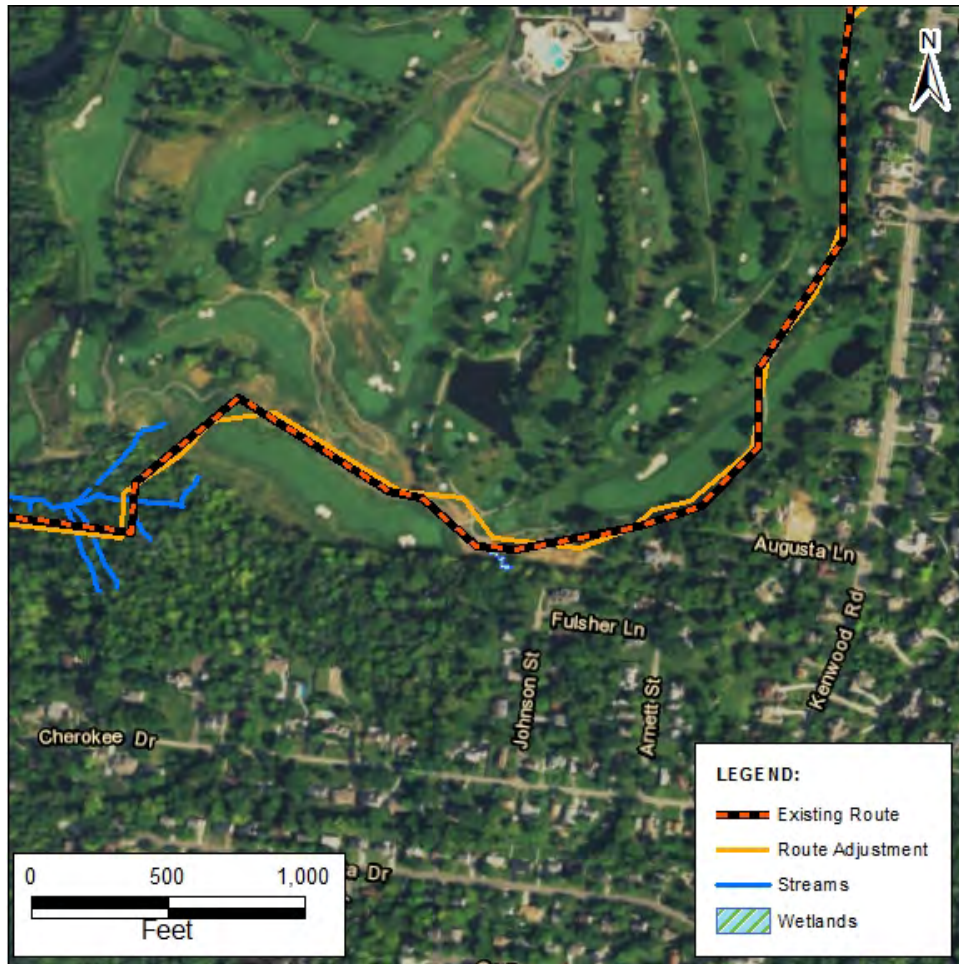
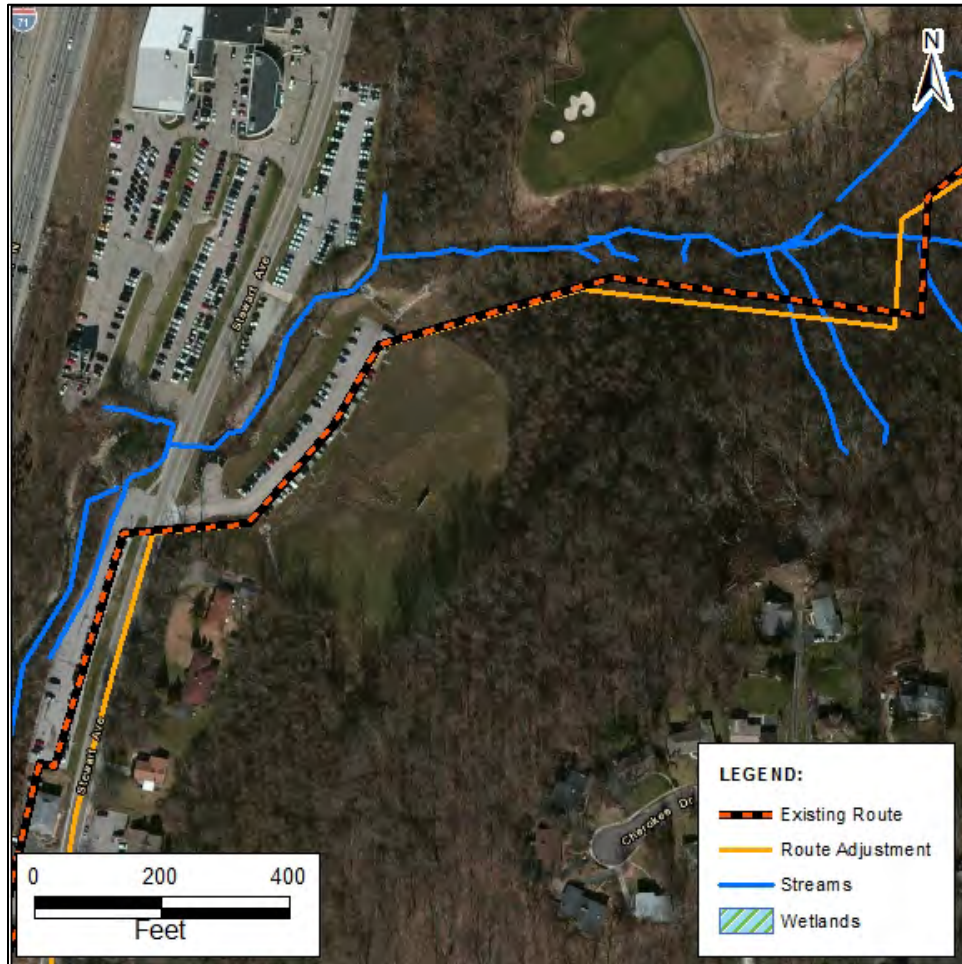


Exhibit 7c: Map Illustration of Adjustment 7 of the Project.



Adjustment 8: The eighth area of route adjustments is located south of the Kenwood Country Club along Stewart Avenue. The maximum shift in the alignment is approximately 150 feet east and is needed because of unstable soils between Stewart Avenue and I-71. The route alignment now runs in the middle of Stewart Avenue and will be located between existing water and sewer lines already located under Stewart Avenue.

Exhibit 8: Map Illustration of Adjustment 8 of the Project.



4906-5-05 PROJECT DESCRIPTION

(A) PROJECT AREA DESCRIPTION

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

Table 5-1 provides information about the Preferred and Alternate Routes right-of-way (ROW) acreage, length, and properties crossed. As a result of the eight areas of Preferred Route adjustments for engineering reasons and landowner requests, the number of properties crossed (by the 80-foot wide temporary construction ROW) has increased by 31 properties compared to the previous Preferred Route in the amended application. The vast majority of these additional properties are located at the outer edge of the preliminary 80-foot temporary construction ROW and the final workspace design may have no effect, or minimal effect, on the vast majority of these additional parcels. Note that the Preferred Route centerline crosses no new properties therefore no new property owners are involved for purposes of permanent easements.

**TABLE 5-1
Right-of-way Area, Length, and Number of Properties Crossed for the Preferred and Alternate Routes**

| | Route Alternatives | |
|--|--------------------|-----------|
| | Preferred | Alternate |
| Proposed Construction ROW area (acres) | 135.0 | 125.5 |
| Length (miles) | 13.9 | 13.0 |
| Number of properties crossed (by the Construction ROW) | 706 | 452 |

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

(A) HEALTH AND SAFETY

(4) Noise from Construction, Operation, and Maintenance

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

Driving of piles is not anticipated during construction of the Project. Trenchless construction methods, including both HDD and horizontal boring (e.g., jack and bore), will be used in multiple locations along the Preferred Route as summarized in Table 7-1. As a result of the route adjustments, and further detailed design work, eight bores have been removed from the Project and will now be completed as open cut trenches. These changes are because of inadequate space for bore pits, the road already needs to be excavated to locate existing utilities so continuing with the open cut trench would be a faster method of construction thereby reducing disruption to the area, and the route is already within pavement on both sides of the road crossing and alternative traffic reroute options are available.

**TABLE 7-1
Preferred Route Proposed Trenchless Construction Locations**

| Trenchless Bore Number | Location/Name | Proposed Crossing Type | Reason |
|-------------------------------|-----------------------------------|-------------------------------|---|
| TB-1 | Conrey Road | Bore | Avoid open cut of road |
| TB-2 (HDD) | Kemper Road | HDD | Unable to bore drainage swale with elevation differences and space constraints on south side |
| TB-3 | Railroad Near Deerfield Road | Bore | Railroad (required) |
| TB-4 | Deerfield Road at Fire Station | Bore | Avoid road disruption at fire station |
| TB-5 | I-275 | Bore | Trenchless construction required |
| TB-6 | Cornell Road | Bore | Avoid open cut of road |
| TB-8 (HDD) | Pfeiffer Road | HDD | Unable to bore box channel because of elevation differences and space constraints; avoid three stream crossings |
| TB-9 | Ursuline Drive | Bore | Avoid open cutting school drive |
| TB-10 | Kenwood Road at Pfeiffer Road | Bore | Avoid open cut of road |
| TB-11 | Railroad at Glendale Milford Road | Bore | Railroad (required) |
| TB-12 | Double railroad spurs | Bore | Railroad (required); avoid open cut of two streams |
| TB-13 | Rail at Catalpa Creek Drive | Bore | Railroad (required) |
| TB-14 | Rail at Cooper Road | Bore | Railroad (required) |

TABLE 7-1

Preferred Route Proposed Trenchless Construction Locations

| Trenchless Bore Number | Location/Name | Proposed Crossing Type | Reason |
|-------------------------------|---------------------------------|-------------------------------|--|
| TB-16 | Hunt Road | Bore | Avoid open cut of road |
| TB-17 (HDD) | Highway 126 | HDD | HDD parallel to railroad due to 30-foot elevation change between highway and embankments |
| TB-22 | Railroad and Blue Ash Road | Bore | Railroad (required) |
| TB-23 | Kenwood Road at Mall | Bore | Avoid open cut of road |
| TB-24 | Montgomery Road | Bore | Avoid open cut of road |
| TB-25 | Kenwood Road at South Mall | Bore | Avoid open cut of road |
| TB-26 (HDD) | Interstate 71 | HDD | Trenchless construction required; elevation differences between road and banks require HDD |
| TB-27 | Kenwood County Club Drive | Bore | Avoid open cut of drive |
| TB-29 | Madison Avenue | Bore | Avoid open cut of road |
| TB-31 | Railroad at Red Bank Expressway | Bore | Railroad (required) |
| TB-32 (HDD) | Erie Avenue | HDD | Avoid cross slope near power lines and minimal space between utilities from Red Bank Road to Erie Avenue |
| TB-33 | Drive to Red Bank Village | Bore | Avoid open cut of road |
| TB-34 | Cul-de sac at Red Bank | Bore | Avoid blocking drive to businesses |
| TB-35 | Fair Lane | Bore | Avoid blocking drive to businesses |
| TB-36 | Duck Creek | Bore | Cross stream - avoid open cut |

HDD = horizontal direct drill

(B) LAND USE

(2) Impact on Identified Land Uses

**TABLE 7-3
Length and Percent of Land Uses Crossed by Centerline of Route Alternatives**

| Land Use | Preferred Route | | Alternate Route | |
|-----------------------|-----------------|---------|-----------------|---------|
| | Linear Feet | Percent | Linear Feet | Percent |
| Delineated Pond | 0 | 0% | 0 | 0% |
| Delineated Stream | 138 | 0.2% | 285 | 0.4% |
| Delineated Wetland | 438 | 0.6% | 448 | 0.7% |
| Educational | 978 | 1.3% | 1,472 | 2.1% |
| Industrial/Commercial | 27,557 | 37.4% | 28,942 | 42.2% |
| Institutional | 0 | 0% | 211 | 0.3% |
| Parks and Recreation | 10,808 | 14.7% | 4,870 | 7.1% |
| Pavement* | 20,765 | 28.2% | 17,442 | 25.5% |
| Residential | 2,581 | 3.5% | 3,668 | 5.4% |
| Undefined | 318 | 0.4% | 589 | 0.9% |
| Woodlots | 10,052 | 13.7% | 10,595 | 15.5% |
| Total | 73,635 | 100% | 68,522 | 100% |

* Pavement represents road ROW.

**TABLE 7-4
Acreage and Percent of Land Uses Crossed by Route Alternatives**

| Land Use | Preferred Route | | | | Alternate Route | | | |
|-----------------------|------------------------|-------------|-----------|-------------|-----------------|-------------|-----------|-------------|
| | CWA ^a Acres | CWA Percent | ROW Acres | ROW Percent | CWA Acres | CWA Percent | ROW Acres | ROW Percent |
| Delineated Pond | 0 | 0% | 0 | 0% | 0.2 | 0.2% | 0 | 0% |
| Delineated Stream | 0.5 | 0.4% | 0.1 | 0.2% | 0.5 | 0.4% | 0.2 | 0.4% |
| Delineated Wetland | 1.1 | 0.8% | 0.3 | 0.6% | 0.8 | 0.6% | 0.3 | 0.6% |
| Educational | 2.1 | 1.6% | 0.7 | 1.4% | 2.4 | 1.9% | 0.9 | 1.9% |
| Industrial/Commercial | 46.3 | 34.3% | 18.9 | 37.4% | 48.4 | 38.6% | 19.6 | 41.6% |
| Institutional | 0.5 | 0.4% | 0.1 | 0.2% | 0.7 | 0.6% | 0.1 | 0.2% |
| Parks and Recreation | 18.2 | 13.5% | 7.3 | 14.5% | 7.1 | 5.6% | 3.2 | 6.8% |
| Pavement ^b | 36.5 | 27.0% | 13.9 | 27.5% | 35.0 | 27.9% | 12.3 | 26.1% |
| Residential | 8.4 | 6.2% | 1.9 | 3.8% | 7.5 | 6.0% | 2.5 | 5.3% |

**TABLE 7-4
Acreage and Percent of Land Uses Crossed by Route Alternatives**

| Land Use | Preferred Route | | | | Alternate Route | | | |
|--------------|---------------------------|----------------|--------------|----------------|-----------------|----------------|--------------|----------------|
| | CWA ^a Acres | CWA Percent | ROW Acres | ROW Percent | CWA Acres | CWA Percent | ROW Acres | ROW Percent |
| Undefined | 0.3 | 0.2% | 0.2 | 0.4% | 2.0 | 1.6% | 0.4 | 0.8% |
| Woodlots | 21.1 | 15.6% | 7.1 | 14.1% | 20.9 | 16.6% | 7.6 | 16.1% |
| Total | 135.0 | 100% | 50.5 | 100% | 125.5 | 100% | 47.1 | 100% |

CWA = construction work area

**TABLE 7-5
Number of Land Use Features Near the Route Alternatives**

| | Route Alternatives | |
|--|--------------------|------------|
| | Preferred | Alternate |
| Length (in miles) | 13.9 | 13.0 |
| Features within 100 feet of Route Alternatives (centerline) | | |
| Historic Structures (Ohio Historic Structures) | 31 | 4 |
| National Register of Historic Places | 0 | 0 |
| Previously Identified Archaeological Sites | 0 | 0 |
| Residences | 115 | 166 |
| Other Sensitive Land Uses* | 5 | 10 |
| Features within 1,000 feet of Route Alternatives (centerline) | | |
| Historic Structures (Ohio Historic Structures) | 229 | 115 |
| National Register of Historic Places | 0 | 0 |
| Previously Identified Archaeological Sites | 0 | 5 |
| Residences | 3,153 | 2,170 |
| Other Sensitive Land Uses* | 45 | 38 |
| Structures within 200 feet of the Edge of Preliminary Permanent ROW (preliminary ROW is 30-foot wide) | 638 | 653 |

(a) Residential

Preferred Route: The Preferred Route centerline is located within 1,000 feet of 3,153 residences and within 100 feet of 115 residences. As shown in Table 7-4, residential areas make up approximately 3.8 percent of the Preferred Route permanent ROW (30-foot width) acreage.

Alternate Route: The Alternate Route centerline is located within 1,000 feet of 2,170 residences and within 100 feet of 166 residences. As shown in Table 7-4, residential areas make up approximately 5.3 percent of the Alternate Route permanent ROW acreage.

Although the Preferred Route is within 1,000 feet of more residences than the Alternate Route, the Preferred Route directly affects less residential land than the Alternate Route. Only 2,581 linear feet of pipeline would be located on residential land under the Preferred Route scenario, compared to 3,668 linear feet of the Alternate Route located on residential land. This is largely because residential land use along the Alternate Route is in older, denser communities, leaving less options of avoiding direct effects to residential properties.

(b) Industrial/Commercial

Preferred Route: Industrial or commercial land uses make up approximately 37.4 percent of the Preferred Route permanent ROW acreage. This represents the largest proportion of land use within the Preferred Route ROW. The Preferred Route centerline crosses 27,557 feet (37.4 percent of the total length) of land classified as industrial or commercial.

Alternate Route: Industrial or commercial land uses make up approximately 41.6 percent of the Alternate Route permanent ROW acreage. The Alternate Route centerline crosses 28,942 feet (42.2 percent of the total length) of land classified as industrial or commercial.

(c) Educational

Preferred Route: Educational land uses make up approximately 1.4 percent of the Preferred Route permanent ROW acreage

Alternate Route: Educational land uses make up approximately 1.9 percent of the Alternate Route permanent ROW acreage

(d) Institutional

Preferred Route: Institutional land uses make up approximately 0.2 percent of the Preferred Route ROW acreage.

Alternate Route: Institutional land uses make up approximately 0.2 percent of the Alternate Route ROW acreage.

(e) Parks and Recreation

Preferred Route: Parks and recreational land uses make up approximately 14.5 percent of the Preferred Route permanent ROW acreage.

Alternate Route: Parks and recreational land uses make up approximately 6.8 percent of the Alternate Route permanent ROW acreage.

(f) Pavement

Preferred Route: Paved areas (e.g., road ROW) make up approximately 27.5 percent of the Preferred Route permanent ROW acreage.

Alternate Route: Paved areas (e.g., road ROW) make up approximately 26.1 percent of the Alternate Route permanent ROW acreage.

(g) Woodlots

Preferred Route: Woodlots make up approximately 14.1 percent of the Preferred Route permanent ROW acreage.

Alternate Route: Woodlots make up approximately 16.1 percent of the Alternate Route permanent ROW acreage.

(3) Impact on Identified Nearby Structures

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

There are 638 structures (residences, commercial businesses, etc.) within 200 feet of the proposed permanent ROW (30-foot width of the Preferred Route). There are 653 structures within 200 feet of the proposed permanent ROW of Alternate Route. The individual structures and their distances from the proposed permanent ROW boundary are listed in Appendix 7-1 (Table 7-1A and Table 7-1B for the Preferred Route and Alternate Route, respectively) and are illustrated on Figure 7-2. The Figure 7-2 map also indicates the preliminary and temporary construction work areas along the corridors, temporary staging areas, temporary access roads, and regulation stations. These facilities and construction areas, which is required to be shown on a map by Ohio Administrative Code (OAC) 4906-5-05(B)(2)(a), are based on preliminary engineering and are best illustrated on this Figure 7-2 map.

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

(B) FIELD SURVEY REPORT FOR VEGETATION AND SURFACE WATERS

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

(b) Wetlands

(i) Summary of National Wetland Inventory Data

TABLE 8-1
NWI Wetlands Within 1,000 feet of the Preferred and Alternate Routes

| Wetland Type | NWI Code | NWI Habitat Type * | Total Number of Each Habitat Type Preferred/ Alternate |
|--|----------|---|--|
| Freshwater Pond | PUBFx | Palustrine Unconsolidated Bottom Semi-Permanently Flooded Excavated | 1 - Alternate |
| Freshwater Pond | PUBGx | Palustrine Unconsolidated Bottom Excavated | 15 - Preferred 11 - Alternate |
| Freshwater Pond | PUBGh | Palustrine Unconsolidated Bottom Intermittently Exposed Diked/Impounded | 2 - Preferred 2 - Alternate |
| Riverine | R2UBH | Lower Perennial, Unconsolidated Bottom, Permanently Flooded. | 1 - Alternate |
| Freshwater Emergent Wetland | PEM1Fx | Palustrine Emergent Persistent Semi-Permanently Flooded Excavated | 1 - Preferred |
| Freshwater Emergent Wetland | PEM1C | Palustrine Emergent Persistent Seasonally Flooded | 1 - Preferred 1 - Alternate |
| Total Number of Preferred Route NWI Wetlands: | | | 19 |
| Total Number of Alternate Route NWI Wetlands: | | | 16 |

Total number of PAB= 0, PEM = 3, PFO= 0, PUB = 31, R = 1

* USFWS, 2010

(ii) Field-Delineated Wetlands

Fifty-one (51) wetlands totaling approximately 6.02 acres were delineated within the survey corridors (280 feet width) of the Preferred and Alternate Routes. Of this total, seven wetlands (totaling 1.28 acres) are crossed by a common segment of the two routes at the north near WW Feed Station. All field-delineated wetlands are mapped on Figures 8-2A through 8-2H and Figures 8-3A through 8-3J. Detailed information on each wetland is provided in Table 8-2. The anticipated maximum construction effects, where unavoidable, on these wetlands would range from estimated totals of 1.46 acres (Alternate Route) to 1.61 acres (Preferred Route) and are summarized in Table 8-2. Three additional potential wetlands were noted within the survey corridor of the

Alternate Route along the Norfolk Southern Railroad corridor south of the city of Reading. These small wetlands were not delineated because of restricted land access and therefore have not been included in the wetland count and effect totals. These wetlands are included in Table 8-2. The effects to wetlands are further discussed in Section 4906-05-08(B)(3)(b).

Duke Energy Ohio is committed to further minimizing these possible wetland effects using location specific construction methodologies that will be detailed further as the engineering design proceeds. No wetlands were identified as Category 3 (i.e., high quality) wetlands. Two wetlands would be affected above the 0.5-acre limit for utilizing the U.S. Army Corps of Engineers (USACE) general nationwide permit process, therefore Duke Energy Ohio plans to file for an individual permit to the USACE and the Ohio Environmental Protection Agency (OEPA).

**TABLE 8-2
Delineated Wetlands within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area**

| Wetland Identifier | Route | Figure | Cowardin Wetland Type ^a | ORAM Score | ORAM Category | Length Crossed by Centerline (feet) ^e | Acreage within Survey Corridor ^b | Acreage within Construction Work Area ^{c,d} |
|---------------------------------|-----------|---------------------|------------------------------------|------------|---------------|--|---|--|
| PREFERRED ROUTE WETLANDS | | | | | | | | |
| P-W001 | Preferred | Sheet 8-2A and 8-3A | PFO | 54.5 | 2 | 0 | 0.69 | 0.68 |
| O-W005 | Preferred | Sheet 8-2A and 8-3A | PFO | 54.5 | 2 | 0 | 0.03 | 0 |
| O-W006 | Preferred | Sheet 8-2A and 8-3A | PFO | 54.5 | 2 | 0 | 0.06 | < 0.01 |
| P-W002 | Preferred | Sheet 8-2A and 8-3A | PEM | 54.5 | 2 | 0 | 0.41 | 0 |
| P-W003 | Preferred | Sheet 8-2A and 8-3A | PEM | 54.5 | 2 | 0 | 0.06 | 0.01 |
| P-WRH02 | Preferred | Sheet 8-2A and 8-3A | PEM | 26 | 1 | 0 | 0.02 | 0 |
| O-W002 | Preferred | Sheet 8-2A and 8-3A | PEM/PFO | 54.5 | 2 | 0 | 0.01 | 0 |

TABLE 8-2

Delineated Wetlands within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Wetland Identifier | Route | Figure | Cowardin Wetland Type ^a | ORAM Score | ORAM Category | Length Crossed by Centerline (feet) ^e | Acreage within Survey Corridor ^b | Acreage within Construction Work Area ^{c,d} |
|--------------------|-----------|------------|------------------------------------|------------|------------------|--|---|--|
| O-W-RH004 | Preferred | Sheet 8-2A | PEM/PSS | 18 | 1 | 12 | 0.04 | 0.02 |
| O-W-RH005 | Preferred | Sheet 8-2A | PEM | 19 | 1 | 0 | 0.01 | 0 |
| O-W009 | Preferred | Sheet 8-2A | PFO | 33 | 1 or 2 gray zone | 0 | < 0.01 | 0 |
| O-W008 | Preferred | Sheet 8-2A | PEM | 26.5 | 1 | 0 | 0.02 | < 0.01 |
| O-W010 | Preferred | Sheet 8-2A | PFO | 57.5 | 2 | 0 | 0.07 | 0 |
| O-W010 | Preferred | Sheet 8-2A | PEM | 57.5 | 2 | 0 | 0.04 | 0 |
| O-W011 | Preferred | Sheet 8-2B | PFO | 57.5 | 2 | 288 | 1.09 | 0.59 |
| O-W032 | Preferred | Sheet 8-2B | PEM | 27 | 1 | 0 | < 0.01 | 0 |
| O-W012 | Preferred | Sheet 8-2B | PEM | 22 | 1 | 0 | < 0.01 | < 0.01 |
| O-W302 | Preferred | Sheet 8-2B | PEM | 10 | 1 | 0 | < 0.01 | 0 |
| O-W014 | Preferred | Sheet 8-2B | PEM | 20 | 1 | 0 | 0.04 | 0 |
| O-W015 | Preferred | Sheet 8-2B | PEM | 18 | 1 | 0 | 0.01 | 0 |
| O-W016 | Preferred | Sheet 8-2C | PEM | 17.5 | 1 | 0 | 0.03 | 0 |
| O-W017 | Preferred | Sheet 8-2C | PEM/PSS | 39 | modified 2 | 0 | < 0.01 | 0 |
| O-W301 | Preferred | Sheet 8-2C | PFO | 28 | 1 | 0 | 0.69 | 0.14 |
| O-W024 | Preferred | Sheet 8-2C | PEM | 16 | 1 | 0 | 0.1 | 0.01 |
| O-W025 | Preferred | Sheet 8-2C | PEM/PSS | 26 | 1 | 0 | 0.03 | 0 |

TABLE 8-2

Delineated Wetlands within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Wetland Identifier | Route | Figure | Cowardin Wetland Type ^a | ORAM Score | ORAM Category | Length Crossed by Centerline (feet) ^e | Acreage within Survey Corridor ^b | Acreage within Construction Work Area ^{c,d} |
|----------------------------------|-----------|---------------------|------------------------------------|------------|------------------|--|---|--|
| O-W026 | Preferred | Sheet 8-2C | PEM/PSS | 33 | 1 or 2 gray zone | 0 | 0.08 | 0.05 |
| O-W027 | Preferred | Sheet 8-2C | PEM | 33 | 1 or 2 gray zone | 0 | 0.01 | 0 |
| O-W029 | Preferred | Sheet 8-2F | PEM | 16 | 1 | 37 | 0.05 | 0.05 |
| O-W030 | Preferred | Sheet 8-2F | PEM | 17 | 1 | 0 | 0.04 | 0.02 |
| BO-W100 | Preferred | Sheet 8-2G | PEM | 29.5 | 1 | 0 | 0.02 | 0 |
| O-W300 | Preferred | Sheet 8-2G | PEM | 29 | 1 | 0 | 0.06 | 0.01 |
| O-W100 | Preferred | Sheet 8-2H | PEM | 20 | 1 | 0 | 0.02 | 0 |
| TOTAL FOR PREFERRED ROUTE | | | | | | 337 feet | 3.78 acres | 1.61 acres |
| ALTERNATE ROUTE WETLANDS | | | | | | | | |
| P-W001 | Alternate | Sheet 8-2A and 8-3A | PFO | 54.5 | 2 | 0 | 0.69 | 0.68 |
| O-W005 | Alternate | Sheet 8-2A and 8-3A | PFO | 54.5 | 2 | 0 | 0.03 | 0 |
| O-W006 | Alternate | Sheet 8-2A and 8-3A | PFO | 54.5 | 2 | 0 | 0.06 | < 0.01 |
| P-W002 | Alternate | Sheet 8-2A and 8-3A | PEM | 54.5 | 2 | 0 | 0.41 | 0 |
| P-W003 | Alternate | Sheet 8-2A and 8-3A | PEM | 54.5 | 2 | 0 | 0.06 | 0.01 |
| P-WRH02 | Alternate | Sheet 8-2A and 8-3A | PEM | 26 | 1 | 0 | 0.02 | 0 |

TABLE 8-2

Delineated Wetlands within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Wetland Identifier | Route | Figure | Cowardin Wetland Type ^a | ORAM Score | ORAM Category | Length Crossed by Centerline (feet) ^e | Acreage within Survey Corridor ^b | Acreage within Construction Work Area ^{c,d} |
|--------------------|-----------|---------------------|------------------------------------|------------|------------------|--|---|--|
| O-W002 | Alternate | Sheet 8-2A and 8-3A | PEM/PFO | 54.5 | 2 | 0 | 0.01 | 0 |
| P-W004 | Alternate | Sheet 8-3A | PEM | 29 | 1 or 2 gray zone | 0 | 0.03 | 0.01 |
| P-W100 | Alternate | Sheet 8-3A | PEM | 22 | 1 | 0 | 0.1 | 0.06 |
| P-WRH06 | Alternate | Sheet 8-3A | PEM/PSS | 39 | 2 | 0 | 0.29 | 0 |
| P-W017 | Alternate | Sheet 8-3B | PSS | 30 | 1 or 2 gray zone | 0 | 0.02 | < 0.01 |
| P-W018 | Alternate | Sheet 8-3B | PFO | 37 | modified 2 | 15 | 0.14 | 0.06 |
| P-W019 | Alternate | Sheet 8-3B | PFO | 42 | modified 2 | 138 | 0.66 | 0.21 |
| P-W020 | Alternate | Sheet 8-3B | PFO | 40.5 | modified 2 | 0 | 0.21 | 0.02 |
| P-W014 | Alternate | Sheet 8-3B | PEM | 25 | 1 | 135 | 0.11 | 0.11 |
| P-W015 | Alternate | Sheet 8-3B | PEM | 32.5 | 1 or 2 gray zone | 57 | 0.04 | 0.04 |
| P-W016 | Alternate | Sheet 8-3B | PSS | 33 | 1 or 2 gray zone | 15 | < 0.01 | < 0.01 |
| P-WRH09 | Alternate | Sheet 8-3C | PFO | 19.5 | 1 | 0 | 0.01 | 0 |
| P-WRH08 | Alternate | Sheet 8-3C | PEM | 18 | 1 | 14 | 0.13 | 0.02 |
| G-WRH02 | Alternate | Sheet 8-3F | PEM | 17 | 1 | 1 | 0.01 | < 0.01 |
| G-WRH03 | Alternate | Sheet 8-3F | PEM | 22 | 1 | 1 | 0.01 | < 0.01 |
| G-WRH04 | Alternate | Sheet 8-3F | PEM | 20 | 1 | 0 | < 0.01 | < 0.01 |
| G-W600 | Alternate | Sheet 8-3I | PEM | 16 | 1 | 0 | 0.1 | 0 |

TABLE 8-2

Delineated Wetlands within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Wetland Identifier | Route | Figure | Cowardin Wetland Type ^a | ORAM Score | ORAM Category | Length Crossed by Centerline (feet) ^e | Acreage within Survey Corridor ^b | Acreage within Construction Work Area ^{c,d} |
|----------------------------------|-----------|------------|------------------------------------|------------|------------------|--|---|--|
| G-W601 | Alternate | Sheet 8-3I | PEM | 16 | 1 | 0 | 0.05 | 0 |
| G-W400a | Alternate | Sheet 8-3I | PEM | 33.5 | 1 or 2 gray zone | 0 | 0.02 | 0.02 |
| G-W400b | Alternate | Sheet 8-3I | PSS | 33.5 | 1 or 2 gray zone | 2 | 0.09 | 0.09 |
| G-W400c | Alternate | Sheet 8-3I | PFO | 33.5 | 1 or 2 gray zone | 0 | 0.03 | 0.03 |
| G-W401 | Alternate | Sheet 8-3I | PEM | 27.5 | 1 | 0 | 0.1 | 0.03 |
| G-W401a | Alternate | Sheet 8-3I | PEM | 27.5 | 1 | 0 | 0.04 | 0 |
| G-W401b | Alternate | Sheet 8-3I | PSS | 27.5 | 1 | 0 | 0.03 | 0.01 |
| G-W603 ^f | Alternate | Sheet 8-3I | - | - | - | 0 | - | - |
| G-W604 ^f | Alternate | Sheet 8-3I | - | - | - | 0 | - | - |
| G-W605 ^f | Alternate | Sheet 8-3I | - | - | - | 0 | - | - |
| TOTAL FOR ALTERNATE ROUTE | | | | | | 378 feet | 3.52 acres | 1.46 acres |

a Wetland Type: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested.

b The width of the survey corridor = 280 feet wide.

c The width of the planned CWA = 80 feet wide.

d All measurements listed as < 0.01 were assumed to be 0.01 for calculations.

e All wetlands will be crossed by open cut methods, primarily because of space limitations for boring equipment.

f Wetland G-W603, G-W604, and G-W605 are linear wetlands observed at the base of a railroad berm from an adjacent property line; a detailed wetland delineation will be performed in the future, as required. These wetlands would not likely be crossed by the pipeline route centerline.

ORAM = Ohio Rapid Assessment Method

(c) Waterbodies

(i) Field-Delineated Streams

One hundred and one (101) streams were evaluated using the Headwater Habitat Evaluation Index (HHEI) method. Seventy-four (74) of these streams were identified within the Preferred Route survey corridor and 27 within the Alternate Route survey corridor. The HHEI evaluations were completed at the proposed pipeline crossing points, if crossed by the proposed alignment. One additional potential stream was noted within the survey corridor of the Alternate Route. This stream was not delineated because of restricted land access and therefore has not been included in the stream count and effect totals. This stream is included in Table 8-3.

Streams identified during the ecological surveys on the Preferred Route and Alternate Route are shown on Figures 8-2A through 8-2H and Figures 8-3A through 8-3J, respectively. Detailed information on each delineated stream is included in Table 8-3. ALU designations within the Little Miami drainage basin obtained from OAC 3745-1-09 are also provided. The Ohio River, located approximately 4.5 miles south of the Project area, is a traditionally navigable waterway (TNW) as defined by the USACE, as well as the Little Miami River located approximately 2 miles southeast of the Project area.

The Preferred Route centerline would cross 24 streams. The length of streams located within the Preferred Route survey corridor is approximately 22,569 linear feet. The Alternate Route centerline would cross 11 streams. The total length of streams located within the survey corridor of the Alternate Route is approximately 5,945 linear feet.

Approximately 4,544 linear feet of stream are located within the planned Preferred Route CWA, while approximately 1,634 linear feet are located within the planned Alternate Route CWA. The length of streams within the Preferred and Alternate Routes CWA considers streams that will be avoided during construction because of planned HDDs. The linear feet of each stream within the CWA is included in Table 8-3 and anticipated temporary effects to waterbodies is further discussed in Section 4906-05-08(B)(3)(c).

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|-----------------------------|-----------|---------------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| PREFERRED ROUTE | | | | | | | | | | | | |
| P-S001 UNT Sharon Creek | Preferred | Sheet 8-2A and 8-3A | Perennial | 8 | 16 | HHEI | 51 | N/A | Modified Class II PHWH | Yes | 872 | 91 |
| P-S002 UNT Sharon Creek | Preferred | Sheet 8-2A and 8-3A | Intermittent | 3.5 | 6 | HHEI | 53 | N/A | Modified Class II PHWH | No (HDD) | 899 | 0 |
| P-S003 UNT Sharon Creek | Preferred | Sheet 8-2A and 8-3A | Ephemeral | 2.5 | 2 | HHEI | 29 | N/A | Class I PHWH | No (HDD) | 95 | 0 |
| P-S004 UNT Sharon Creek | Preferred | Sheet 8-2A and 8-3A | Ephemeral | 1 | 0 | HHEI | 13 | N/A | Class I PHWH | No (HDD) | 94 | 0 |
| P-S005 UNT Sharon Creek | Preferred | Sheet 8-2A and 8-3A | Perennial | 8 | 6 | HHEI | 62 | N/A | Modified Class II PHWH | No (HDD) | 220 | 0 |
| O-S007 UNT Sharon Creek | Preferred | Sheet 8-2A and 8-3A | Perennial | 12 | 8 | HHEI | 69 | N/A | Modified Class II PHWH | No (HDD) | 88 | 0 |
| O-SRH05 UNT Sharon Creek | Preferred | Sheet 8-2A | Ephemeral | 3 | 0 | HHEI | 12 | N/A | Modified Class I PHWH | No | 73 | 38 |
| O-S008 UNT Sharon Creek | Preferred | Sheet 8-2A | Intermittent | 4 | 4 | HHEI | 51 | N/A | Modified Class II PHWH | Yes | 344 | 80 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|--|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S010 UNT Sharon Creek | Preferred | Sheet 8-2A | Intermittent | 3 | 2 | HHEI | 30 | N/A | Modified Class II PHWH | No | 81 | 0 |
| O-S009 UNT Sharon Creek | Preferred | Sheet 8-2B | Intermittent | 3 | 5 | HHEI | 39 | N/A | Modified Class II PHWH | No | 439 | 107 |
| O-S011 UNT Sharon Creek | Preferred | Sheet 8-2B | Intermittent | 7 | 6 | HHEI | 56 | N/A | Modified Class II PHWH | No | 234 | 0 |
| O-S013 UNT Sharon Creek | Preferred | Sheet 8-2B | Intermittent | 10 | 3 | HHEI | 44 | N/A | Modified Class II PHWH | No | 26 | 0 |
| O-S012 UNT Sharon Creek | Preferred | Sheet 8-2B | Perennial | 12 | 16 | HHEI | 51 | N/A | Modified Class II PHWH | Yes | 707 | 467 |
| O-S014 UNT Sharon Creek | Preferred | Sheet 8-2B | Ephemeral | 3 | 2 | HHEI | 21 | N/A | Modified Class I PHWH | No | 49 | 27 |
| O-S015 UNT Sharon Creek | Preferred | Sheet 8-2B | Ephemeral | 3 | 1 | HHEI | 22 | N/A | Modified Class I PHWH | No | 225 | 50 |
| O-S016 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 3 | 0 | HHEI | 17 | N/A | Modified Class I PHWH | No | 53 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|--|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S017 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 4 | 0 | HHEI | 15 | N/A | Modified Class I PHWH | Yes | 246 | 49 |
| O-S018 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 3 | 0 | HHEI | 17 | N/A | Modified Class I PHWH | No | 41 | 40 |
| O-S019 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 3 | 2 | HHEI | 19 | N/A | Modified Class I PHWH | No | 105 | 30 |
| O-S020 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 5 | 5 | HHEI | 52 | N/A | Modified Class II PHWH | Yes | 535 | 480 |
| O-S021 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 3 | 2 | HHEI | 31 | N/A | Modified Class II PHWH | Yes | 82 | 82 |
| O-S022 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 3 | 0 | HHEI | 16 | N/A | Modified Class I PHWH | No | 116 | 16 |
| O-S023 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 3 | 1 | HHEI | 22 | N/A | Modified Class I PHWH | Yes | 110 | 79 |
| O-S024 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 4 | 0 | HHEI | 23 | N/A | Modified Class I PHWH | No | 170 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|--|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S025 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 2 | 0 | HHEI | 18 | N/A | Modified Class I PHWH | No | 162 | 0 |
| O-S026 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 5 | 6 | HHEI | 49 | N/A | Modified Class II PHWH | No | 64 | 0 |
| O-S028 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 1 | 0 | HHEI | 16 | N/A | Modified Class I PHWH | Yes | 85 | 48 |
| O-S029 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 4 | 20 | HHEI | 51 | N/A | Modified Class II PHWH | No | 178 | 270 |
| O-S030 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 1 | 0 | HHEI | 16 | N/A | Modified Class I PHWH | Yes | 94 | 76 |
| O-S035 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Perennial | 5 | 9 | HHEI | 62 | N/A | Modified Class II PHWH | Yes | 779 | 506 |
| O-S034 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 4 | 0 | HHEI | 28 | N/A | Modified Class I PHWH | No | 990 | 0 |
| O-S036 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 3 | 3 | HHEI | 33 | N/A | Modified Class II PHWH | No | 41 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|---|-----------|------------|--------------|-----------------------------------|--------------------------------------|------|-------|--|---|---------------------------------------|--|---|
| O-S037 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 1 | 1.5 | HHEI | 22 | N/A | Modified Class I PHWH | No | 40 | 0 |
| O-S038 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Intermittent | 2 | 2 | HHEI | 33 | N/A | Modified Class II PHWH | No | 363 | 0 |
| O-S039 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 1 | 0 | HHEI | 16 | N/A | Modified Class I PHWH | No | 48 | 0 |
| O-S040 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2B | Ephemeral | 5 | 0 | HHEI | 14 | N/A | Modified Class I PHWH | No | 24 | 0 |
| O-S041 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Ephemeral | 4 | 0 | HHEI | 16 | N/A | Modified Class I PHWH | No (HDD) | 109 | 0 |
| O-S042 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Perennial | 5 | 6 | HHEI | 42 | N/A | Modified Class II PHWH | No (HDD) | 153 | 0 |
| O-S043 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Ephemeral | 2 | 0 | HHEI | 16 | N/A | Modified Class I PHWH | No (HDD) | 56 | 0 |
| O-S044 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Ephemeral | 5 | 0 | HHEI | 26 | N/A | Modified Class I PHWH | No (HDD) | 136 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|---|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S045 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Intermittent | 5 | 2 | HHEI | 32 | N/A | Modified Class II PHWH | No (HDD) | 90 | 0 |
| BO-S004 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Perennial | 15 | 5 | QHEI | 62 | N/A | Good | Yes | 692 | 80 |
| BO-S005 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Intermittent | 4 | 0 | HHEI | 39 | N/A | Modified Class II PHWH | No (HDD) | 134 | 0 |
| BO-S006 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Intermittent | 2 | 2 | HHEI | 32 | N/A | Modified Class II PHWH | No (HDD) | 36 | 0 |
| BO-S007 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Ephemeral | 2 | 0 | HHEI | 17 | N/A | Class I PHWH | No (HDD) | 28 | 0 |
| BO-S008 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Perennial | 8 | 11 | HHEI | 61 | N/A | Modified Class II PHWH | No | 99 | 0 |
| O-S047 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Ephemeral | 3 | 0 | HHEI | 18 | N/A | Modified Class I PHWH | No | 36 | 0 |
| O-S048 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Intermittent | 4 | 4 | HHEI | 51 | N/A | Modified Class II PHWH | No | 53 | 13 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|--|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S311 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Perennial | 8 | 6 | HHEI | 63 | N/A | Modified Class II PHWH | Yes | 273 | 80 |
| O-S310 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Perennial | 4 | 3 | HHEI | 48 | N/A | Modified Class II PHWH | Yes | 125 | 125 |
| O-S308 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Perennial | 5 | 3 | HHEI | 53 | N/A | Modified Class II PHWH | Yes | 884 | 176 |
| O-S060 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Intermittent | 3 | 4 | HHEI | 32 | N/A | Modified Class II PHWH | Yes | 792 | 457 |
| O-S059 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Intermittent | 3 | 6 | HHEI | 38 | N/A | Modified Class II PHWH | Yes | 55 | 55 |
| O-S061 UNT N. Branch Sycamore Creek | Preferred | Sheet 8-2C | Ephemeral | 2 | 0 | HHEI | 18 | N/A | Modified Class I PHWH | No | 46 | 31 |
| O-S063 UNT Sycamore Creek | Preferred | Sheet 8-2D | Intermittent | 3 | 4 | HHEI | 38 | N/A | Modified Class II PHWH | No (HDD) | 598 | 0 |
| O-S064 UNT Sycamore Creek | Preferred | Sheet 8-2D | Intermittent | 2 | 4 | HHEI | 32 | N/A | Modified Class II PHWH | No (HDD) | 31 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|------------------------------------|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S062 UNT Sycamore Creek | Preferred | Sheet 8-2D | Perennial | 4 | 14 | HHEI | 42 | N/A | Modified Class II PHWH | No (HDD) | 161 | 0 |
| O-S065 UNT Sycamore Creek | Preferred | Sheet 8-2D | Intermittent | 4 | 4 | HHEI | 32 | N/A | Modified Class II PHWH | No | 249 | 249 |
| O-S083 UNT Duck Creek | Preferred | Sheet 8-2F | Ephemeral | 4 | 0 | HHEI | 17 | N/A | Modified Class I PHWH | No | 372 | 0 |
| O-S085 UNT Duck Creek | Preferred | Sheet 8-2F | Ephemeral | 4 | 0 | HHEI | 26 | N/A | Class I PHWH | No | 108 | 0 |
| O-S082 UNT East Fork Duck Creek | Preferred | Sheet 8-2F | Perennial | 20 | 16 | HHEI | 69 | N/A | Class II PHWH | Yes | 1,066 | 80 |
| O-S088 UNT Duck Creek | Preferred | Sheet 8-2F | Intermittent | 5 | 1.5 | HHEI | 43 | N/A | Class II PHWH | No | 154 | 37 |
| O-S087 UNT Duck Creek | Preferred | Sheet 8-2F | Ephemeral | 3 | 0 | HHEI | 26 | N/A | Class I PHWH | Yes | 289 | 95 |
| O-S086 UNT Duck Creek | Preferred | Sheet 8-2F | Ephemeral | 3 | 0 | HHEI | 26 | N/A | Class I PHWH | Yes | 253 | 88 |
| O-S090 UNT Duck Creek | Preferred | Sheet 8-2F | Ephemeral | 2 | 0 | HHEI | 17 | N/A | Class I PHWH | No | 41 | 0 |
| O-S089 UNT Duck Creek | Preferred | Sheet 8-2F | Ephemeral | 3 | 0 | HHEI | 27 | N/A | Class I PHWH | No | 67 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|----------------------------|-----------|------------|--------------|--------------------------|-----------------------------|-----------------------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S108 Duck Creek | Preferred | Sheet 8-2G | Perennial | Up to 100 | 12 | None/ OEPA Assessment | N/A | Limited Resource Water | N/A | No | 2,565 | 0 |
| O-S304 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 2 | 1 | HHEI | 34 | N/A | Modified Class II PHWH | No | 19 | 0 |
| O-S307 UNT Duck Creek | Preferred | Sheet 8-2G | Intermittent | 7 | 2 | HHEI | 43 | N/A | Modified Class II PHWH | No | 26 | 0 |
| BO-S100 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 1 | 0 | HHEI | 33 | N/A | Modified Class II PHWH | Yes | 264 | 76 |
| BO-S101 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 8 | 2 | HHEI | 36 | N/A | Modified Class II PHWH | Yes | 284 | 84 |
| BO-S102 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 3 | 0 | HHEI | 23 | N/A | Modified Class I PHWH | No | 474 | 0 |
| BO-S103 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 10 | 4 | HHEI | 52 | N/A | Modified Class II PHWH | Yes | 456 | 91 |
| BO-S104 Duck Creek | Preferred | Sheet 8-2G | Perennial | 50+ | 12 | None/ OEPA Assessment | N/A | Limited Resource Water | N/A | No | 1,774 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|--------------------------------------|-----------|---------------------|--------------|--------------------------|-----------------------------|-----------------------------|-------|-----------------------------------|--|------------------------------------|--|---|
| O-S301 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 2 | 2 | HHEI | 29 | N/A | Modified Class I PHWH | Yes | 268 | 89 |
| O-S302 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 2 | 1 | HHEI | 17 | N/A | Modified Class I PHWH | No | 20 | 0 |
| BO-S105 UNT Duck Creek | Preferred | Sheet 8-2G | Ephemeral | 10 | 2 | HHEI | 52 | N/A | Modified Class II PHWH | No | 94 | 18 |
| BO-S106 UNT Duck Creek | Preferred | Sheet 8-2G | Intermittent | 25 | 6 | QHEI | 38 | N/A | Poor | No | 36 | 0 |
| O-S300 Duck Creek | Preferred | Sheet 8-2H | Intermittent | 20 | 12 | None/ OEPA Assessment | N/A | Limited Resource Water | N/A | Yes | 331 | 84 |
| TOTAL FOR THE PREFERRED ROUTE | | | | | | | | | | | 22,569 feet | 4,544 feet |
| ALTERNATE ROUTE | | | | | | | | | | | | |
| P-S001 UNT Sharon Creek | Alternate | Sheet 8-3A | Perennial | 8 | 16 | HHEI | 51 | N/A | Modified Class II PHWH | Yes | 872 | 91 |
| P-S002 UNT Sharon Creek | Alternate | Sheet 8-2A and 8-3A | Intermittent | 3.5 | 6 | HHEI | 53 | N/A | Modified Class II PHWH | No (HDD) | 899 | 0 |
| P-S003 UNT Sharon Creek | Alternate | Sheet 8-2A and 8-3A | Ephemeral | 2.5 | 2 | HHEI | 29 | N/A | Class I PHWH | No (HDD) | 95 | 0 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|-----------------------------|-----------|---------------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| P-S004 UNT Sharon Creek | Alternate | Sheet 8-2A and 8-3A | Ephemeral | 1 | 0 | HHEI | 13 | N/A | Class I PHWH | No (HDD) | 94 | 0 |
| P-S005 UNT Sharon Creek | Alternate | Sheet 8-2A and 8-3A | Perennial | 8 | 6 | HHEI | 62 | N/A | Modified Class II PHWH | No (HDD) | 220 | 0 |
| O-S007 UNT Sharon Creek | Alternate | Sheet 8-2A and 8-3A | Perennial | 12 | 8 | HHEI | 69 | N/A | Modified Class II PHWH | No (HDD) | 88 | 0 |
| P-S006 UNT Sharon Creek | Alternate | Sheet 8-3A | Intermittent | 4 | 4 | HHEI | 31 | N/A | Modified Class II PHWH | No | 158 | 1 |
| P-SRH06 UNT Sharon Creek | Alternate | Sheet 8-3A | Intermittent | 8 | 4 | HHEI | 43 | N/A | Modified Class II PHWH | No | 144 | 46 |
| P-S030 UNT Sharon Creek | Alternate | Sheet 8-3B | Perennial | 5 | 6 | HHEI | 52 | N/A | Modified Class II PHWH | Yes | 82 | 82 |
| P-S031 UNT Sharon Creek | Alternate | Sheet 8-3B | Ephemeral | 3 | 3 | HHEI | 31 | N/A | Class II PHWH | No | 103 | 11 |
| P-S032 UNT Sharon Creek | Alternate | Sheet 8-3B | Ephemeral | 3 | 0 | HHEI | 16 | N/A | Class I PHWH | No | 51 | 37 |
| P-S025 UNT Sharon Creek | Alternate | Sheet 8-3B | Intermittent | 3 | 2 | HHEI | 19 | N/A | Modified Class I PHWH | Yes | 146 | 146 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|---|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| P-S026 UNT Sharon Creek | Alternate | Sheet 8-3B | Intermittent | 4 | 4 | HHEI | 41 | N/A | Modified Class II PHWH | No | 50 | 50 |
| P-S027 UNT Sharon Creek | Alternate | Sheet 8-3B | Perennial | 5 | 4 | HHEI | 63 | N/A | Modified Class II PHWH | No | 89 | 29 |
| P-S028 UNT Sharon Creek | Alternate | Sheet 8-3B | Ephemeral | 4 | 0 | HHEI | 13 | N/A | Modified Class I PHWH | No | 31 | 31 |
| P-S029 UNT Sharon Creek | Alternate | Sheet 8-3B | Intermittent | 3 | 5 | HHEI | 40 | N/A | Modified Class II PHWH | Yes | 177 | 57 |
| P-S016 UNT Sharon Creek | Alternate | Sheet 8-3C | Intermittent | 5 | 3 | HHEI | 54 | N/A | Modified Class II PHWH | No | 11 | 0 |
| P-S015 UNT Sharon Creek | Alternate | Sheet 8-3C | Perennial | 4 | 8 | HHEI | 61 | N/A | Modified Class II PHWH | No | 203 | 0 |
| P-SRH13 UNT N. Branch Sycamore Creek | Alternate | Sheet 8-3C | Intermittent | 9 | 3 | HHEI | 48 | N/A | Modified Class II PHWH | No | 144 | 0 |
| G-SRH01 UNT Mill Creek | Alternate | Sheet 8-3E | Intermittent | 8 | 10 | HHEI | 39 | N/A | Modified Class II PHWH | Yes | 289 | 88 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|----------------------------|-----------|------------|--------------|--------------------------|-----------------------------|-----------------------------|-------|-----------------------------------|--|------------------------------------|--|---|
| G-SRH02 UNT Mill Creek | Alternate | Sheet 8-3E | Ephemeral | 8 | 8 | HHEI | 58 | N/A | Modified Class II PHWH | Yes | 120 | 120 |
| G-SRH03 Mill Creek | Alternate | Sheet 8-3E | Perennial | 30+ | >36 | None/ OEPA Assessment | N/A | Warmwater Habitat | N/A | Yes | 268 | 80 |
| G-SRH04 UNT Mill Creek | Alternate | Sheet 8-3F | Ephemeral | 3 | 0 | HHEI | 24 | N/A | Modified Class I PHWH | Yes | 250 | 128 |
| G-SRH05 Rossmoyne Creek | Alternate | Sheet 8-3G | Perennial | 20+ | 14 | None/ OEPA Assessment | N/A | Warmwater Habitat | N/A | Yes | 241 | 85 |
| G-SRH06 Mill Creek | Alternate | Sheet 8-3G | Perennial | 30+ | >36 | None/ OEPA Assessment | N/A | Warmwater Habitat | N/A | Yes | 403 | 170 |
| G-SRH07 UNT Mill Creek | Alternate | Sheet 8-3H | Ephemeral | 3 | 0 | HHEI | 30 | N/A | Modified Class II PHWH | No | 134 | 31 |
| G-SRH08 UNT Mill Creek | Alternate | Sheet 8-3H | Intermittent | 9 | 6 | HHEI | 63 | N/A | Modified Class II PHWH | Yes | 223 | 99 |
| G-S404 UNT Mill Creek | Alternate | Sheet 8-3I | Perennial | 20 | 33 | QHEI | 66 | N/A | Good | No | 108 | 0 |
| G-S400 UNT Mill Creek | Alternate | Sheet 8-3I | Ephemeral | 2 | 0 | HHEI | 11 | N/A | Modified Class I PHWH | No | 174 | 174 |

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Survey Corridor and Construction Work Area

| Stream ID / Waterbody Name | Route | Figure | Flow Regime | Top of Bank Width (feet) | Maximum Pool Depth (inches) | Form | Score | OEPA Aquatic Life Use Designation | PHWH Class (HHEI)/ Narrative Rating (QHEI) | Crossed by Centerline ^c | Length (linear feet) within Survey Corridor ^a | Length (linear feet) within Construction Work Area ^b |
|---------------------------------------|-----------|------------|--------------|--------------------------|-----------------------------|------|-------|-----------------------------------|--|------------------------------------|--|---|
| G-S401 UNT Mill Creek | Alternate | Sheet 8-3I | Ephemeral | 3 | 0 | HHEI | 21 | N/A | Modified Class I PHWH | No | 65 | 65 |
| G-S402 UNT Mill Creek | Alternate | Sheet 8-3I | Ephemeral | 1 | 0 | HHEI | 14 | N/A | Modified Class I PHWH | No | 13 | 13 |
| G-S405 ^d UNT Mill Creek | Alternate | Sheet 8-3H | Intermittent | - | - | - | - | - | - | - | - | - |
| TOTAL FOR THE ALTERNATE ROUTE | | | | | | | | | | | 5,945 feet | 1,634 feet |

a The width of the survey corridor was 280 feet wide.

b The width of the planned CWA = 80 feet wide.

c Unless noted in the “Crossed by Centerline” column, the planned crossing method is open cut trench (which is described in Section 4906-5-05 (B) of this Application).

d Stream G-S405 was observed from the property line; a detailed stream assessment will be performed in the future, as required.

ID = identification

N/A = not applicable

PHWH = Primary Headwater Habitat

QHEI = Qualitative Habitat Evaluation Index

UNT = unnamed tributary

(3) Construction Impacts on Vegetation and Surface Waters**(h) Construction Impacts on Vegetation**

The following discussion describes the potential effects on woody and herbaceous vegetation along the proposed routes during construction.

Preferred Route: The plant communities that would be most affected by construction of the Preferred Route are herbaceous plants (e.g., grasses, etc.), shrubs, and trees associated with residential areas, woodlots, industrial areas, commercial areas, institutional areas, and recreation areas. Approximately 27,557 linear feet (46.8 acres) of the Preferred Route CWA crosses industrial/commercial/institutional areas, approximately 10,052 linear feet (21.1 acres) crosses woodlots, and approximately 10,808 linear feet (18.2 acres) crosses recreation areas (see Tables 7-3 and 7-4). Given the CWA will be approximately 80 feet wide (maximum based on preliminary plans), the effects to vegetation are not expected to have a significant cumulative effect on vegetation communities within any localized section of the pipeline route. Although the cumulative acreage of woodlots in the planned CWA is an estimated 21.1 acres, the effects from this clearing would occur over the length of the 13.9 miles of the pipeline route. Duke Energy Ohio recognizes the importance of trees, shrubs, and other vegetation to landowners and, where removal of such vegetation is necessary, Duke Energy Ohio will only remove trees, shrubs, etc. that are essential for construction and operation of the pipeline.

Alternate Route: The plant communities that would be most affected by construction of the Alternate Route are herbaceous plants (e.g., grasses, etc.), shrubs, and trees associated with residential areas, woodlots, industrial areas, commercial areas, institutional areas, and recreation areas. Approximately 10,595 linear feet (20.9 acres) of the Alternate Route CWA crosses woodlots, approximately 29,153 linear feet (49.1 acres) crosses industrial/commercial/institutional areas, and approximately 4,870 linear feet (7.1 acres) crosses recreation areas (see Tables 7-3 and 7-4). In general, the same level of effects to vegetation communities along the Preferred Route discussed above apply to the Alternate Route as well, although the woodlot acreage to be cleared for the Alternate Route would be greater than for the Preferred Route.

(i) Construction Impacts on Wetlands

Preferred Route: Thirty (presumed jurisdictional) wetlands were identified along the Preferred Route survey corridor. Three wetlands are crossed by the centerline of the Preferred Route and 1.61 acres are within the proposed CWA. More detailed information about each feature can be found in Table 8-3 in Section 4906-05-08(B)(1)(b)(ii). It is not anticipated that any vegetation clearing activities adjacent to wetlands will result in significant erosion and water quality degradation. As required, woody vegetation in or near wetlands will be hand-cut by chain saws rather than large machinery to the extent possible. Timber mats will be utilized as necessary for vehicles or equipment to cross through any wetland. It is expected that the use of construction equipment within wetland areas can be minimized as numerous access points are along the proposed route from existing roads and other paved surfaces.

Some palustrine forested (PFO) wetlands along the Preferred Route, up to an estimated 1.42 acres, would be converted to palustrine emergent (PEM) wetlands once the trees are removed for construction within the planned 80-foot wide CWA. Emergent wetland areas will be seeded following the completion of construction activities and will be permitted to re-establish as functional wetlands.

Removal of vegetation debris adjacent to wetlands would be accomplished by hand, by using timber matting under standard equipment, or using low-pressure rubber-wheeled vehicles, or vehicles equipped rubber tracks.

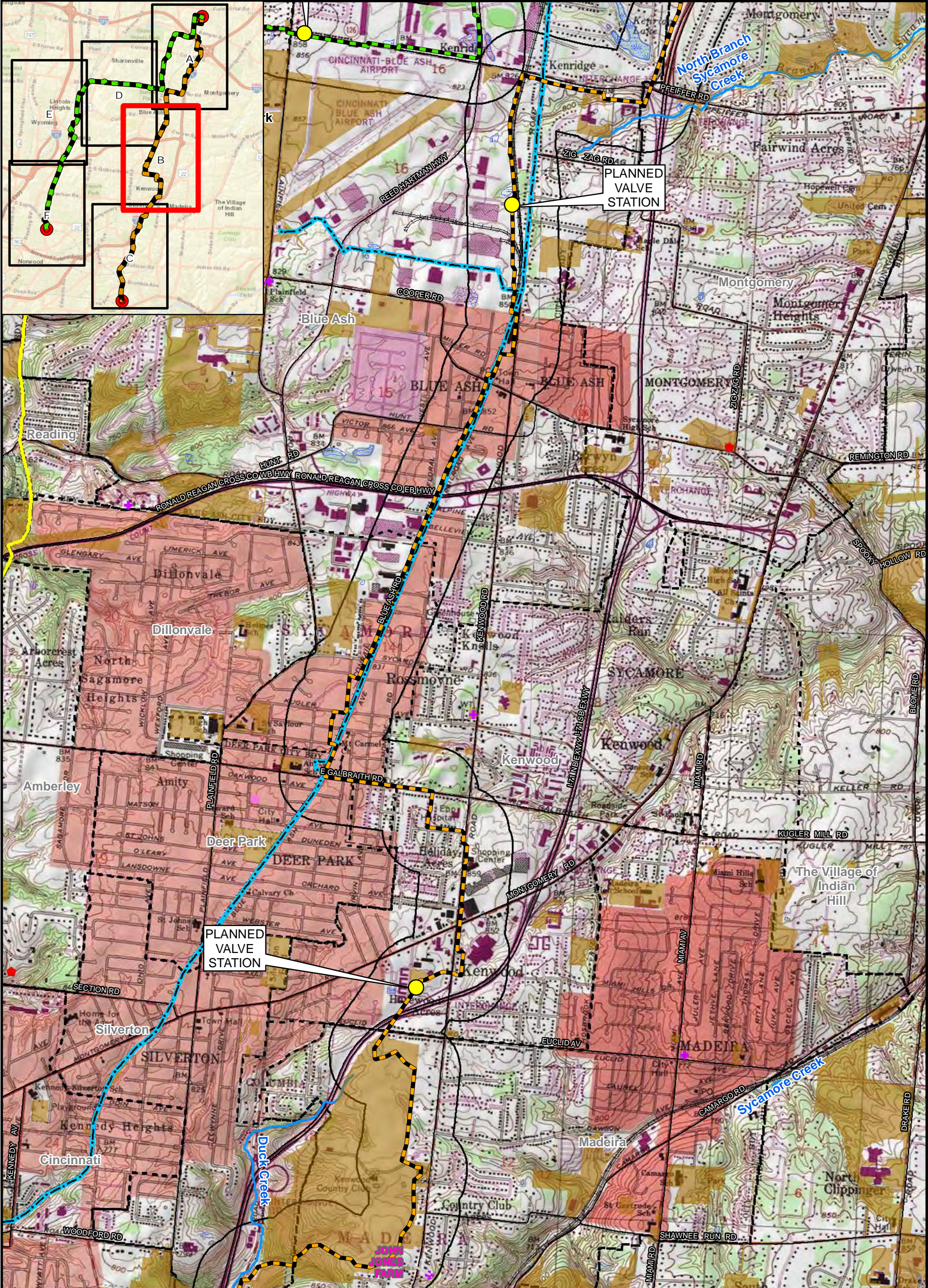
Alternate Route: Twenty-eight (presumed jurisdictional) wetlands were identified along the Alternate Route. Nine wetlands are crossed by the centerline of the Alternate Route and 1.46 acres are within the proposed CWA. Detailed information about each feature can be found in Table 8-3 in Section 4906-05-08(B)(1)(b)(ii). The same vegetation clearing and construction equipment access precautions described above for the Preferred Route applies to the Alternate Route.

Some PFO wetlands along the Alternate Route, up to an estimated 1.01 acre, would be converted to PEM wetlands once the trees are removed for construction within the planned 80-foot wide CWA.

(j) Construction Impacts on Waterbodies

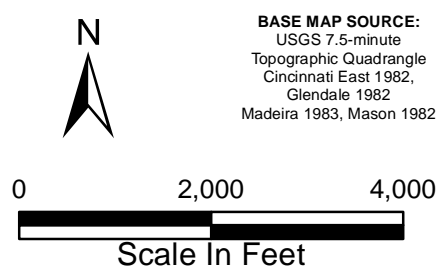
The Preferred Route centerline crosses 24 streams. The Alternate Route centerline crosses 11 streams. Construction effects on these features are included in Table 8-3 and further discussed in Section 4906-05-08(B)(3)(c). Horizontal directional drilling or other boring techniques will be used to install the pipeline beneath selected streams. Table 8-3 includes the crossing method for each stream, most of which will be open cut trench because of the relatively small size of streams.

Approximately 4,544 linear feet of stream are located within the planned Preferred Route CWA, while approximately 1,634 linear feet are located within the planned Alternate Route CWA.



LEGEND:

- Preferred Route
- Alternate Route
- 1,000 Foot Buffer of Preferred and Alternate Route
- National Register Listed
- National Register Determination of Eligibility
- Cemetery
- NHD Stream
- Existing Pipelines
- Existing Electric Transmission Lines
- Railroad
- NWI Wetland
- Park or Recreation Area
- Municipal Boundary
- Historic District



BASE MAP SOURCE:
USGS 7.5-minute
Topographic Quadrangle
Cincinnati East 1982,
Glendale 1982
Madeira 1983, Mason 1982

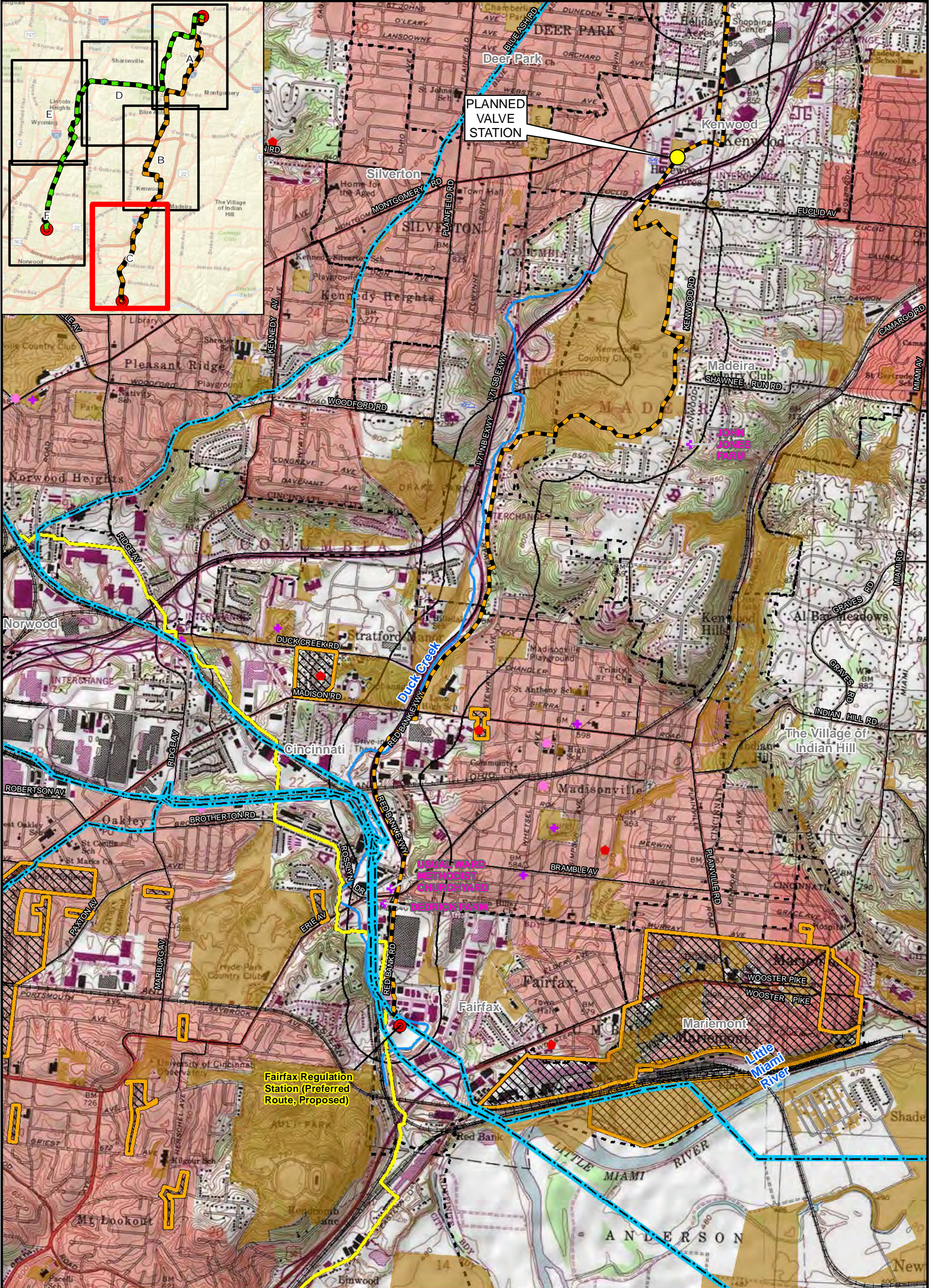


C314V Central
Corridor Pipeline
Extension Project

FIGURE 5-1B
PROJECT FEATURES AND
CULTURAL RESOURCE MAP

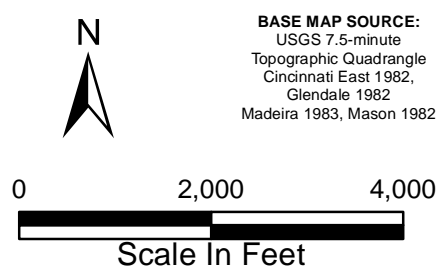
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CREATED BY: TH
REVIEWED BY: MF

DATE: 4/25/2017
ch2m


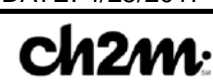


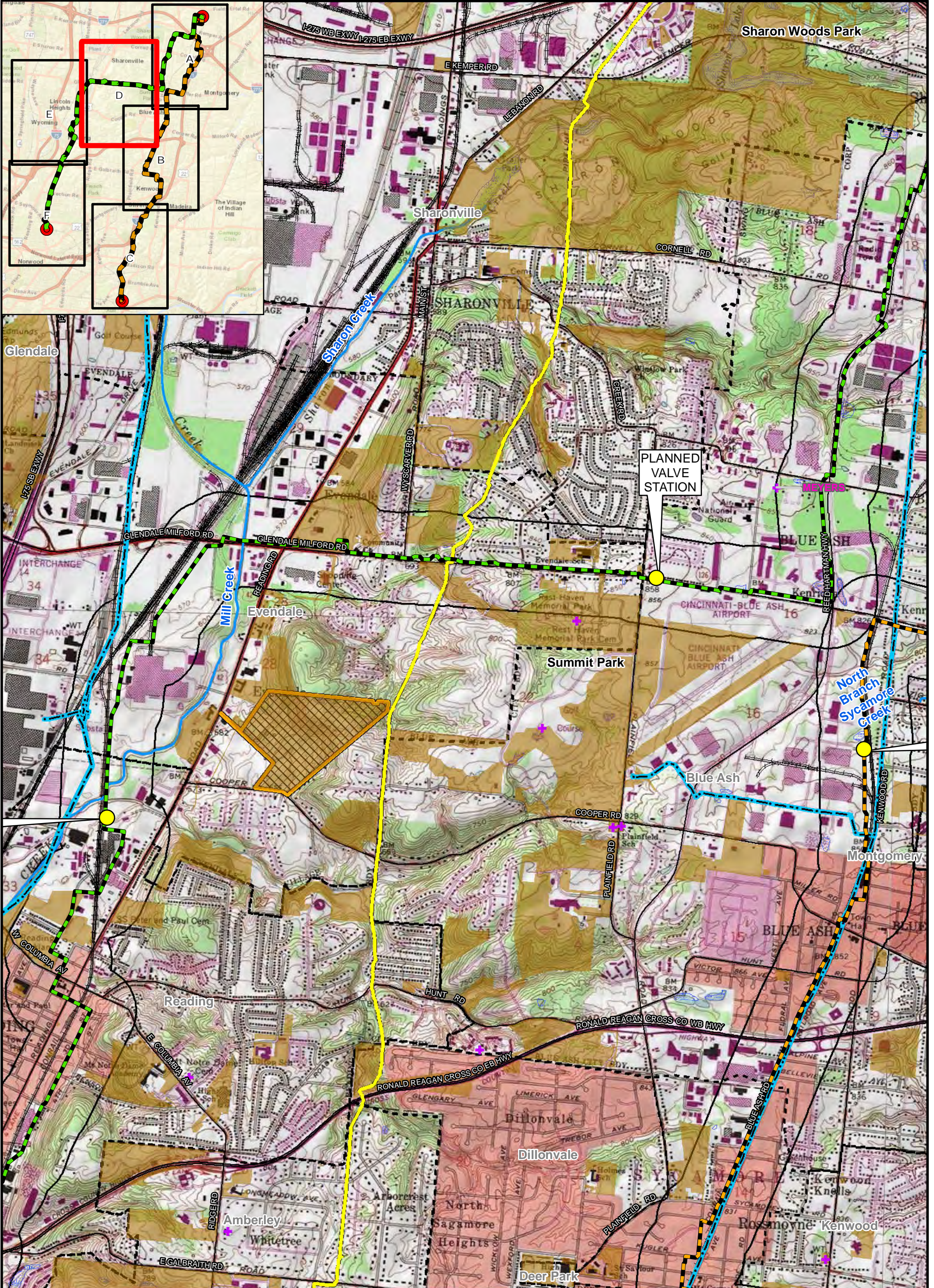
LEGEND:

- Preferred Route
- Alternate Route
- 1,000 Foot Buffer of Preferred and Alternate Route
- National Register Listed
- National Register Determination of Eligibility
- Cemetery
- NHD Stream
- Existing Pipelines
- Existing Electric Transmission Lines
- Railroad
- NWI Wetland
- Park or Recreation Area
- Municipal Boundary
- Historic District



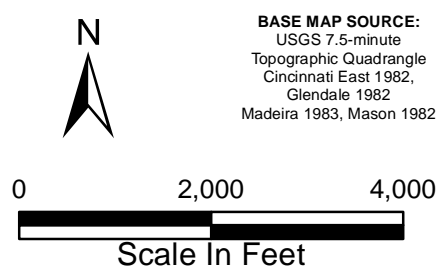
BASE MAP SOURCE:
USGS 7.5-minute
Topographic Quadrangle
Cincinnati East 1982,
Glendale 1982
Madeira 1983, Mason 1982

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|  | C314V Central Corridor Pipeline Extension Project |
| FIGURE 5-1C PROJECT FEATURES AND CULTURAL RESOURCE MAP | |
| PN: 672247 CREATED BY: TH REVIEWED BY: MF | DATE: 4/25/2017  |



LEGEND:

- - - Preferred Route
- - - Alternate Route
- 1,000 Foot Buffer of Preferred and Alternate Route
- National Register Listed
- ◆ National Register Determination of Eligibility
- + Cemetery
- NHD Stream
- Existing Pipelines
- Existing Electric Transmission Lines
- Railroad
- NWI Wetland
- Park or Recreation Area
- Municipal Boundary
- Historic District



BASE MAP SOURCE:
USGS 7.5-minute
Topographic Quadrangle
Cincinnati East 1982,
Glendale 1982
Madeira 1983, Mason 1982

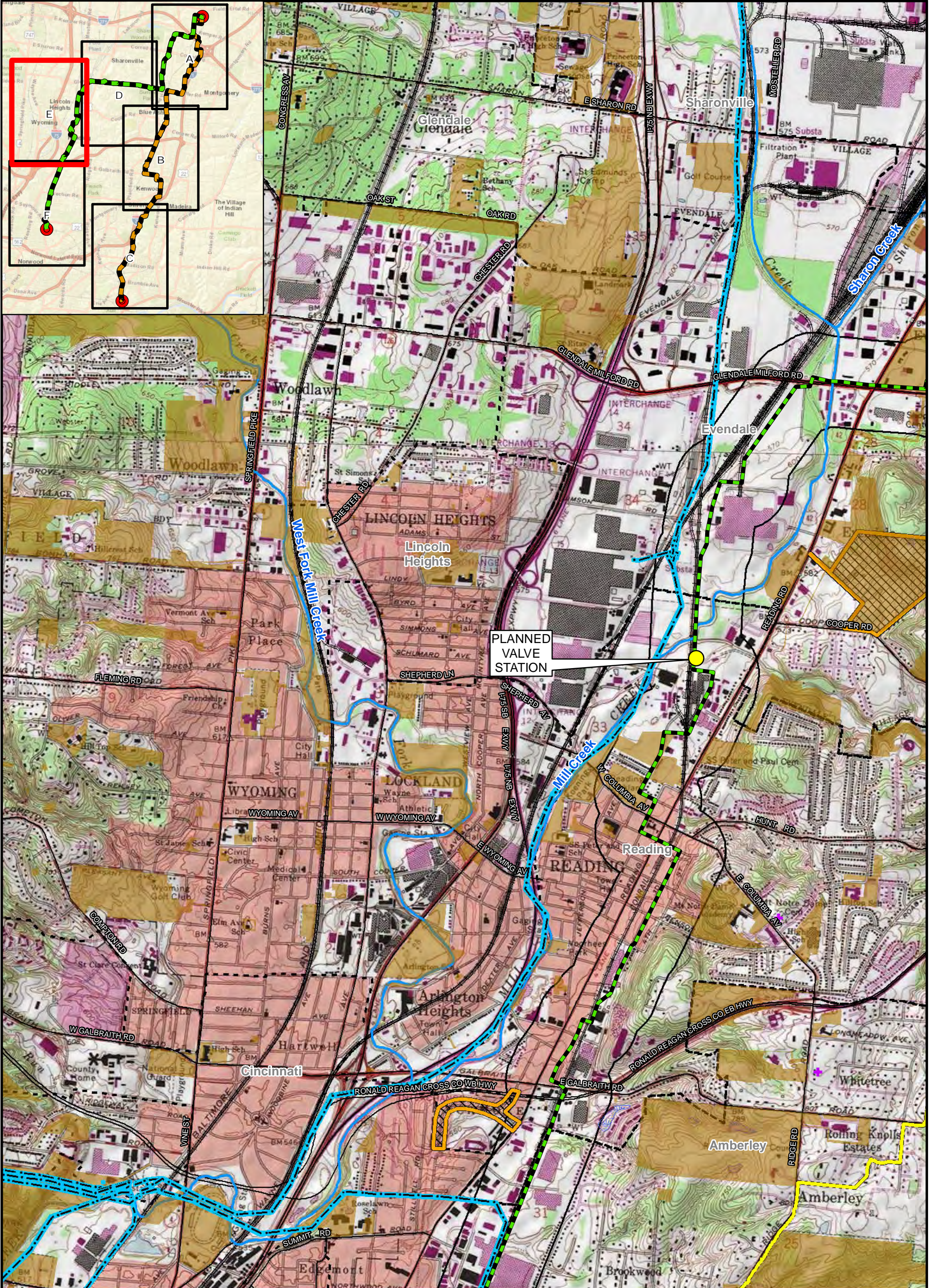


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Extension Project

**FIGURE 5-1D
PROJECT FEATURES AND
CULTURAL RESOURCE MAP**

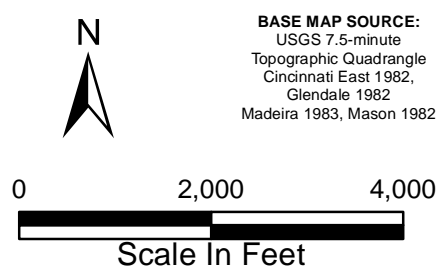
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CREATED BY: TH
REVIEWED BY: MF

DATE: 4/25/2017
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LEGEND:

- Preferred Route
- Alternate Route
- 1,000 Foot Buffer of Preferred and Alternate Route
- National Register Listed
- National Register Determination of Eligibility
- Cemetery
- NHD Stream
- Existing Pipelines
- Existing Electric Transmission Lines
- Railroad
- NWI Wetland
- Park or Recreation Area
- Municipal Boundary
- Historic District



BASE MAP SOURCE:
USGS 7.5-minute
Topographic Quadrangle
Cincinnati East 1982,
Glendale 1982
Madeira 1983, Mason 1982

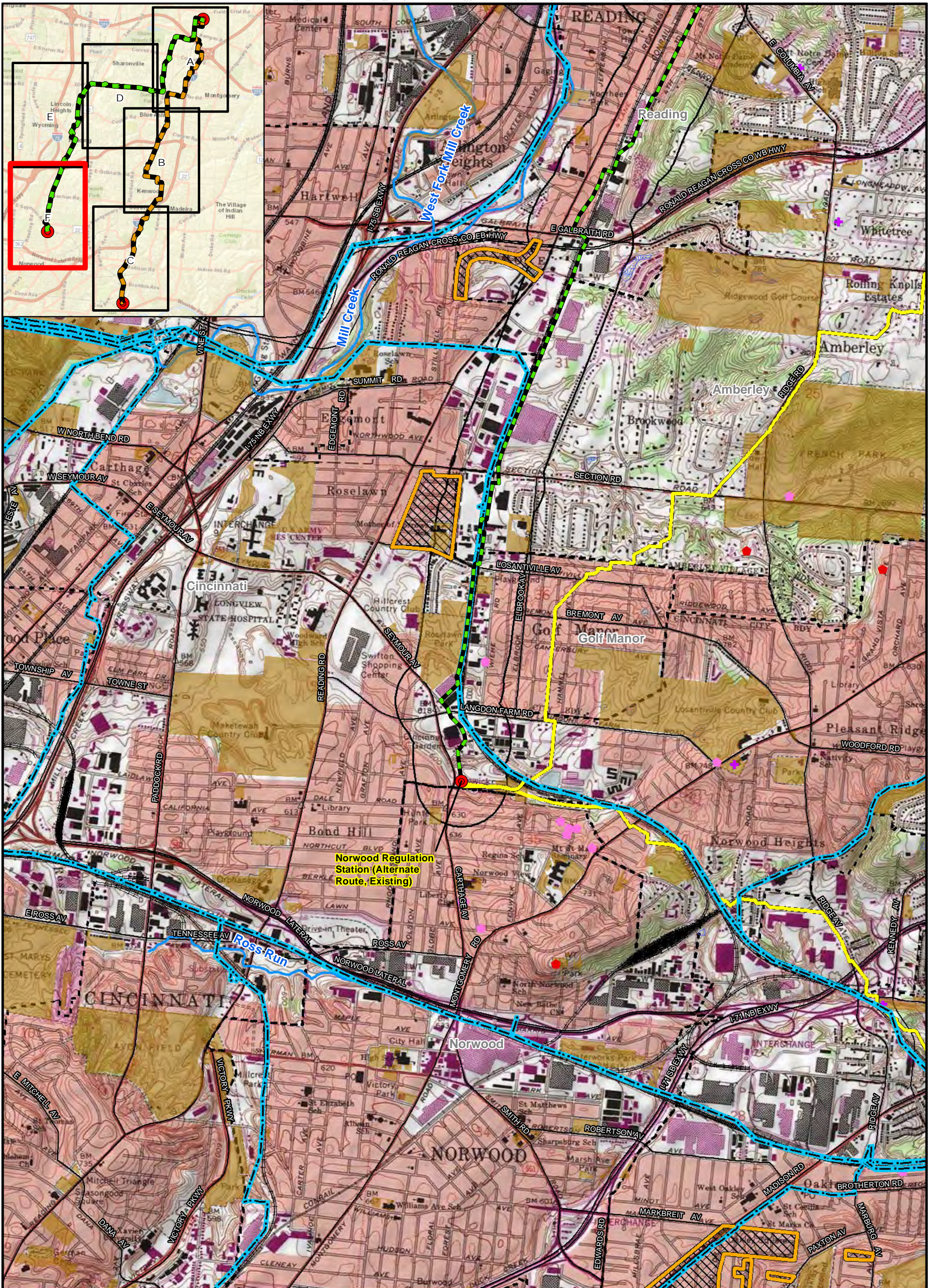


C314V Central
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Extension Project

**FIGURE 5-1E
PROJECT FEATURES AND
CULTURAL RESOURCE MAP**

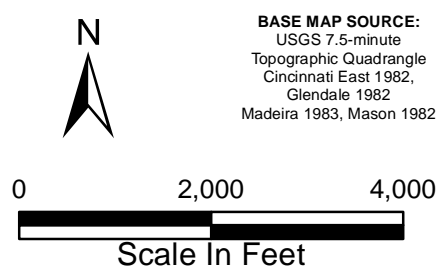
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CREATED BY: TH
REVIEWED BY: MF

DATE: 4/25/2017
ch2m



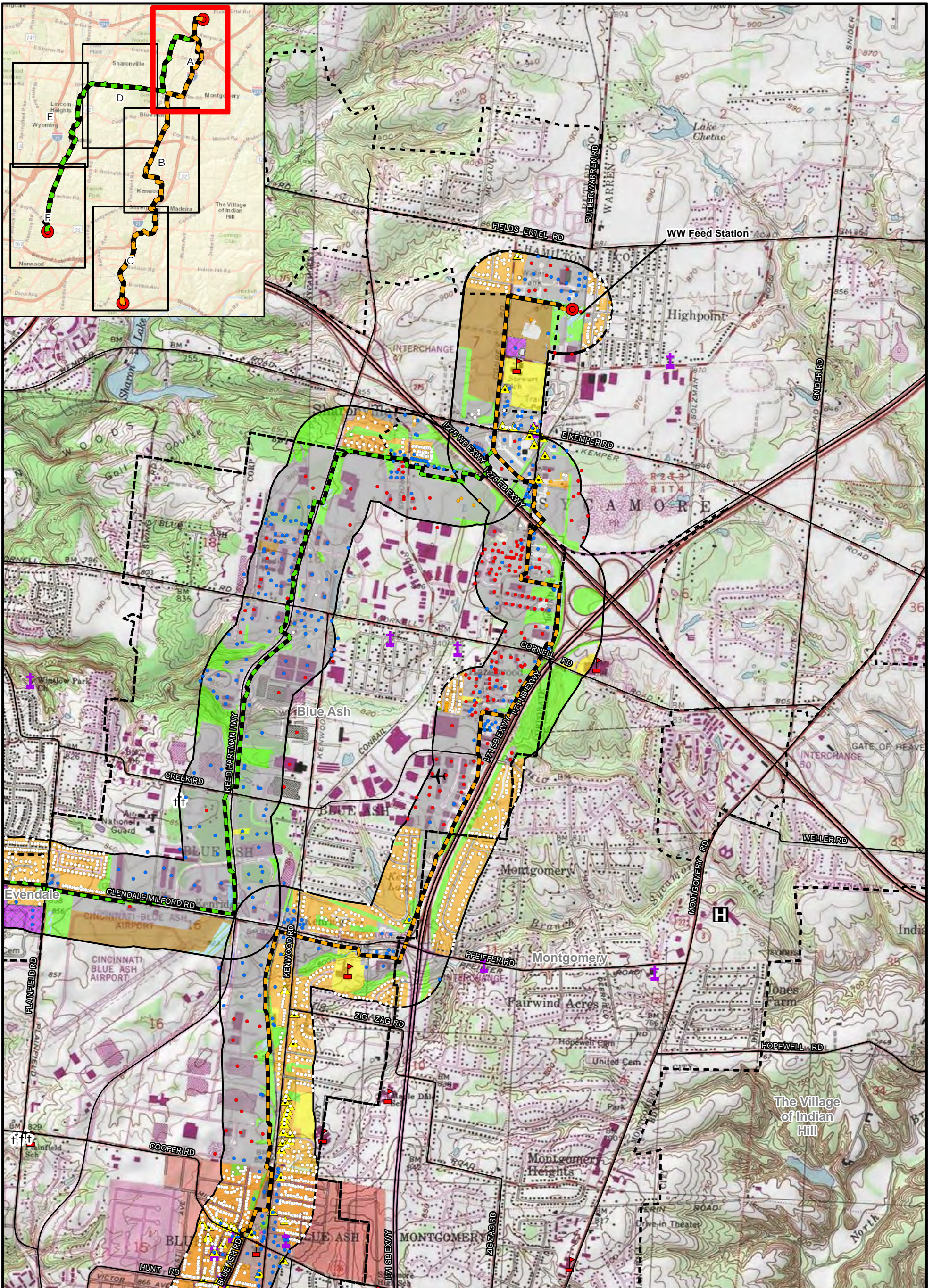
LEGEND:

- Preferred Route
- Alternate Route
- 1,000 Foot Buffer of Preferred and Alternate Route
- National Register Listed
- National Register Determination of Eligibility
- Cemetery
- NHD Stream
- Existing Pipelines
- Existing Electric Transmission Lines
- Railroad
- NWI Wetland
- Park or Recreation Area
- Municipal Boundary
- Historic District

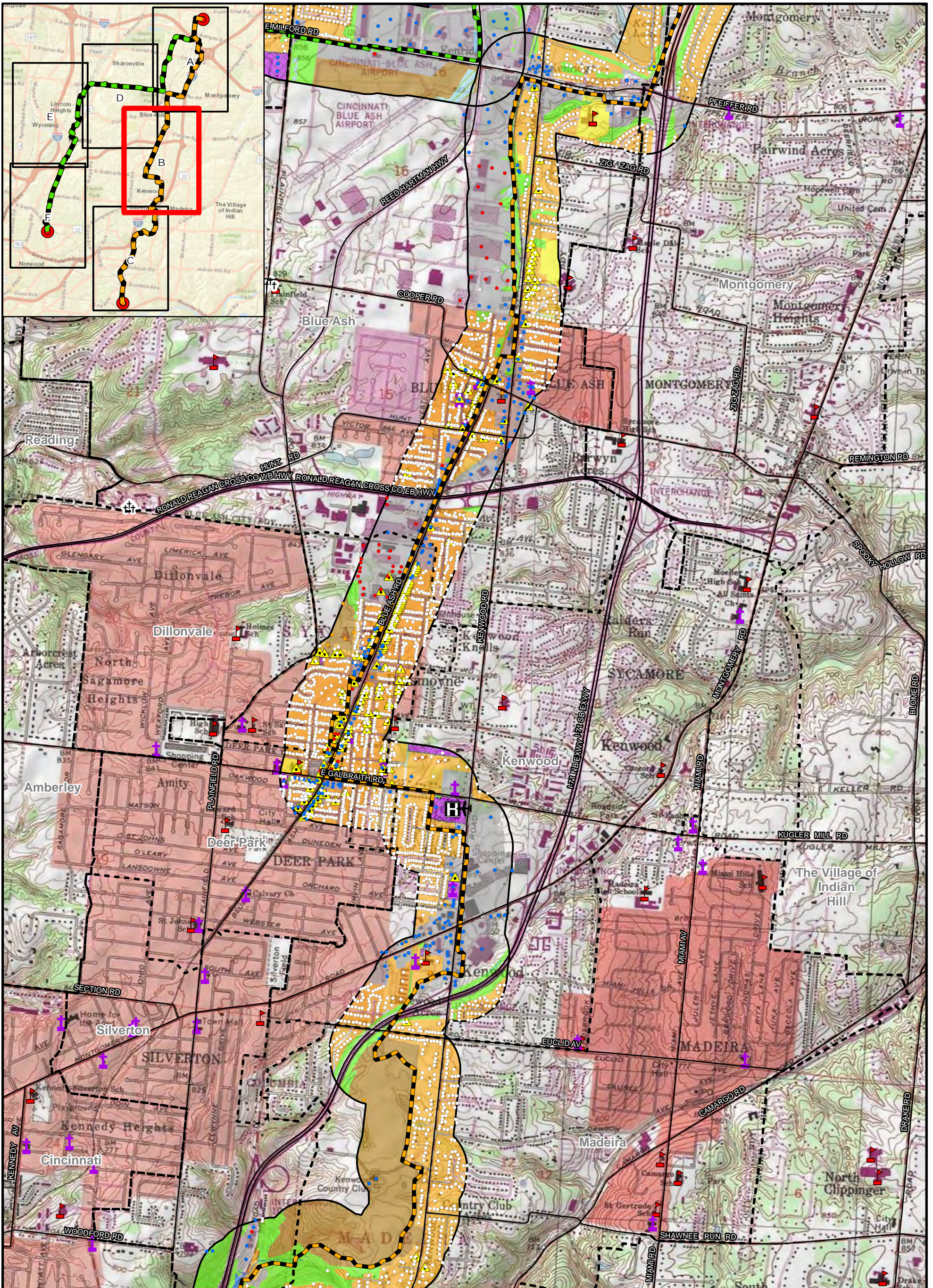


BASE MAP SOURCE:
USGS 7.5-minute
Topographic Quadrangle
Cincinnati East 1982,
Glendale 1982
Madeira 1983, Mason 1982

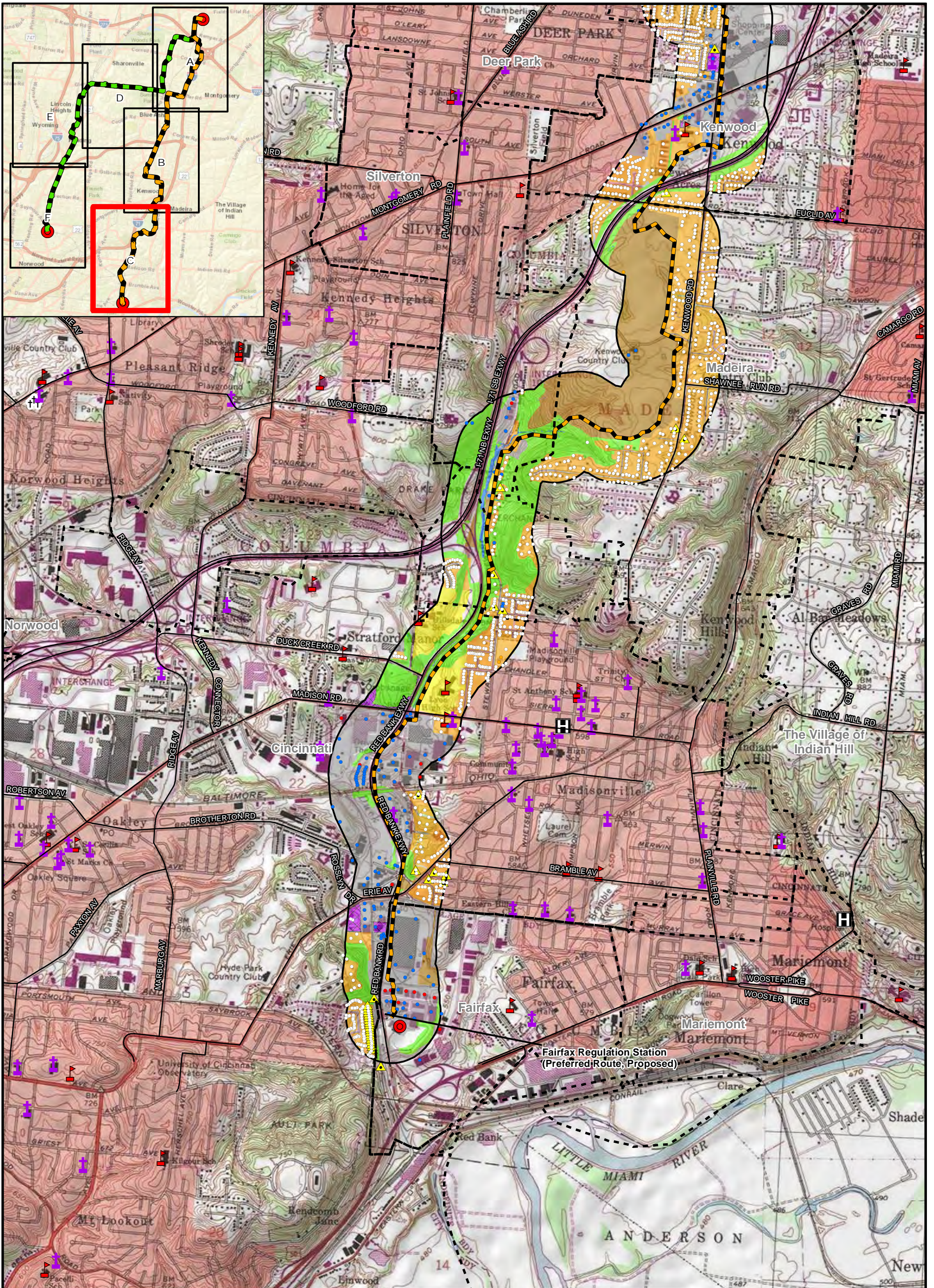
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|---|---|
| | C314V Central Corridor Pipeline Extension Project |
| FIGURE 5-1F PROJECT FEATURES AND CULTURAL RESOURCE MAP | |
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| CREATED BY: TH | |
| REVIEWED BY: MF | |



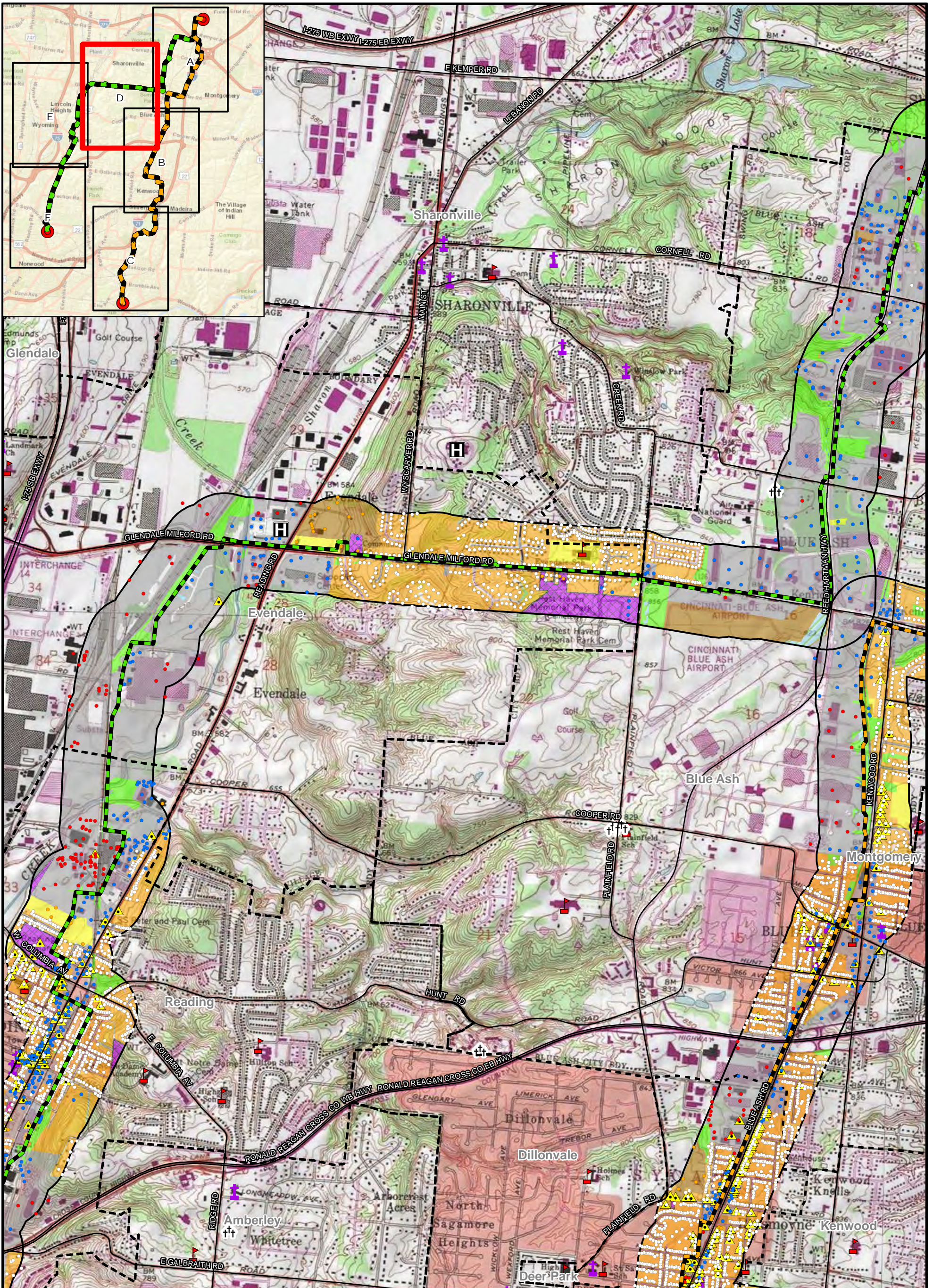
| | | | | | | | | | |
|--|--|--|--|--|--|---|--|--|--|
| LEGEND: Stations (Existing and Proposed) Cemeteries Church Hospitals Schools Historic Structures Airports/Heliports Road Preferred Route Alternate Route 1,000 Foot Buffer Around Preferred and Alternate Route Municipal Boundary Station | | Structures Commercial Residential Civic Building Industrial Commercial/Industrial Education Institutional Mixed Use Parks and recreation Residential Undefined Woodlots | | Landuse Delineated Stream Delineated Wetland Delineated Pond Commercial/Industrial Education Institutional Mixed Use Parks and recreation Residential Undefined Woodlots | | BASE MAP SOURCE: USGS 7.5-minute Topographic Quadrangle Cincinnati East 1982, Glendale 1982, Madeira 1983, Mason 1982 0 2,000 4,000 Scale In Feet | | C314V Central Corridor Pipeline Extension Project FIGURE 7-1A LAND USE MAP PN: 672247 CREATED BY: TH REVIEWED BY: MF | |
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|--|--|---|--|--|--|---|--|---|--|---|--|---|--|
| LEGEND: Stations (Existing and Proposed) Cemeteries Church Hospitals Schools Historic Structures Airports/Heliports Road Preferred Route Alternate Route 1,000 Foot Buffer Around Preferred and Alternate Route Municipal Boundary Station | | Structures Commercial Residential Civic Building Industrial Education Institutional Mixed Use Parks and recreation Residential Undefined Woodlots | | Landuse Delineated Stream Delineated Wetland Delineated Pond Commercial/Industrial Education Institutional Mixed Use Parks and recreation Residential Undefined Woodlots | | BASE MAP SOURCE: USGS 7.5-minute Topographic Quadrangle Cincinnati East 1982, Glendale 1982, Madeira 1983, Mason 1982 | | | | | | C314V Central Corridor Pipeline Extension Project | |
| | | | | | | | | FIGURE 7-1B LAND USE MAP | | PN: 672247 CREATED BY: TH REVIEWED BY: MF | | | |
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| | | | | | | | |
|--|--|--|--|--|--|---|--|
| LEGEND: Stations (Existing and Proposed) Cemeteries Church Hospitals Schools Historic Structures Airports/Heliports Road Preferred Route Alternate Route 1,000 Foot Buffer Around Preferred and Alternate Route Municipal Boundary Station | | Structures Commercial Residential Civic Building Industrial Commercial/Industrial Education Institutional Mixed Use Parks and recreation Residential Undefined Woodlots | | Landuse Delineated Stream Delineated Wetland Delineated Pond N 0 2,000 4,000 Scale In Feet | | C314V Central Corridor Pipeline Extension Project FIGURE 7-1C LAND USE MAP PN: 672247 CREATED BY: TH REVIEWED BY: MF | |
|--|--|--|--|--|--|---|--|



| | | | | | | | | | | | | | |
|--|--|--|--|--|--|---|--|---|--|--|--|---|--|
| LEGEND: Stations (Existing and Proposed) Cemeteries Church Hospitals Schools Historic Structures Airports/Heliports Road Preferred Route Alternate Route 1,000 Foot Buffer Around Preferred and Alternate Route Municipal Boundary Station | | Structures Commercial Residential Civic Building Industrial Commercial/Industrial Education Institutional Mixed Use Parks and recreation Residential Undefined Woodlots | | Landuse Delineated Stream Delineated Wetland Delineated Pond | | BASE MAP SOURCE: USGS 7.5-minute Topographic Quadrangle Cincinnati East 1982, Glendale 1982, Madeira 1983, Mason 1982 | | | | | | C314V Central Corridor Pipeline Extension Project | |
| | | | | | | FIGURE 7-1D LAND USE MAP | | PN: 672247 CREATED BY: TH REVIEWED BY: MF | | | | | |