

APPENDIX J-1

Waters of the U.S. Report

Clarification Note for Central Alternative 1:

Central Alternatives 1A and 1B as described in the DEIS/FEIS are physically the same alternative. The only difference between them is that Central Alternative 1A would include tolls on both the new I-69 bridge and on the US 41 bridge. Central Alternative 1B would only include tolls on the new I-69 bridge. Any reference in this document to Central Alternative 1 applies to both Central Alternative 1A and Central Alternative 1B. Additional applicable information regarding Central Alternatives 1A and 1B (Preferred) is provided in Appendix J-2 and the FEIS.

This document was completed before the development of Central Alternative 1B Modified (Selected); therefore, the alternative is not included in the document. Applicable information regarding Central Alternative 1B Modified (Selected) is provided in the Appendix J-3 and the FEIS.

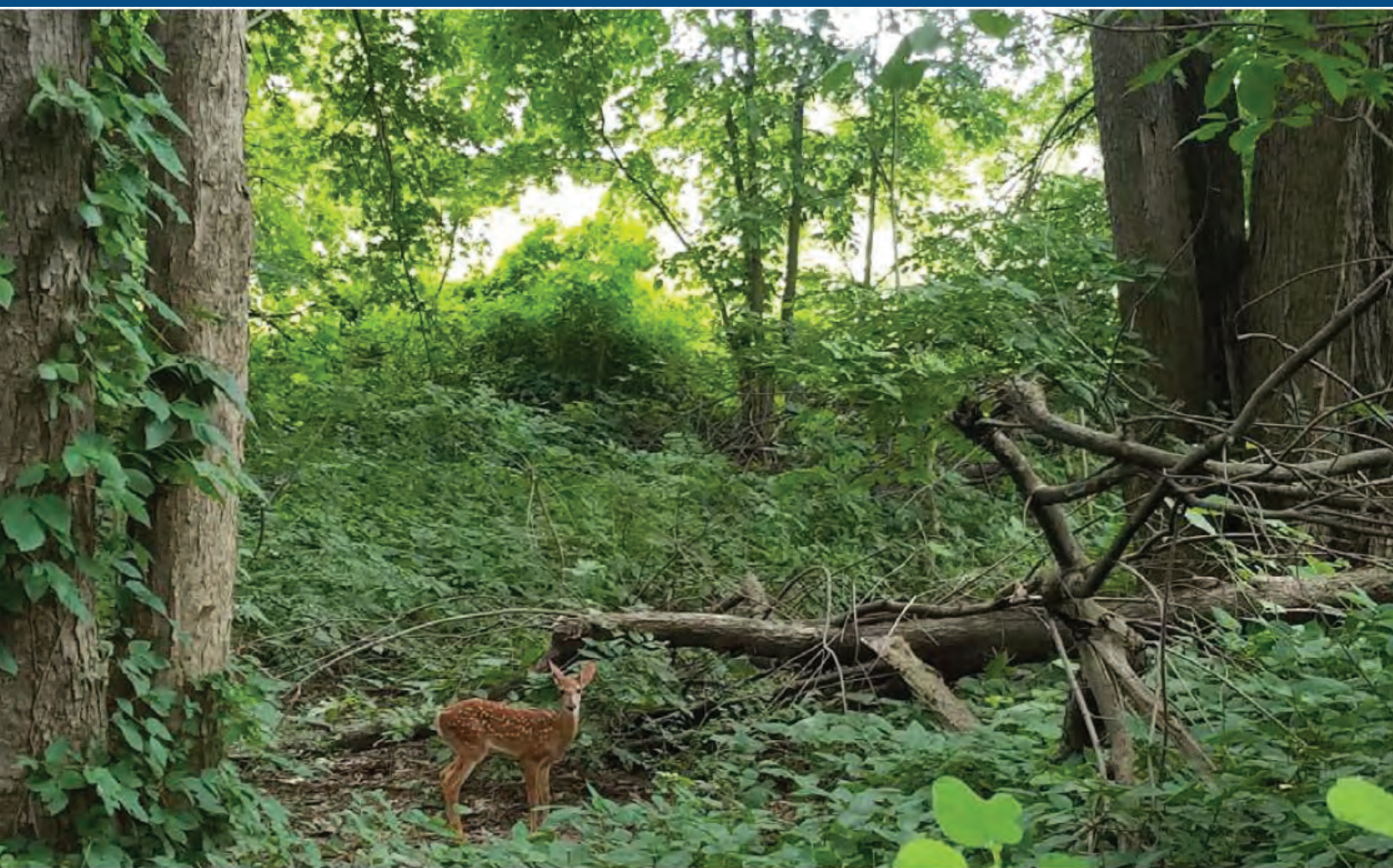
October 15, 2018

ORX

69

WATERS OF THE U.S. TECHNICAL REPORT

I-69 OHIO RIVER CROSSING PROJECT
Evansville, IN and Henderson, KY





OHIO RIVER CROSSING

Waters of the U.S. Technical Report

I-69 Ohio River Crossing Project
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Prepared by:
PARSONS



TABLE OF CONTENTS

| | |
|---|------------|
| CHAPTER 1 - INTRODUCTION..... | 1-1 |
| 1.1 Project Description | 1-1 |
| 1.2 Project Alternatives | 1-3 |
| 1.2.1 West Alternative 1..... | 1-4 |
| 1.2.2 West Alternative 2..... | 1-6 |
| 1.2.3 Central Alternative 1..... | 1-7 |
| 1.3 Project Study area Overview | 1-7 |
| 1.4 Regulatory Considerations..... | 1-8 |
| CHAPTER 2 - METHODOLOGY | 2-1 |
| 2.1 Interagency Coordination | 2-1 |
| 2.2 Desktop Review | 2-1 |
| 2.3 Study Area Soils..... | 2-1 |
| 2.4 Preliminary Field Review | 2-3 |
| 2.5 Field Reconnaissance | 2-3 |
| CHAPTER 3 - RESULTS | 3-1 |
| 3.1 Overview | 3-1 |
| 3.2 Wetlands | 3-1 |
| 3.3 Streams..... | 3-4 |
| 3.4 Other Waters | 3-5 |
| 3.5 Wetland Mitigation Sites | 3-6 |
| 3.6 Wetland Reserve Program | 3-7 |
| 3.7 Summary..... | 3-7 |
| CHAPTER 4 - REFERENCES | 4-1 |
| CHAPTER 5 - LIST OF ACRONYMS | 5-1 |
| APPENDIX A – WETLAND DATA | |
| APPENDIX B – STREAM DATA | |

APPENDIX C – DETAILED WOTUS PROJECT MAPS

APPENDIX D – NATIONAL WETLANDS INVENTORY MAP

APPENDIX E – NRCS SOILS MAPS

LIST OF TABLES

| | |
|---|-----|
| Table 2-1. Mapped Soil Types Associated with Wetlands Field-Identified in the Study Area..... | 2-2 |
| Table 3-1. Wetland Data Summary for the Study Area | 3-1 |
| Table 3-2. Perennial and Intermittent Streams..... | 3-5 |
| Table 3-3. Waterbodies and Open Water Habitat..... | 3-6 |
| Table A-1. Wetland Data Summary for the Study Area | A-2 |
| Table B-1. Stream Data Summary | B-1 |

LIST OF FIGURES

| | |
|-------------------------------------|-----|
| Figure 1-1. DEIS Project Area | 1-2 |
| Figure 1-2. DEIS Alternatives | 1-5 |

1 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Federal Highway Administration (FHWA), Indiana Department of Transportation (INDOT), and Kentucky Transportation Cabinet (KYTC) issued a revised Notice of Intent (NOI) in the *Federal Register* on February 13, 2017 for the preparation of an Environmental Impact Statement (EIS) for the I-69 Ohio River Crossing (ORX) project in the Evansville, IN and Henderson, KY area, which is part of the National I-69 Corridor that extends between Mexico and Canada. An NOI was previously issued for the project on May 10, 2001. Under that NOI, a Draft Environmental Impact Statement (DEIS) was completed in 2004, but the project was subsequently suspended in 2005.

For the new DEIS that is being prepared for the I-69 ORX project, the project area extends from I-69 (formerly I164) in Indiana on the south side of Evansville (i.e., northern terminus) across the Ohio River to I-69 (formerly Edward T. Breathitt Pennyryle Parkway) at the KY 425 interchange southeast of Henderson, KY (i.e., southern terminus) (Figure 1-1). The section of Edward T. Breathitt Pennyryle Parkway between KY 351 and KY 425 that was not re-designated as I-69, was recently re-designated as US 41. The western limit of the project area is parallel to and extends a maximum of about 2,000 feet west of US 41. The eastern limit of the project area extends about 1,500 feet to 3.4 miles east of US 41. Currently, I-69 does not cross the Ohio River and the only cross-river access between Evansville and Henderson is limited to US 41, which is classified as a principal arterial and does not meet interstate design standards.

One of the first steps in the EIS process for the I-69 ORX project was the scoping phase which included the analysis of the project's purpose and need. As a result of this analysis, the following project needs have been identified:

- Lack of National I69 Corridor system linkage
- High cost of maintaining cross river mobility on existing facilities
- Unacceptable levels of service for cross-river traffic
- High-crash locations in the I69/US 41 corridor

Based on these needs, the project's purpose includes the following:

- Provide cross-river system linkage and connectivity between I69 in Indiana and I69 in Kentucky that is compatible with the National I69 Corridor
- Develop a solution to address long-term cross-river mobility
- Provide a cross-river connection that reduces traffic congestion and delay
- Improve safety for cross-river traffic

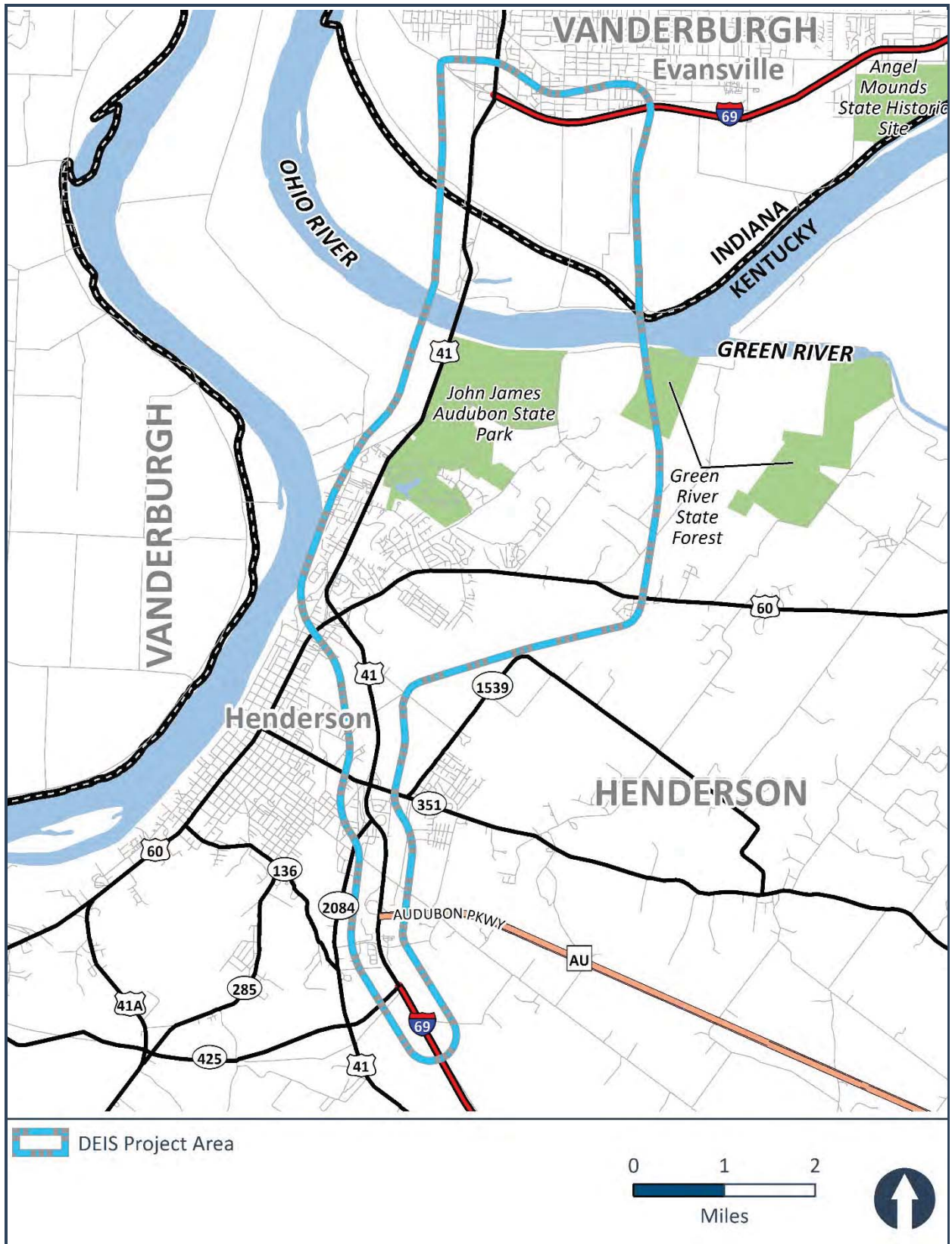


Figure 1-1. DEIS Project Area

1.2 PROJECT ALTERNATIVES

Based on the project's purpose and need, a range of alternatives was developed and evaluated using secondary source and windshield survey data, and input from the public and agencies. Because the range of alternatives was developed based on conceptual designs, they were referred to as corridors. Each corridor was evaluated on the degree to which it meets the purpose and need; its potential social, environmental, and economic impacts; and its conceptual cost. In addition to the No Build Alternative, the following five corridors were developed based on alternatives previously presented in the 2004 *Interstate 69 Henderson, Kentucky to Evansville, Indiana Draft Environmental Impact Statement* and the 2014 *I-69 Feasibility Study, Henderson, Kentucky, SIU #4, Final*:

- West Corridor 1 (Based on Alternative 7 from the 2014 Feasibility Study)
- West Corridor 2 (Based on Corridors F and G from the 2004 DEIS and Alternatives 5 and 6 from the 2014 Feasibility Study)
- Central Corridor 1 (Based on Alternative 1a from the 2014 Feasibility Study)
- Central Corridor 2 (Based on the Preferred Alternative 2 from the 2004 DEIS)
- East Corridor (Based on Alternative 3 from the 2004 DEIS)

The results of the evaluation of these corridors were presented in a *Screening Report* completed on July 28, 2017 that recommended three corridors — West Corridor 1, West Corridor 2, and Central Corridor 1 — be carried forward for more detailed evaluation in the DEIS, in addition to the No Build Alternative. In the *Screening Report*, for West Corridors 1 and 2, it was assumed that both US 41 bridges would be taken out of service and the new I-69 bridge would have six lanes. For Central Corridor 1, it was assumed that both US 41 bridges would remain open and the new I-69 bridge would have four lanes. However, the report stated that the future use of the existing US 41 bridges and corresponding number of lanes on the new I-69 bridge for each corridor would be subject to further evaluation.

Following the *Screening Report*, preliminary designs were then developed within these corridors based on public and agency input, assessment of potential environmental and right-of-way impacts, and results of a traffic analysis. Follow-on studies were conducted regarding the location and configuration of interchanges, the disposition of and long-term maintenance costs for the existing US 41 bridges, and tolling scenarios with resulting traffic patterns. This included the development, evaluation, and screening of the following three different US 41 and I-69 bridge scenarios for each of the three corridors.

- Build a six-lane I-69 bridge for all cross-river traffic and take both US 41 bridges out of service
- Build a four-lane I-69 bridge, retain the US 41 southbound bridge for two-way local traffic, and take the northbound US 41 bridge out of service.
- Build a four-lane I-69 bridge and retain both US 41 bridges for local traffic

The results from this next level of evaluation of the project corridors were presented in a *Screening Report Supplement*, dated January 2018. The *Screening Report Supplement* identified the best bridge scenario for each corridor and identified the following alternatives to be carried forward for detailed evaluation in the DEIS and this Waters of the US Technical Report.

- No Build Alternative: required by NEPA to serve as a baseline for comparison
- West Alternative 1: four lanes on the new I-69 bridge, retain the existing southbound US 41 bridge for two-way local traffic, and take the existing northbound US 41 bridge out of service
- West Alternative 2: six lanes on the new I-69 bridge and take both existing US 41 bridges out of service
- Central Alternative 1: four lanes on the new I-69 bridge, retain the existing southbound US 41 bridge for two-way local traffic, and take the existing northbound US 41 bridge out of service

Following the *Screening Report Supplement*, it was determined that the northbound US 41 bridge would be retained and the southbound US 41 bridge would be removed for West Alternative 1 and Central Alternative 1 and both bridges would be removed for West Alternative 2. The three recommended DEIS build alternatives are shown in Figure 1-2 and described in greater detail in the following sections.

Consistent with the Evansville Metropolitan Planning Organization's fiscally-constrained Metropolitan Transportation Plan, tolling I-69 will be a key part of the financing for this project. The toll policy will define business rules and toll rates for different vehicle types and will be developed with the federally required financial plan prior to construction. The NEPA process will not determine the toll policy but will evaluate, and document in the DEIS, the environmental consequences associated with tolling being a part of the project.

The DEIS will evaluate potential impacts that would result from the placement of tolls on both the I-69 bridge and the remaining northbound US 41 bridge. This would provide a "reasonable worst case" in terms of potential impacts associated with increased traffic volumes on I-69. For purposes of evaluation, it was assumed that toll rates would be similar to the Louisville, KY metropolitan area bridges for the I-65 and KY 841/SR 265 Ohio River Crossings (i.e., \$2.00 for cars, \$5.00 for medium trucks, and \$10 for large trucks).

1.2.1 WEST ALTERNATIVE 1

West Alternative 1 would include a new I-69 bridge approximately 5,400 feet long over the Ohio River and associated floodplain/floodway that would be located approximately 70 feet west of the existing southbound US 41 bridge. The new bridge would include four lanes, with the capacity to expand to six lanes in the future, if needed. The sections of the proposed new I-69 beyond the new bridge would also include four lanes. The northbound US 41 bridge would be retained and the southbound US 41 bridge would be removed. The northbound US 41 bridge, which has two lanes, would be converted from a one-way bridge to a two-way bridge for local

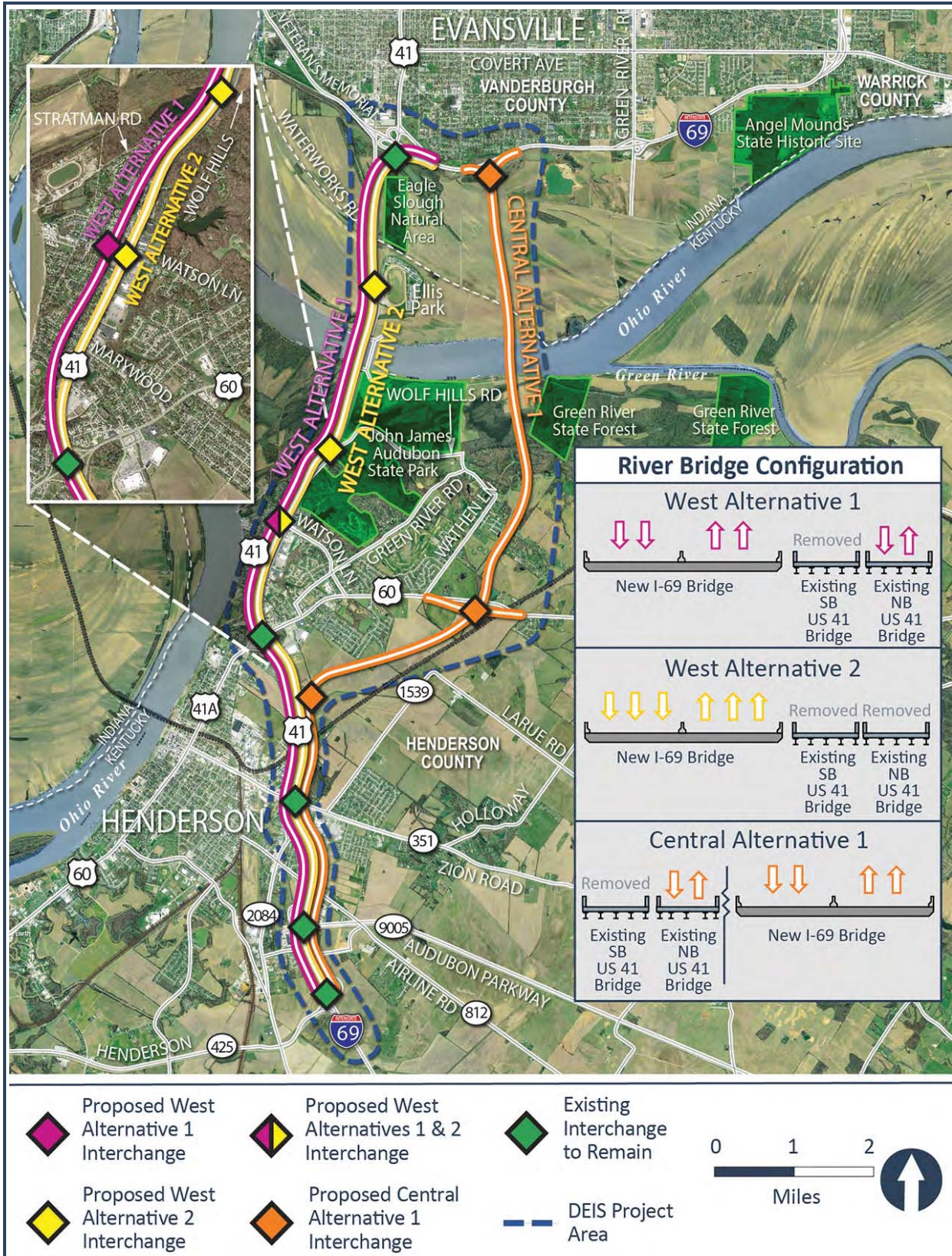


Figure 1-2. DEIS Alternatives

traffic. Most of West Alternative 1 would utilize rural design standards, including a grass median; however, through Henderson, it would utilize urban design standards and include a narrower median with a concrete barrier. West Alternative 1 would begin on existing I-69 in Indiana just east of the US 41 interchange and become the through movement for I-69. Connections to US 41 to the north and Veterans Memorial Parkway to the west would be provided. The alternative would bridge over Waterworks Road and Nugent Drive while local access to Waterworks Road and Ellis Park would be maintained by US 41.

In Kentucky, the alternative would bridge over Stratman Road, with local access to Stratman Road and Wolf Hills Road provided by US 41 and the local bridge. The alternative would continue south and run parallel to and approximately one block west of US 41 and the Henderson commercial strip. An interchange would be constructed at Watson Lane to provide highway access to the commercial strip and adjacent residential areas. An overpass (no interchange) would be provided at Barker Road to provide additional access to residential areas west of the alternative. A local access road with a side walk would be provided on the west side of the alternative between Barker Road and Atkinson Park. The alternative would then continue south and tie into the existing four-lane, fully-controlled access section of US 41 south of the US 60 interchange. The US 60 interchange would be modified to provide connections to and from existing US 41, US 60, and I-69. US 41 (formerly named the Edward T. Breathitt Pennyryle Parkway) south of US 60 to KY 425, where I-69 in Kentucky currently ends, would be modernized to meet interstate standards. The total length of West Alternative 1 is 11.1 miles, which includes 2.9 miles of existing US 41.

1.2.2 WEST ALTERNATIVE 2

As with West Alternative 1, West Alternative 2 would include a new I-69 bridge approximately 5,400 feet long over the Ohio River and associated floodplain/floodway that would be located approximately 70 feet west of the existing southbound US 41 bridge. The new I-69 bridge for West Alternative 2 would include six lanes and both of the existing US 41 bridges would be taken out of service. The sections of the proposed new I-69 beyond the new bridge would also include six lanes. Most of West Alternative 2 would utilize rural design standards, including a grass median; however, through Henderson, it would utilize urban design standards and include a narrower median with a concrete barrier. Similar to West Alternative 1, West Alternative 2 would begin on existing I-69 in Indiana just east of the US 41 interchange and become the through movement for I-69. Connections to US 41 to the north and Veterans Memorial Parkway to the west would be provided. From the US 41/I-69 interchange to Ellis Park, the alternative would follow the existing US 41 alignment. Through this area, Waterworks Road would bridge over the alternative and an interchange would be provided at Ellis Park.

In Kentucky, the alternative would follow existing US 41 through the Henderson commercial strip, with local access provided via a reconstructed US 41 located adjacent to and east of the alternative. The reconstructed US 41 would include two lanes plus left turn lanes where needed. An interchange would be provided at Stratman Road/Wolf Hills Road and at Watson Lane. At the Watson Lane interchange, US 41 would be relocated approximately 300 feet to the east to provide adequate spacing between the interchange and the US 41/Watson Lane intersection. An

overpass (no interchange) would be provided at Rettig Road to provide additional access to residential areas west of the alternative. In addition, a pedestrian/bicycle path would be provided on the west side of the alternative. The alternative would continue south, within the US 41 corridor, to the existing US 60 interchange, which would be modified to provide connections to and from existing US 41, US 60, and I-69. The existing four-lane section of US 41 (formerly named the Edward T. Breathitt Pennyryle Parkway) south of US 60 to KY 425, where I-69 in Kentucky currently ends, would be modernized to meet interstate standards. The total length of West Alternative 2 is 11.0 miles, which includes 2.9 miles of existing US 41.

1.2.3 CENTRAL ALTERNATIVE 1

Central Alternative 1 would include a new I-69 bridge approximately 7,600 feet long over the Ohio River and associated floodplain/floodway that is located approximately 1.5 miles east of the existing US 41 bridges. The new I-69 bridge would include four lanes, with the capacity to expand to six lanes in the future, if needed. The sections of the proposed new I-69 beyond the new bridge would also include four lanes. The northbound US 41 bridge would be retained and the southbound US 41 bridge would be removed. The northbound US 41 bridge, which has two lanes, would be converted from a one-way bridge to a two-way bridge for local traffic. Central Alternative 1 would utilize rural design standards and include a depressed grass median outside of the bridge limits.

Central Alternative 1 begins at existing I-69 in Indiana, approximately 1 mile east of the US 41 interchange. The alternative would continue south across the Ohio River just west of a gas transmission line. It would remain just west of the gas transmission line near the Green River State Forest, then turn southwest where an access road for the gas transmission line would bridge over the alternative. The alternative would continue south to US 60 where an interchange would be provided. As part of the US 60 interchange, US 60 would be relocated approximately 400 feet south, which would require a new bridge over the CSX Railroad east of the interchange. The alternative would continue southwest and tie into to US 41 via an interchange approximately 1 mile south of the US 60 interchange. From the alternative's interchange with US 41 to KY 425, the existing four-lane US 41 would be modernized to meet interstate standards through improvements to ramps and merge areas. The total length of Central Alternative 1 is 11.2 miles, which includes 2.8 miles of existing US 41.

1.3 PROJECT STUDY AREA OVERVIEW

The study area for Waters of the United States (WOTUS) and waters of the state, including streams, wetlands, and ponds, included all areas within the alternative alignments, hereafter "alternative(s)", plus a buffer around those alternatives. The study area widths varied. In general, an approximately 300-foot wide corridor was surveyed along the proposed alternatives with the corridor widened at all proposed interchanges. In addition, as the preliminary design of the alternatives progressed, minor shifts in the alignments were made to improve the facility design or to avoid known or newly-discovered features, such as wetland mitigation sites or cultural resources. Particular focus was on features that would be either directly impacted by the potential limits of disturbance, or that would receive drainage from the potential limits of disturbance, thereby potentially incurring indirect impacts from the project.

The alternatives were surveyed using the guidelines and procedures defined in the 1987 U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* (USACE 1987). For areas north of the Ohio River and north of Waterworks Road, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0) (USACE 2010) was used. For areas in Kentucky, primarily south of the Ohio River but also including areas north of the Ohio River but south of Waterworks Road, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) (USACE 2012) was used.

Prior to field investigations, a desktop analysis of available information was reviewed and potential wetland areas were identified using published data, including: 2004 I-69 DEIS and supplemental studies; National Wetlands Inventory (NWI) maps; U.S. Geological Survey (USGS) topographic maps; aerial photography; aerial color infrared photography, where available; and Natural Resources Conservation Service (NRCS) soils maps. The NWI mapping was used as an initial screen to determine locations of potential water resources within the project area. NWI wetlands are illustrated in the detailed mapping provided in Appendix D. The study area for wetlands and WOTUS, including streams and headwaters, included all areas within the alternatives and in a wider study corridor, as described in the Methodology Section below.

1.4 REGULATORY CONSIDERATIONS

The USACE, under Section 404 of the Clean Water Act (CWA), regulates WOTUS which include federally jurisdictional wetlands, streams, and other surface waters. The U.S. Environmental Protection Agency (EPA) and USACE have promulgated regulations to implement the permitting program. WOTUS under the Clean Water Act, including streams and wetlands, are defined by the EPA [<https://www.epa.gov/cwa-404/definition-waters-united-states-under-clean-water-act>] and 40 CFR 230.3(s). Wetlands are currently defined by USACE (33 CFR 328.3[b]) and EPA (40 CFR 230.3[s]) as:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetlands provide valuable habitat for aquatic and terrestrial wildlife; improve water quality through nutrient and pollutant uptake; perform important hydrologic functions, such as regulating storm flow; maintain food chain and nutrient cycling functions; serve socioeconomic roles, such as recreational activities or timber production; and may support rare, threatened, and endangered species.

Based upon USACE and EPA regulatory guidance following recent court cases, to be considered jurisdictional, a wetland area must be adjacent to other WOTUS or display a level of connectivity to the local watershed and satisfy criteria for hydrology, hydric soils, and hydrophytic vegetation (DOJ 2001 and DOJ 2006). Wetland hydrology means that water permanently or periodically inundates soils or that the soil is saturated to the surface for a given duration during the growing season. Hydric soils show signs of reduced rather than oxidized soil conditions. Hydrophytic

plants have adapted to areas having hydric soils and/or to areas that have inundated or saturated soils, which create anaerobic conditions.

Executive Order 11990, Protection of Wetlands, mandates that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance their natural values.

Streams are linear geographic features that convey flowing waters. Headwater streams are the uppermost, low-order streams of a watershed and comprise the majority of streams in the United States, both in terms of numbers and length. Streams can be perennial, intermittent, or ephemeral, and, in general, they include navigable waters, traditional navigable waters (TNW), relatively permanent waters that flow into TNW, and non-relatively permanent waters that flow directly or indirectly into TNW where there is a significant nexus. Regulated streams are defined by 40 CFR 230.3(s), and all final jurisdictional determinations will be approved by the USACE.

Section 401 of the CWA provides the state(s) authority to issue certification that proposed dredge and fill activities will not violate applicable state water quality standards. Part 230.10(a)(5)(b) of the guidelines states that no discharge of dredged or fill material shall be permitted if it “causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standards.” A Section 401 certification (or waiver) is required for any discharge regulated under Section 404. The Indiana Department of Environmental Management (IDEM) administers Section 401 Water Quality Certification (401 WQC) for water quality impacts to WOTUS. Isolated wetlands (those wetlands not regulated under the federal CWA are regulated under Indiana's State Isolated Wetlands law. Impacts to isolated wetlands require a state Isolated Wetland Permit from IDEM.

The Kentucky Division of Water (KDOW), Water Quality Certification Section administers the Section 401 Water Quality Certification Program for the Commonwealth of Kentucky. KDOW provides the review and authorization of selected federal licenses and permits. This includes Section 401 certification and Clean Water Act Section 404 permits for discharge of dredged or fill material issued by the USACE, Federal Energy Regulatory Commission (FERC) hydropower licenses, and Rivers and Harbors Act Section 9 and Section 10 permits for activities that have a potential discharge in navigable waters issued by the USACE. A Section 401 certification from the Commonwealth of Kentucky also affirms that the discharge will not violate Kentucky's water quality standards. KDOW does not have an isolated wetland permit as discussed above for IDEM.

Kentucky Revised Statute 150.255 authorizes the Kentucky Department of Fish & Wildlife Resources to conduct mitigation and to recover costs associated conducting mitigation. No state general fund tax dollars or Department license dollars are used to fund the program (KDFWR 2018).

Federal regulations require that in-lieu fee Sponsors use full cost accounting in setting credit prices in accordance with the “Final Rule” at 33 C.F.R. §332.8(o)(5)(ii). This means that credit rates must be sufficient to fund all costs of an in-lieu fee mitigation program. The Sponsor shall determine the cost of compensatory mitigation credits (KDFWR 2018).

Per the KDFWR 2018, pursuant to the federal regulation, the Instrument authorized by the U.S. Army Corps of Engineers for the in-lieu fee program officially established the Department as an in-lieu fee Sponsor and the rules for setting credit rates. The Instrument may be viewed at: <http://fw.ky.gov/pdf/filoinstrument.pdf> . The Instrument requires the Department to set fees,

“...to reflect the expected costs associated with the mitigation, based on "full cost accounting" and include, as appropriate: land or easement acquisition, project planning and design, construction, plant materials, labor, legal fees, monitoring, remediation or adaptive management activities, administrative costs, contingencies (including construction and real estate expenses), long term management and protection, financial assurances, or other costs. The Sponsor may adjust fees as necessary ...”

If a build alternative is selected, the Kentucky in-lieu fee mitigation program will be considered as part of the overall mitigation and permitting package.

2 METHODOLOGY

2.1 INTERAGENCY COORDINATION

An interagency coordination (IAC) meeting was held on April 12, 2017 to discuss the I-69 ORX project DEIS and study effort. As part of the IAC meeting, a general approach to the data collection of WOTUS was presented and discussed with USACE, IDEM, and KDOW. The level of effort for the field surveys was further refined by INDOT, and it was determined that a complete WOTUS report would be developed after the Preferred Alternative for the project is selected. The WOTUS report presented here includes an overview (desktop survey) and general field check of water resources for the alternatives under consideration.

The purpose of the field effort and this subsequent WOTUS Technical Report was to collect data to identify potential wetlands, streams, and other jurisdictional waters sufficient to provide informed guidance for the decision-maker in the I-69 ORX DEIS. In most cases, the field effort and data collected was not sufficient to apply for a CWA Section 404/401 permit, however the data collected would be valid to be included in further permitting efforts, and it would form the basis of the final permitting effort, if a build alternative is selected.

2.2 DESKTOP REVIEW

The primary data sources for the preliminary analysis of the study area included NWI maps; USGS 7.5-minute series topographic maps; NRCS soil mapping for Vanderburgh County, Indiana and Henderson County, Kentucky; and previous studies for the project area, specifically the 2004 *I-69 Henderson, Kentucky to Evansville, Indiana Draft EIS* (INDOT and KYTC 2004) and the 2005 *Preliminary Wetland Delineation Report – I-69 Henderson to Evansville in Vanderburgh and Warrick Counties, Indiana and Henderson County, Kentucky* (BLA 2005). Aerial photography and aerial color infrared photography were also reviewed prior to field surveys.

A desktop review of the study area that included the use of the resources described above was completed, and the data were entered into a geographic information system (GIS) database. With this preliminary data, a preliminary field review was planned.

2.3 STUDY AREA SOILS

Hydric soils are soils that are inundated with water long enough to produce anaerobic conditions, and they are one indicator of jurisdictional wetlands. Generally, hydric soils are those soils that are poorly drained or very poorly drained. Hydric soils may indicate the presence of wetlands or high water tables. In the Ohio River floodplain, previously mapped hydric soils are often underlain with buried agricultural drain tiles.

The NRCS database includes a listing of soil map units that relate to specific soil series. A soil series is the lowest, most homogeneous class in the soil taxonomy system. Each soil series has

distinct soil attributes that are defined by the NRCS. The soil attributes include physical and chemical properties and interpretive groupings produced by the NRCS, including attributes that relate to potential soil impacts. Examples of those soil attributes include the topographic setting and average slope, hydric soil conditions, drainage characteristics, susceptibility to water and wind erosion, and suitability for use as farmland. Table 2-1 summarizes the soil map units associated with wetland areas identified during the field surveys. NRCS soil map units are illustrated in the detailed mapping provided in Appendix E.

Table 2-1. Mapped Soil Types Associated with Wetlands Field-Identified in the Study Area

| SOIL | ABBREVIATION | KENTUCKY | INDIANA |
|---|--------------|------------------------------------|------------------------------------|
| | | HYDROLOGIC SOIL GROUP ¹ | HYDROLOGIC SOIL GROUP ¹ |
| Borrow pits | Br | No rating | No rating |
| Newark silty clay loam | Ns/Nw | B/D | B/D |
| Lindside silty clay loam | Le/Ln | C | B/D |
| Huntington silty clay loam | Ht | - | B |
| Weinbach silt loam | Wh/Wb | C/D | C/D |
| Made land | Ma | No rating | No rating |
| Melvin silty clay loam | Mn | B/D | - |
| Egam silty clay loam | Ec | C | - |
| Huntington fine sandy loam, 0 to 4 percent slopes | HnA | A | - |
| Huntington silt loam, 0 to 4 percent slopes, occasionally flooded | HsA | B | - |
| Ashton silt loam | As | B | - |
| Sciotoville fine sandy loam, 0 to 2 percent slopes | ScA | C/D | - |
| Sciotoville silt loam, 2 to 6 percent slopes, eroded (otwell flooded) | SeB2 | D | - |
| Newark silt loam, 0 to 2 percent slopes, occasionally flooded | Ne | B/D | - |
| Melvin silt loam, 0 to 2 percent slopes, occasionally flooded | uMeIA | C/D | - |
| Sharon silt loam, 0 to 2 percent slopes, occasionally flooded | uShaA | C | - |
| Belknap silt loam, 0 to 2 percent slopes, occasionally flooded | uBeIA | B/D | - |
| Alford silt loam, 30 to 60 percent slopes | uAlfF | B | - |
| Hosmer silt loam, 6 to 12 percent slopes, severely eroded | uHosC3 | D | - |
| Dekoven and wakeland silt loams | Dw | B/D | - |
| Alford silt loam, 12 to 20 percent slopes, severely eroded | uAlfD3 | B | - |
| Wakeland silt loam, 0 to 2 percent slopes, occasionally flooded | uWakA | B/D | - |
| Wheeling silt loam, 2 to 6 percent slopes, eroded (elk flooded) | WpB2 | B | - |

Table 2-1. Mapped Soil Types Associated with Wetlands Field-Identified in the Study Area

| SOIL | ABBREVIATION | KENTUCKY | INDIANA |
|---|--------------|------------------------------------|------------------------------------|
| | | HYDROLOGIC SOIL GROUP ¹ | HYDROLOGIC SOIL GROUP ¹ |
| Wheeling silt loam, 0 to 2 percent slopes (elk flooded) | WpA/WhA | B | B |
| Dekoven silt loam | De | B/D | - |
| Woodmere silty clay loam | Wo | - | C |
| Wheeling loam, 2 to 6 percent slopes, eroded | WhB2 | - | B |

Source: NRCS 1967; NRCS 1976; NRCS; 2016; and NRCS 2017.

Table Note:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes. If a soil group is not provided, the soil group is not present in the project area.

2.4 PRELIMINARY FIELD REVIEW

Using the data obtained during the desktop review, a windshield field review of the five alternatives discussed in Section 1.3 was completed May 9–10, 2017. The desktop data were either verified or revised during this field review, and some areas that had not been previously mapped were included as potential wetlands, streams, or other waters. This data was used during the development of the *I-69 ORX Screening Report* (INDOT and KYTC 2017).

2.5 FIELD RECONNAISSANCE

The purpose of the field effort and this subsequent WOTUS Technical Report was to collect data to identify potential wetlands, streams, and other waters sufficient to provide informed guidance for the decision-maker in the I-69 ORX DEIS, and to provide initial data for permitting efforts on the Preferred Alternative. In most cases, the field effort and data collected would not be sufficient to apply for a CWA Section 404/401 permit, however the data collected would be valid for inclusion in further permitting efforts, and would form the basis of the final permitting effort if a build alternative is selected in the DEIS. The level of detail provided in this technical report allowed the design team to avoid or minimize impacts to WOTUS and known wetland mitigation sites, and it will aid the decision-maker in the selection of the Preferred Alternative.

In the *Screening Report*, multiple corridors were evaluated to determine if they met the purpose and need of the project. The selected alternatives were then field surveyed using the guidelines and procedures defined in the 1987 U.S. Army Corps of Engineers *Wetland Delineation Manual*.

Per guidance from USACE, for areas north of the Ohio River and north of Waterworks Road (Indiana), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0) was used, and for areas north of the Ohio River but south of Waterworks Road and south of the Ohio River (Kentucky), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) was used.

Field surveys were conducted during the growing season, beginning in June 2017 and concluding in the latter part of October 2017. At the request of INDOT and KYTC, the WOTUS surveys used existing data to the extent possible, and general surveys were conducted to delineate the wetland boundaries. Areas delineated during the 2005 wetland delineation effort (BLA 2005) were visited to verify their existence, and some of the boundaries were extended to meet the current study corridors. New wetland data sheets were not prepared for the 2005 wetlands. All other wetlands were delineated in the field, data were recorded on applicable data sheets, wetlands were photographed, and the boundaries were mapped using a Global Positioning System (GPS) unit (Trimble Geo7x).

The functions and values of each delineated wetland are included in Appendix A. The assessment was a rapid in-the-field-check of functions and values of each wetland based on the best professional judgment of the wetland scientists conducting the surveys.

Perennial and intermittent streams (drainage area greater than one square mile) were evaluated in the field using the Ohio EPA Qualitative Habitat Evaluation Index (QHEI), photographed, and mapped with a GPS unit. All ephemeral streams and ditches along with visible culverts were mapped with the GPS unit. The GPS data was converted to ArcGIS shapefiles, data was attributed, and entered into the project GIS database.

3 RESULTS

3.1 OVERVIEW

The majority of the I-69 ORX project area lies within the Ohio River floodplain. Consequently, most of the wetlands and wetland acreage affected by the project alternatives are typical of large river floodplains, such as bottomland hardwood wetlands or herbaceous and scrub-shrub wetlands that had been previously cleared or disturbed by agriculture and/or other development. Smaller tributaries including Eagle Creek, Mound Slough, Sugar Creek, and the multiple tributaries to North Fork Canoe Creek are all tributaries to the Ohio River. Although there are five perennial streams, such as Eagle Creek and North Fork Canoe Creek, and four intermittent streams, including Mound Slough and Sugar Creek, the majority of waterway/stream channels identified in the I-69 ORX study area are ephemeral. Most of the streams in the study area have been channelized.

3.2 WETLANDS

There were 64 wetlands identified and/or confirmed during the field surveys. The approximate wetland type, size (acreage), and estimated disturbance are shown on Table 3-1. Wetland data sheets and photographs are presented in Appendix A and are illustrated in the detailed mapping provided in Appendix C. All wetlands presented in Table 3-1 are likely jurisdictional; no isolated wetlands were identified. All final jurisdictional determinations will be made by USACE. If a build alternative is selected as the Preferred Alternative, detailed wetland delineations will be completed for that alternative.

Wetlands were avoided, where feasible, during development of project alternatives in several ways. First, existing data from previous surveys (e.g., BLA 2005), published data (e.g., NWI mapping), and windshield surveys, were used to avoid or minimize impacts by shifting alignments and interchange configurations. Second, additional refinements to the alternative footprints were made as field data was being collected, providing further avoidance and impact minimization to likely jurisdictional areas.

Table 3-1. Wetland Data Summary for the Study Area

| WETLAND ID | WETLAND TYPE ¹ | LATITUDE ² | LONGITUDE ² | WETLAND IMPACT ³ | | |
|------------|---------------------------|-----------------------|------------------------|-----------------------------|--------------------|--------------------|
| | | | | CENTRAL ALTERNATIVE 1 | WEST ALTERNATIVE 1 | WEST ALTERNATIVE 2 |
| WTL-01 | PFO | 37.93697 | -87.52069 | 6.7 | 0.4 | 0.4 |
| WTL-02 | PFO | 37.93794 | -87.52250 | 0.0 | 0.0 | 0.0 |
| WTL-03 | PFO | 37.93759 | -87.52503 | 0.0 | 0.0 | 0.0 |
| WTL-04 | PFO | 37.93572 | -87.52649 | 0.4 | 0.4 | 0.4 |
| WTL-05 | PSS | 37.93551 | -87.53290 | 0.0 | 0.1 | 0.1 |

Table 3-1. Wetland Data Summary for the Study Area

| WETLAND ID | WETLAND TYPE ¹ | LATITUDE ² | LONGITUDE ² | WETLAND IMPACT ³ | | |
|-----------------------|---------------------------|-----------------------|------------------------|-----------------------------|--------------------|--------------------|
| | | | | CENTRAL ALTERNATIVE 1 | WEST ALTERNATIVE 1 | WEST ALTERNATIVE 2 |
| WTL-06 | PFO | 37.93533 | -87.53541 | 0.0 | 0.6 | 0.5 |
| WTL-07 | PEM/PFO | 37.93711 | -87.53869 | 0.0 | 0.1 | 0.1 |
| WTL-08 | PFO | 37.93661 | -87.53939 | 0.0 | 0.2 | 0.2 |
| WTL-09 | PFO | 37.93779 | -87.54115 | 0.0 | 0.0 | 0.0 |
| WTL-10 | PFO | 37.93721 | -87.54154 | 0.0 | 0.1 | 0.1 |
| WTL-11 | PEM/PSS/PFO | 37.93581 | -87.54330 | 0.0 | 17.9 | 5.9 |
| WTL-12 | PFO | 37.93844 | -87.54288 | 0.0 | 0.0 | 0.0 |
| WTL-13 | PFO | 37.93771 | -87.54331 | 0.0 | 0.0 | 0.0 |
| WTL-14 | PFO | 37.93796 | -87.54430 | 0.0 | 0.0 | 0.0 |
| WTL-15 | PFO | 37.93849 | -87.54606 | 0.0 | 0.0 | 0.0 |
| WTL-16 | PFO | 37.93054 | -87.54895 | 0.0 | 4.7 | 2.1 |
| WTL-17 | PFO | 37.92881 | -87.54560 | 0.0 | 0.0 | 0.0 |
| WTL-18 | PFO | 37.92648 | -87.54951 | 0.0 | 1.8 | 0.3 |
| WTL-19 | PFO | 37.92497 | -87.54731 | 0.0 | 0.0 | 0.0 |
| WTL-20 | PFO | 37.92363 | -87.54591 | 0.0 | 0.0 | 0.0 |
| WTL-21 | PEM | 37.92225 | -87.54503 | 0.0 | 0.0 | 0.0 |
| WTL-22 | PFO/PEM | 37.92283 | -87.54717 | 0.0 | 0.0 | 0.3 |
| WTL-23 | PEM | 37.92100 | -87.54803 | 0.0 | 1.1 | 2.0 |
| WTL-24 | PEM/PSS/PFO | 37.92139 | -87.54968 | 0.0 | 1.0 | 0.2 |
| WTL-25 | PSS | 37.91708 | -87.55019 | 0.0 | 0.5 | 0.0 |
| WTL-26 | PFO | 37.91163 | -87.55025 | 0.0 | 0.2 | 0.1 |
| WTL-27 | PFO | 37.91012 | -87.55041 | 0.0 | 0.0 | 0.0 |
| WTL-28 | PEM | 37.90076 | -87.55455 | 0.0 | 0.0 | 0.0 |
| WTL-29 | PEM/PFO | 37.89858 | -87.55441 | 0.0 | 2.7 | 2.6 |
| WTL-30 | PFO | 37.89764 | -87.55293 | 0.0 | 0.0 | 0.0 |
| WTL-31 | PFO | 37.89577 | -87.55577 | 0.0 | 2.6 | 2.5 |
| WTL-32 | PEM/PFO | 37.89234 | -87.54895 | 0.0 | 0.0 | 0.0 |
| WTL-33 | PEM/PSS/PFO | 37.88828 | -87.56220 | 0.0 | 20.9 | 17.3 |
| WTL-34 | PFO | 37.88887 | -87.55442 | 0.0 | 0.0 | 0.0 |
| WTL-35 ⁽⁴⁾ | PFO | 37.88363 | -87.57639 | 0.0 | 0.0 | 0.0 |
| WTL-36 | PSS | 37.85557 | -87.57367 | 0.0 | 0.0 | 0.0 |
| WTL-37 | PFO | 37.85003 | -87.56846 | 0.0 | 0.0 | 0.0 |
| WTL-38 | PEM | 37.83593 | -87.56524 | 0.0 | 0.0 | 0.0 |
| WTL-39 | PEM | 37.83351 | -87.56561 | 0.0 | 0.0 | 0.0 |
| WTL-40 | PEM | 37.83119 | -87.56769 | 0.0 | 0.0 | 0.0 |
| WTL-41 | PEM | 37.83073 | -87.56557 | 0.0 | 0.0 | 0.0 |
| WTL-42 | PSS | 37.83041 | -87.56440 | 0.0 | 0.0 | 0.0 |
| WTL-43 | PEM | 37.82990 | -87.56733 | 0.0 | 0.0 | 0.0 |

Table 3-1. Wetland Data Summary for the Study Area

| WETLAND ID | WETLAND TYPE ¹ | LATITUDE ² | LONGITUDE ² | WETLAND IMPACT ³ | | |
|-----------------------|---------------------------|-----------------------|------------------------|-----------------------------|--------------------|--------------------|
| | | | | CENTRAL ALTERNATIVE 1 | WEST ALTERNATIVE 1 | WEST ALTERNATIVE 2 |
| WTL-44 | PEM | 37.82811 | -87.56665 | 0.0 | 0.0 | 0.0 |
| WTL-45 | PEM | 37.82729 | -87.56652 | 0.0 | 0.0 | 0.0 |
| WTL-46 | PEM | 37.82597 | -87.56589 | 0.0 | 0.0 | 0.0 |
| WTL-47 | PEM | 37.82463 | -87.56791 | 0.0 | 0.0 | 0.0 |
| WTL-48 | PEM | 37.81786 | -87.56323 | 0.0 | 0.0 | 0.0 |
| WTL-49 | PEM | 37.81786 | -87.56290 | 0.0 | 0.0 | 0.0 |
| WTL-50 | PEM | 37.81714 | -87.56299 | 0.0 | 0.0 | 0.0 |
| WTL-51 | PEM | 37.81656 | -87.56256 | 0.0 | 0.0 | 0.0 |
| WTL-52 ⁽⁴⁾ | PFO | 37.93870 | -87.50658 | 0.0 | 0.0 | 0.0 |
| WTL-53 | PFO | 37.93901 | -87.51192 | 0.0 | 0.0 | 0.0 |
| WTL-54 ⁽⁴⁾ | PSS | 37.93808 | -87.50978 | 0.0 | 0.0 | 0.0 |
| WTL-55 | PFO | 37.93764 | -87.51128 | 0.0 | 0.0 | 0.0 |
| WTL-56 | PFO | 37.93827 | -87.51470 | 0.0 | 0.0 | 0.0 |
| WTL-57 | PFO | 37.93557 | -87.52003 | 1.4 | 0.0 | 0.0 |
| WTL-58 | PEM/PFO | 37.89886 | -87.51964 | 1.4 | 0.0 | 0.0 |
| WTL-59 | PFO | 37.89328 | -87.51710 | 7.3 | 0.0 | 0.0 |
| WTL-60 | PFO | 37.88543 | -87.51528 | 0.2 | 0.0 | 0.0 |
| WTL-61 | PEM | 37.88226 | -87.51322 | 0.0 | 0.0 | 0.0 |
| WTL-62 | PSS | 37.88158 | -87.51591 | 0.2 | 0.0 | 0.0 |
| WTL-63 | PSS | 37.88135 | -87.51786 | 0.0 | 0.0 | 0.0 |
| WTL-64 | PSS | 37.87647 | -87.52046 | 0.0 | 0.0 | 0.0 |
| TOTALS | | | | 17.6 | 55.4 | 35.1 |

Source: BLA, 2005 and Parsons, 2017.

Table Notes:

1. Wetland types include: PFO = Palustrine Forested; PSS = Palustrine Scrub-Shrub; and PEM = Palustrine Emergent.

2. The latitude and longitude identify the midpoint of the wetland.

3. Wetland impact is the overall acreage of the wetland within the construction limits.

4. Wetland is outside of the project area, so it is not shown on the detailed maps in the Appendices.

As shown on Table 3-1, for West Alternative 1 approximately 55.4 acres in 18 wetlands would lie within the project limits; for West Alternative 2 approximately 35.1 acres in 17 wetlands would lie within the project limits; and for Central Alternative 1 approximately 17.6 acres in 7 wetlands would lie within the project limits. The project limits used in this analysis are based on the potential project limits as of December 4, 2017.

Each alternative has the potential to have indirect impacts to wetlands. Indirect impacts could result from temporary construction measures, impacts to wetland hydrology that occur outside the project limits, and new development that occurs as a result of the project. The indirect impact analysis is ongoing. Indirect impacts to wetlands will be reported in the DEIS.

The functions and values of each delineated wetland are included in the data sheets in Appendix A. This assessment was based on a rapid field-check and the professional judgment of the wetland scientists conducting the survey.

Wetlands that were small and/or were immediately adjacent to the existing roadways, such as US 41, generally had low function and value, especially for wildlife. The larger more diverse wetlands, such as those on Central Alternative 1 south of the Ohio River, had higher scores. In general, the wetlands on new alignment had much higher functional values, because of the undisturbed condition.

The wetlands present in West Alternatives 1 and 2 have generally low functional values for terrestrial and aquatic wildlife habitat and low visual/aesthetic quality primarily due to the proximity to existing roadways, primarily US 41, and other disturbances and development. West Alternatives 1 and 2 had low to moderate functional values for floodwater alteration/retention; erosion control and stabilization; and sediment, nutrient, and toxicant removal. Central Alternative 1 had moderate to high functional values for terrestrial and aquatic wildlife habitat and low to moderate visual/aesthetic quality due to their position in the landscape, less man-made disturbance, and more natural habitat diversity.

3.3 STREAMS

The perennial and intermittent streams are shown on Table 3-2. Five streams were classified as perennial, including the Ohio River, Eagle Creek, and North Fork Canoe Creek and their tributaries. They comprise less than 6 percent of all the streams identified. Four ephemeral or intermittent streams were identified including Mound Slough (STR-27) and Sugar Creek (STR-60). Data sheets for perennial and intermittent streams, and a stream summary table, are provided in Appendix B (Stream Data). There were 82 ephemeral streams identified during the field investigation. They are illustrated on the maps provided in Appendix C.

Table 3-2. Perennial and Intermittent Streams

| STREAM ID | STREAM NAME | STREAM TYPE ¹ | LATITUDE ² | LONGITUDE ² | STREAM IMPACT ³ | | |
|---------------|-------------------------------------|--------------------------|-----------------------|------------------------|----------------------------|---------------|---------------|
| | | | | | CENTALT1 | WESTALT1 | WESTALT2 |
| STR-12 | Tributary to Eagle Creek | Ephemeral/Interrmittent | 37.93681 | -87.53879 | 0.0 | 400.8 | 377.3 |
| STR-13 | Eagle Creek | Perennial | 37.93519 | -87.52548 | 944.2 | 1035.3 | 887.0 |
| STR-20 | Tributary to Ohio River | Perennial | 37.92286 | -87.54817 | 0.0 | 309.3 | 192.4 |
| STR-23 | Tributary to Ohio River | Perennial | 37.91087 | -87.55000 | 0.0 | 144.9 | 171.0 |
| STR-26 | Ohio River | Perennial | 37.90445 | -87.51727 | 93.5 | 133.7 | 133.7 |
| STR-27 | Mound Slough | Intermittent | 37.89568 | -87.55246 | 0.0 | 133.5 | 133.5 |
| STR-60 | Sugar Creek | Intermittent | 37.86467 | -87.57527 | 0.0 | 255.4 | 0.0 |
| STR-78 | North Fork Canoe Creek | Perennial | 37.84522 | -87.56506 | 570.0 | 176.2 | 172.3 |
| STR-158 | Tributary to North Fork Canoe Creek | Intermittent | 37.84737 | -87.56349 | 682.6 | 0.0 | 0.0 |
| TOTALS | | | | | 2290.3 | 2589.0 | 2067.2 |

Source: Parsons, 2017.

Table Notes:

1. Some intermittent streams transitioned to ephemeral in their upper reaches and were mapped as ephemeral/intermittent.
2. The latitude and longitude identify the midpoint of the stream.
3. Stream impact is the overall length of the stream within the construction limits, expressed as linear feet.

3.4 OTHER WATERS

Other waters present in the I-69 ORX study area include: borrow pits, open water sloughs that may be remnant Ohio River channels, and man-made ponds. They are illustrated on the maps provided in Appendix C. The borrow pits were primarily in the northern third of the project area in Indiana with connections to Eagle Creek or immediately adjacent to US 41. There is one large borrow pit along the West Alternatives south of the Ohio River and west of US 41. This pit has connections to Mound Slough in flood events. Smaller man-made retention ponds are also found immediately adjacent to the study corridor alignments but will likely not be impacted.

As shown on Table 3-3, approximately 9.6 acres in six open water habitats would lie within the project limits of West Alternative 1. For West Alternative 2, approximately 2.8 acres in three open water habitats would lie within the project limits. For Central Alternative 1 approximately 12.7 acres in one open water habitat (OW-4) would lie within the project limits.

Open water features would be indirectly impacted by one or more of the alternatives. Indirect impacts would result from temporary construction measures or impacts to wetland hydrology. The indirect impact analysis is ongoing. Indirect impacts to waterbodies will be reported in the DEIS.

Table 3-3. Waterbodies and Open Water Habitat

| WATERBODY NAME | HABITAT TYPE | NATURAL FEATURE | LATITUDE ¹ | LONGITUDE ¹ | WATER IMPACT ² | | |
|----------------|----------------|-----------------|-----------------------|------------------------|---------------------------|----------|----------|
| | | | | | CENTALT1 | WESTALT1 | WESTALT2 |
| OW-1 | Borrow pit | Man-made | 37.93768 | -87.50963 | 0.0 | 0.0 | 0.0 |
| OW-2 | Borrow pit | Man-made | 37.93753 | -87.51170 | 0.0 | 0.0 | 0.0 |
| OW-3 | Borrow pit | Man-made | 37.93776 | -87.51434 | 0.0 | 0.0 | 0.0 |
| OW-4 | Borrow pit | Man-made | 37.93447 | -87.52282 | 12.7 | 0.0 | 0.0 |
| OW-5 | Borrow pit | Man-made | 37.93513 | -87.54110 | 0.0 | 2.9 | 1.0 |
| OW-6 | Borrow pit | Man-made | 37.93433 | -87.54301 | 0.0 | 0.4 | 0.0 |
| OW-7 | Borrow pit | Man-made | 37.93225 | -87.54486 | 0.0 | 0.0 | 0.0 |
| OW-8 | Borrow pit | Man-made | 37.92088 | -87.54992 | 0.0 | 1.5 | 0.0 |
| OW-9 | Borrow pit | Man-made | 37.91736 | -87.55020 | 0.0 | 3.2 | 0.0 |
| OW-10 | Slough | Natural | 37.91098 | -87.54868 | 0.0 | 0.6 | 0.7 |
| OW-11 | Borrow pit | Man-made | 37.89400 | -87.55691 | 0.0 | 1.0 | 1.1 |
| OW-12 | Borrow pit | Man-made | 37.87516 | -87.52182 | 0.0 | 0.0 | 0.0 |
| OW-13 | Borrow pit | Man-made | 37.86552 | -87.52296 | 0.0 | 0.0 | 0.0 |
| OW-14 | Retention pond | Man-made | 37.89197 | -87.55288 | 0.0 | 0.0 | 0.0 |
| OW-15 | Retention pond | Man-made | 37.88895 | -87.54427 | 0.0 | 0.0 | 0.0 |
| OW-16 | Retention pond | Man-made | 37.88729 | -87.53937 | 0.0 | 0.0 | 0.0 |
| OW-17 | Retention pond | Man-made | 37.88688 | -87.53955 | 0.0 | 0.0 | 0.0 |
| OW-18 | Retention pond | Man-made | 37.88662 | -87.53981 | 0.0 | 0.0 | 0.0 |
| OW-19 | Retention pond | Man-made | 37.88623 | -87.53997 | 0.0 | 0.0 | 0.0 |
| TOTALS | | | | | 12.7 | 9.6 | 2.8 |

Source: Parsons, 2017.

Table Notes:

1. The latitude and longitude identify the midpoint of the feature.
2. Waterbody impact is the overall acreage of the waterbody within the project alternative study corridor.

3.5 WETLAND MITIGATION SITES

There were several wetland mitigation sites identified within the I-69 ORX project area in Indiana. The project team coordinated with USACE and IDEM to obtain the boundaries of the mitigation sites, and they were entered into the project GIS. The mitigation sites included: Vigo Coal mitigation site [LRL-2005-166 and LRL-2005-166 (Supplemental Mitigation for On-site Deficiencies)]; Liberty Mine (LRL-2010-218); and Cypress Creek Mine. They are illustrated on the maps provided in Appendix C.

The Central Alternative 1 avoids direct impacts to the three mitigation sites. Indirect impacts to wildlife would result from habitat disturbance and additional noise. There is also the potential for short-term habitat degradation resulting from off-site sedimentation during construction. Since the mitigation sites are already positioned near roadways and existing I-69, the I-69 ORX project additional impacts would likely not be significant.

3.6 WETLAND RESERVE PROGRAM

The Wetlands Reserve Program (WRP) was a voluntary program that offered landowners the opportunity to protect, restore, and enhance wetlands on their property. The United States Department of Agriculture (USDA) NRCS provided technical and financial support to help landowners with their wetland restoration efforts through the WRP. This program offered landowners an opportunity to establish long-term conservation and wildlife practices and protection. The NRCS goal was to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. Typical lands that were eligible for WRP included: wetlands farmed under natural conditions; farmed wetlands; prior converted cropland; lands that had the potential to become a wetland as a result of flooding; and riparian areas that linked protected wetlands. The Agricultural Act of 2014 established the Agricultural Conservation Easement Program (ACEP) that repealed WRP and other programs but did not affect the validity or terms of any WRP contract, agreement, or easement entered into prior to February 7, 2014.

Although all areas enrolled in the WRP program are not necessarily considered jurisdictional wetlands, WRP tracts often include jurisdictional wetlands or areas that were converted to wetlands. These may be considered jurisdictional even though they may lack one of the three wetland criteria (i.e., hydrophytic vegetation, hydric soils, and/or wetland hydrology). WRP tract boundaries in the I-69 ORX study area were obtained from NRCS and entered into the project GIS, and they are illustrated on the maps provided in Appendix C. Due to their proximity to existing disturbed areas, such as US 41, and since there would be no direct take of WRP tracts, there would be no direct impacts to WRP tracts from any of the project alternatives. There could be minor short-term adverse indirect impacts to WRP habitat associated with disturbance during construction, however the impacts would likely be minor.

3.7 SUMMARY

The majority of the I-69 ORX project area lies within the Ohio River floodplain. Consequently, most of the wetlands and wetland acreage affected by the project alternatives are typical of large river floodplains, such as bottomland hardwood wetlands or herbaceous and scrub-shrub wetlands that had been previously cleared or disturbed by agriculture and/or other development. Smaller tributaries including Eagle Creek, Mound Slough, Sugar Creek, and the multiple tributaries to North Fork Canoe Creek are all tributaries to the Ohio River. Although there are five perennial streams and four intermittent streams, the majority of waterway/stream channels identified in the I-69 ORX study area are ephemeral. Most of the streams in the study area have been channelized.

There were 64 wetlands identified and/or confirmed during the field surveys. Wetland data sheets and photographs are presented in Appendix A and are illustrated in the detailed mapping

provided in Appendix C. All wetlands presented in Table 3-1 are likely jurisdictional; no isolated wetlands were identified.

There were 91 streams mapped during the field surveys. Five streams were classified as perennial, including the Ohio River, Eagle Creek, and North Fork Canoe Creek and their tributaries. They comprise less than 6 percent of all the streams identified. Four ephemeral or intermittent streams were identified including Mound Slough (STR-27) and Sugar Creek (STR-60). Data sheets for perennial and intermittent streams, and a stream summary table, are provided in Appendix B (Stream Data). There were 82 ephemeral streams identified during the field investigation. They are illustrated on the maps provided in Appendix C.

Other waters present in the I-69 ORX study area include: borrow pits, open water sloughs that may be remnant Ohio River channels, and man-made ponds. They are illustrated on the maps provided in Appendix C. The borrow pits were primarily in the northern third of the project area in Indiana with connections to Eagle Creek or immediately adjacent to US 41. There is one large borrow pit along the West Alternatives south of the Ohio River and west of US 41. This pit has connections to Mound Slough in flood events. Smaller man-made retention ponds are also found immediately adjacent to the study corridor alignments but will likely not be impacted. As shown on Table 3-3, approximately 9.6 acres in six open water habitats would lie within the project limits of West Alternative 1. For West Alternative 2, approximately 2.8 acres in three open water habitats would lie within the project limits. For Central Alternative 1 approximately 12.7 acres in one open water habitat (OW-4) would lie within the project limits.

There would be no direct take of wetland mitigation sites or WRP lands.

4 REFERENCES

The list of published references and information sources is presented below.

Bernardin Lochmueller and Associates (BLA)

- 2005 Preliminary Wetland Delineation Report I-69 Henderson to Evansville in Vanderburgh and Warrick Counties, Indiana and Henderson County, Kentucky, March 4, 2005, Bernardin Lochmueller and Associates, Inc., 6200 Vogel Road, Evansville, Indiana, 47715.

Indiana Department of Transportation and Kentucky Transportation Cabinet (INDOT and KYTC)

- 2004 Interstate 69 Henderson, Kentucky to Evansville, Indiana Draft Environmental Impact Statement, Indiana Department of Transportation and Kentucky Transportation Cabinet, February 11, 2004.
- 2017 I-69 Ohio River Crossing Project Screening Report.

Kentucky Department of Fish and Wildlife Resources (KDFWR)

- 2018 Kentucky Department of Fish and Wildlife Resources Stream Team Program. website <https://fw.ky.gov/Fish/Pages/Stream-Team-Program.aspx>. National Resources Conservation Service

Natural Resources Conservation Service (NRCS)

- 1967 Soil Survey of Henderson County, Kentucky, United States Department of Agriculture, Soil Conservation Service in cooperation with Kentucky Agricultural Experiment Station, Henry T. Converse, Jr. and Frank R. Cox, Jr., February 1967.
- 1976 Soil Survey of Vanderburgh County Indiana, United States Department of Agriculture, Soil Conservation Service in cooperation with Purdue university Agricultural Experiment Station, Leo A. Kelly, June 1976
- 2016 Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
- 2017 Natural Resources Conservation Service, United States Department of Agriculture. Wetland Reserve Program. <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/wetlands/>

U.S. Department of Justice (DOJ)

- 2001 Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 532 U.S. 159. <https://www.justice.gov/osg/brief/solid-waste-agency-vus-159>
- 2006 Rapanos v. United States. 547 U.S. 715. <https://www.justice.gov/osg/brief/rapanos-v-united-states-brief-merits>

U.S. Army Corps of Engineers (USACE)

- 1987 Wetlands Research Program Technical Report Y-87-1 (on-line edition), Corps of Engineers, 1987 Wetlands Delineation Manual
[\[http://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf\]](http://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf)
- 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0), August 2010
[\[http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/erdc-el-tr-10-16.pdf\]](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/erdc-el-tr-10-16.pdf)
- 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) April 2012
[\[http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/EMP_Piedmont_v2b.pdf\]](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/EMP_Piedmont_v2b.pdf)

5 LIST OF ACRONYMS

The list of acronyms is shown in the table below.

| ACRONYM | FULL ACRONYM REFERENCE |
|---------|--|
| ACEP | Agricultural Conservation Easement Program |
| CWA | Clean Water Act |
| DEIS | Draft Environmental Impact Statement |
| EIS | Environmental Impact Statement |
| EPA | Environmental Protection Agency |
| FERC | Federal Energy Regulatory Commission |
| FHWA | Federal Highway Administration |
| GIS | geographic information system |
| GPS | global positioning system |
| IAC | interagency coordination |
| IDEM | Indiana Department of Environmental Management |
| INDOT | Indiana Department of Transportation |
| KDOW | Kentucky Division of Water |
| KYTC | Kentucky Transportation Cabinet |
| NOI | notice of intent |
| NRCS | Natural Resources Conservation Services |
| NWI | National Wetland Inventory |
| ORX | Ohio River Crossing |
| PEM | palustrine emergent |
| PFO | palustrine forested |
| PSS | palustrine scrub-shrub |
| QHEI | Qualitative Habitat Evaluation Index |
| US | United States |
| USACE | United States Army Corps of Engineers |
| USDA | United States Department of Agriculture |
| USGS | United States Geological Survey |
| WOTUS | Waters of the United States |
| WQC | Water Quality Certification |
| WRP | Wetland Reserve Program |

A WETLAND DATA

The purpose of the field survey and this WOTUS report was to collect data to identify potential wetlands sufficient to provide informed guidance for the decision-maker in the I-69 ORX DEIS and the selection of the preferred alternative. In general, the data collected in the field was not intended to satisfy the requirements for a Section 404/401 permit application, however it would be used in the WOTUS report prepared for the preferred alternative. The level of detail provided in this technical report was used by the design team to avoid or minimize impacts to WOTUS and to the wetland mitigation sites.

The I-69 ORX wetlands were evaluated in the field and mapped with a handheld GPS unit. The wetland data sheets and photographs presented in this appendix are representative of each of the wetlands identified during the field surveys. Areas that were presumed to be wetlands, such as mapped NWI wetlands, that lacked one or more of the requisite parameters (hydrophytic vegetation, hydric soils, and hydrology) to be considered a wetland were also documented to explain why the areas would not be considered wetlands or would not be regulated. All of the wetlands included in this appendix are presumed to be jurisdictional, because of their connection to other jurisdictional water features. No Indiana state isolated wetlands were identified. Table A-1 lists all of the wetlands identified/verified in the field survey.

Wetlands mapped in the 2005 BLA survey were visited, and the boundaries were verified or expanded in some areas, but additional data was not collected within the previously identified wetland areas.

The wetland data sheets apply to the representative data point for each wetland area surveyed. In addition, general observations of wetland conditions were made in the comments sections of the data sheets even though that may or may not directly apply to the actual data point. For example, if additional hydrology indicators, such as water marks on trees or standing water in depressions, were observed in the wetland but not at the data point, these strong hydrology indicators were included in the comment section. Another example would be the presence of an obligate species, such as buttonbush, that was identified outside of the data point.

The functional value assessment worksheet was used to field-check the of functions and values of each wetland. The qualitative approach is quick, repeatable, and results in consistent scoring of the identified wetlands. Wetland size, past disturbance, habitat diversity, and proximity to other WOTUS affects the functions of each wetland and are reflected in their subsequent scores.

Table A-1. Wetland Data Summary for the Study Area

| WETLAND ID | WETLAND TYPE ¹ | LATITUDE ² | LONGITUDE ² | WETLAND IMPACT ³ | | |
|-----------------------|---------------------------|-----------------------|------------------------|-----------------------------|--------------------|--------------------|
| | | | | CENTRAL ALTERNATIVE 1 | WEST ALTERNATIVE 1 | WEST ALTERNATIVE 2 |
| WTL-01 | PFO | 37.93697 | -87.52069 | 6.7 | 0.4 | 0.4 |
| WTL-02 | PFO | 37.93794 | -87.52250 | 0.0 | 0.0 | 0.0 |
| WTL-03 | PFO | 37.93759 | -87.52503 | 0.0 | 0.0 | 0.0 |
| WTL-04 | PFO | 37.93572 | -87.52649 | 0.4 | 0.4 | 0.4 |
| WTL-05 | PSS | 37.93551 | -87.53290 | 0.0 | 0.1 | 0.1 |
| WTL-06 | PFO | 37.93533 | -87.53541 | 0.0 | 0.6 | 0.5 |
| WTL-07 | PEM/PFO | 37.93711 | -87.53869 | 0.0 | 0.1 | 0.1 |
| WTL-08 | PFO | 37.93661 | -87.53939 | 0.0 | 0.2 | 0.2 |
| WTL-09 | PFO | 37.93779 | -87.54115 | 0.0 | 0.0 | 0.0 |
| WTL-10 | PFO | 37.93721 | -87.54154 | 0.0 | 0.1 | 0.1 |
| WTL-11 | PEM/PSS/PFO | 37.93581 | -87.54330 | 0.0 | 17.9 | 5.9 |
| WTL-12 | PFO | 37.93844 | -87.54288 | 0.0 | 0.0 | 0.0 |
| WTL-13 | PFO | 37.93771 | -87.54331 | 0.0 | 0.0 | 0.0 |
| WTL-14 | PFO | 37.93796 | -87.54430 | 0.0 | 0.0 | 0.0 |
| WTL-15 | PFO | 37.93849 | -87.54606 | 0.0 | 0.0 | 0.0 |
| WTL-16 | PFO | 37.93054 | -87.54895 | 0.0 | 4.7 | 2.1 |
| WTL-17 | PFO | 37.92881 | -87.54560 | 0.0 | 0.0 | 0.0 |
| WTL-18 | PFO | 37.92648 | -87.54951 | 0.0 | 1.8 | 0.3 |
| WTL-19 | PFO | 37.92497 | -87.54731 | 0.0 | 0.0 | 0.0 |
| WTL-20 | PFO | 37.92363 | -87.54591 | 0.0 | 0.0 | 0.0 |
| WTL-21 | PEM | 37.92225 | -87.54503 | 0.0 | 0.0 | 0.0 |
| WTL-22 | PFO/PEM | 37.92283 | -87.54717 | 0.0 | 0.0 | 0.3 |
| WTL-23 | PEM | 37.92100 | -87.54803 | 0.0 | 1.1 | 2.0 |
| WTL-24 | PEM/PSS/PFO | 37.92139 | -87.54968 | 0.0 | 1.0 | 0.2 |
| WTL-25 | PSS | 37.91708 | -87.55019 | 0.0 | 0.5 | 0.0 |
| WTL-26 | PFO | 37.91163 | -87.55025 | 0.0 | 0.2 | 0.1 |
| WTL-27 | PFO | 37.91012 | -87.55041 | 0.0 | 0.0 | 0.0 |
| WTL-28 | PEM | 37.90076 | -87.55455 | 0.0 | 0.0 | 0.0 |
| WTL-29 | PEM/PFO | 37.89858 | -87.55441 | 0.0 | 2.7 | 2.6 |
| WTL-30 | PFO | 37.89764 | -87.55293 | 0.0 | 0.0 | 0.0 |
| WTL-31 | PFO | 37.89577 | -87.55577 | 0.0 | 2.6 | 2.5 |
| WTL-32 | PEM/PFO | 37.89234 | -87.54895 | 0.0 | 0.0 | 0.0 |
| WTL-33 | PEM/PSS/PFO | 37.88828 | -87.56220 | 0.0 | 20.9 | 17.3 |
| WTL-34 | PFO | 37.88887 | -87.55442 | 0.0 | 0.0 | 0.0 |
| WTL-35 ⁽⁴⁾ | PFO | 37.88363 | -87.57639 | 0.0 | 0.0 | 0.0 |

Table A-1. Wetland Data Summary for the Study Area

| WETLAND ID | WETLAND TYPE ¹ | LATITUDE ² | LONGITUDE ² | WETLAND IMPACT ³ | | |
|-----------------------|---------------------------|-----------------------|------------------------|-----------------------------|--------------------|--------------------|
| | | | | CENTRAL ALTERNATIVE 1 | WEST ALTERNATIVE 1 | WEST ALTERNATIVE 2 |
| WTL-36 | PSS | 37.85557 | -87.57367 | 0.0 | 0.0 | 0.0 |
| WTL-37 | PFO | 37.85003 | -87.56846 | 0.0 | 0.0 | 0.0 |
| WTL-38 | PEM | 37.83593 | -87.56524 | 0.0 | 0.0 | 0.0 |
| WTL-39 | PEM | 37.83351 | -87.56561 | 0.0 | 0.0 | 0.0 |
| WTL-40 | PEM | 37.83119 | -87.56769 | 0.0 | 0.0 | 0.0 |
| WTL-41 | PEM | 37.83073 | -87.56557 | 0.0 | 0.0 | 0.0 |
| WTL-42 | PSS | 37.83041 | -87.56440 | 0.0 | 0.0 | 0.0 |
| WTL-43 | PEM | 37.82990 | -87.56733 | 0.0 | 0.0 | 0.0 |
| WTL-44 | PEM | 37.82811 | -87.56665 | 0.0 | 0.0 | 0.0 |
| WTL-45 | PEM | 37.82729 | -87.56652 | 0.0 | 0.0 | 0.0 |
| WTL-46 | PEM | 37.82597 | -87.56589 | 0.0 | 0.0 | 0.0 |
| WTL-47 | PEM | 37.82463 | -87.56791 | 0.0 | 0.0 | 0.0 |
| WTL-48 | PEM | 37.81786 | -87.56323 | 0.0 | 0.0 | 0.0 |
| WTL-49 | PEM | 37.81786 | -87.56290 | 0.0 | 0.0 | 0.0 |
| WTL-50 | PEM | 37.81714 | -87.56299 | 0.0 | 0.0 | 0.0 |
| WTL-51 | PEM | 37.81656 | -87.56256 | 0.0 | 0.0 | 0.0 |
| WTL-52 ⁽⁴⁾ | PFO | 37.93870 | -87.50658 | 0.0 | 0.0 | 0.0 |
| WTL-53 | PFO | 37.93901 | -87.51192 | 0.0 | 0.0 | 0.0 |
| WTL-54 ⁽⁴⁾ | PSS | 37.93808 | -87.50978 | 0.0 | 0.0 | 0.0 |
| WTL-55 | PFO | 37.93764 | -87.51128 | 0.0 | 0.0 | 0.0 |
| WTL-56 | PFO | 37.93827 | -87.51470 | 0.0 | 0.0 | 0.0 |
| WTL-57 | PFO | 37.93557 | -87.52003 | 1.4 | 0.0 | 0.0 |
| WTL-58 | PEM/PFO | 37.89886 | -87.51964 | 1.4 | 0.0 | 0.0 |
| WTL-59 | PFO | 37.89328 | -87.51710 | 7.3 | 0.0 | 0.0 |
| WTL-60 | PFO | 37.88543 | -87.51528 | 0.2 | 0.0 | 0.0 |
| WTL-61 | PEM | 37.88226 | -87.51322 | 0.0 | 0.0 | 0.0 |
| WTL-62 | PSS | 37.88158 | -87.51591 | 0.2 | 0.0 | 0.0 |
| WTL-63 | PSS | 37.88135 | -87.51786 | 0.0 | 0.0 | 0.0 |
| WTL-64 | PSS | 37.87647 | -87.52046 | 0.0 | 0.0 | 0.0 |
| TOTALS | | | | 17.6 | 55.4 | 35.1 |

Source: BLA, 2005 and Parsons, 2017.

Table Notes:

1. Wetland types include: PFO = Palustrine Forested; PSS = Palustrine Scrub-Shrub; and PEM = Palustrine Emergent.
2. The latitude and longitude indicate the midpoint of the wetland.
3. Wetland impact is the overall acreage of the wetland within the construction limits.
4. Wetland is outside of the project area, so it is not shown on the detailed maps in the Appendices.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-01
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 3, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 4 Lat: 37.93645 Long: -87.52312 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a bottomland hardwood forest located south of I-69 and north of Eagle Creek. During rain events, the wetland likely receives runoff from I-69. The wetland may provide effective flood water storage for Eagle Creek. **Field ID: C1-WTL-05**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Ulmus americana</u> | <u>15</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>55</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>85</u> x 2 = <u>170</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>90</u> (A) <u>185</u> (B) Prevalence Index = B/A = <u>2.06</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Carex grayi</u> | <u>30</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>N</u> | <u>FAC</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>35</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The forest floor is covered with leaf litter and woody debris that limits the emergence of herbaceous vegetation.

SOIL

Sampling Point: WTL-01

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 5/2 | 100 | | | | | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input checked="" type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):
 Type: None
 Depth (inches): N/A
Hydric soil present? Y**Remarks:**

There is a thin layer of leaf litter on top of the soil's surface. Soils are saturated at this point.

The soils lack redoximorphic features to be considered depleted; however, redoximorphic features would be present if soils were more stable, and located outside of a floodplain.

HYDROLOGY**Wetland Hydrology Indicators:**Primary Indicators (minimum of one is required; check all that apply)

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. The southern portion of this wetland abuts the Eagle Creek stream terrace. Sediment deposits (thin coatings of silt) are visible on tree trunk bases. The Ohio River affects Eagle Creek and contributes to the areas hydrology through overflow flooding. A sparsely vegetated herbaceous layer located within the wetland, just outside the data point plot.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-01

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Overflow flooding from Eagle Creek, which is affected by the Ohio River, adds to this wetland function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for nearby Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat for aquatic fauna is present in Eagle Creek, south of this wetland. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located south of I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-01 (06/27/17)

Vegetation along northern boundary of wetland. Sparsely vegetated herbaceous layer located within the wetland, just outside the data point plot. Photo direction: South



WTL-01 (06/27/17)

Vegetation along western boundary of wetland.
Photo direction: East

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/26/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-02
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 3, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93794 Long: -87.52246 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a depressional bottomland hardwood forest located north of I-69. A man-made berm is located on the western edge of this wetland. If the berm was removed, hydrology would likely disappear. **Field ID: C1-WTL-02**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>60.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Ulmus americana</u> | <u>50</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>10</u> | <u>N</u> | <u>FACW</u> | |
| 3 | <u>Celtis laevigata</u> | <u>10</u> | <u>N</u> | <u>FACW</u> | |
| 4 | <u>Betula nigra</u> | <u>5</u> | <u>N</u> | <u>FACW</u> | |
| | | <u>75</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>75</u> x 2 = <u>150</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>100</u> (A) <u>240</u> (B) Prevalence Index = B/A = <u>2.40</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u>Morus rubra</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | |
| 1 | <u>Campsis radicans</u> | <u>10</u> | <u>Y</u> | <u>FACU</u> | |
| 2 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | Hydrophytic vegetation present? <u>Y</u> |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

Poison Ivy (*Toxicodendron radicans*) and trumpet vine (*Campsis radicans*) are sparse within the herbaceous stratum. Densities of these species increase along the edge of the wetland boundary.

SOIL

Sampling Point: WTL-02

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|----|----------------|----|-------|-------|------------|-------------------------------------|
| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 5/2 | 80 | 10 YR 5/8 | 20 | C | M | Silty clay | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

| Hydric Soil Indicators: | Indicators for Problematic Hydric Soils: |
|--|--|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Other (explain in remarks) |
| <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) | |

Restrictive Layer (if observed):
 Type: None
 Depth (inches): N/A

Hydric soil present? Y

Remarks:
 There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

| Wetland Hydrology Indicators: | | | |
|--|---|---|--|
| <u>Primary Indicators (minimum of one is required; check all that apply)</u> | | <u>Secondary Indicators (minimum of two required)</u> | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Aquatic Fauna (B13) | <input type="checkbox"/> Surface Soil Cracks (B6) | |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> True Aquatic Plants (B14) | <input checked="" type="checkbox"/> Drainage Patterns (B10) | |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) | <input checked="" type="checkbox"/> Crayfish Burrows (C8) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input checked="" type="checkbox"/> Stunted or Stressed Plants (D1) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Gauge or Well Data (D9) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |
| <input checked="" type="checkbox"/> Water-Stained Leaves (B9) | | | |

| Field Observations: | | | | Indicators of wetland hydrology present? <u>Y</u> |
|---|---|-----------------|---------------|---|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): | <u>>16</u> | |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): | <u>>16</u> | |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): | <u>>16</u> | |

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

Remarks:
 Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. A man-made berm is located on the western edge of this wetland. If the berm was removed, hydrology would likely disappear.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-02

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | Due to the presence of a levee, effective flood storage is non-existent upslope of the wetland; as a result, the wetland likely receives and retains water during high rain/flood events. A man-made berm is located on the western edge of this wetland. If the berm was removed, hydrology would likely disappear. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Only ephemeral aquatic species would benefit from this habitat. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-02 (06/26/2017)

Vegetation along western boundary of wetland.

Photo direction: East

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/23/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-03
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 3, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93747 Long: -87.52584 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

Remarks: (Explain alternative procedures here or in a separate report.)
 This is a bottomland hardwood forest located north of I-69. A portion of the wetland appears to be an old creek bed. An ephemeral channel connects to the western boundary of the wetland. Construction on I-69 and the levee to the north likely caused the channel to become disconnected. Field ID: C1-WTL-01

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>75.00%</u> (A/B) |
|-----------------------|------------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Fraxinus pennsylvanica</u> | <u>25</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Ulmus americana</u> | <u>15</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>40</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>50</u> (A) <u>115</u> (B) Prevalence Index = B/A = <u>2.30</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Parthenocissus quinquefolia</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

Remarks: (Include photo numbers here or on a separate sheet)
 The herbaceous stratum is sparsely vegetated. The herbaceous stratum surrounding the wetland is dominated by poison ivy (*Toxicodendron radicans*).

SOIL

Sampling Point: WTL-03

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 85 | 10 YR 5/8 | 15 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*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 wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None
 Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

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): >16
 Saturation present? Yes ☐ No ☒ Depth (inches): >16
 (includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-03

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | Due to the presence of a levee, effective flood storage is non-existent upslope of the wetland; as a result, the wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-03 (06/23/2017)

Water-stained leaves and woody debris within wetland. Sparsely vegetated herbaceous stratum. Some water marks on trees show that the area does pond water periodically. Photo direction: South



WTL-03 (06/23/2017)

Water marks on trees show that the area does pond water periodically.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-04
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 3, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
 Slope (%): 10 Lat: 37.93578 Long: -87.52644 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | |
|---|---|
| Hydrophytic vegetation present? <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? <u>Y</u> | |
| Indicators of wetland hydrology present? <u>Y</u> | |

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

This is a bottomland hardwood forest swale located south of I-69 and north of Eagle Creek. During rain events, the wetland likely receives runoff from I-69 and overflow flooding from Eagle Creek. **Field ID: C1-WTL-06**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Salix nigra</u> | <u>20</u> | <u>Y</u> | <u>OBL</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>60</u> | <u>= Total Cover</u> | | |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | Prevalence Index Worksheet Total % Cover of: OBL species <u>30</u> x 1 = <u>30</u> FACW species <u>55</u> x 2 = <u>110</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>85</u> (A) <u>140</u> (B) Prevalence Index = B/A = <u>1.65</u> |
| 1 | <u>Acer saccharinum</u> | <u>10</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>10</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation <input checked="" type="checkbox"/> Dominance test is >50% <input checked="" type="checkbox"/> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Leersia oryzoides</u> | <u>10</u> | <u>Y</u> | <u>OBL</u> | |
| 2 | <u>Carex grayi</u> | <u>5</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The forest floor is covered with leaf litter and tree debris. Duckweed (*Lemna spp.*) is present on surface water within the wetland. Poison ivy (*Toxicodendron radicans*) is prevalent along the wetland fringe.

SOIL

Sampling Point: WTL-04

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 5/2 | 100 | | | | | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input checked="" type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):
 Type: None
 Depth (inches): N/A
Hydric soil present? Y**Remarks:**

There is a thin layer of leaf litter on top of the soil's surface. Soils are saturated at this point. The soils lack redoximorphic features to be considered depleted; however, redoximorphic features would be present if soils were more stable and located outside of a floodplain.

HYDROLOGY**Wetland Hydrology Indicators:**Primary Indicators (minimum of one is required; check all that apply)

- | |
|--|
| <input checked="" type="checkbox"/> Surface Water (A1) |
| <input checked="" type="checkbox"/> High Water Table (A2) |
| <input checked="" type="checkbox"/> Saturation (A3) |
| <input type="checkbox"/> Water Marks (B1) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) |
| <input type="checkbox"/> Drift Deposits (B3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) |
| <input type="checkbox"/> Iron Deposits (B5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Water-Stained Leaves (B9) |

- | |
|---|
| <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Gauge or Well Data (D9) |
| <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|--|---|-----------------------------|-------------------------------|
| Surface water present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Depth (inches): <u>0-2</u> |
| Water table present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Ponded/pooled water is present within the wetland. Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. Sediment deposits (thin coatings of silt) are visible on tree trunk bases. A culvert connecting to an ephemeral channel is located on the southern edge of the wetland.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-04

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | Ponded/pooled water is present within the wetland. During rain events, the wetland likely receives runoff from I-69. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). Raccoon tracks were visible along the edge of ponded water. The narrow size of the wetland may result in minimized habitat potential for large mammals. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | Ponded/pooled water is present within the wetland. Tadpoles were observed within ponded areas. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located south of I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 9

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-04 (06/27/2017)
 Ponded water and vegetation within wetland.
 Photo direction: West



WTL-04 (06/27/2017)
 Ponded water and vegetation within wetland.
 Photo direction: West



WTL-04 (06/27/2017)

Leaf litter and tree debris along western boundary of wetland.

Photo direction: South



WTL-04 (06/27/2017)

Culvert connecting to an ephemeral channel located on the southern edge of the wetland.

Photo direction: North

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-05
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 2 Lat: 37.93551 Long: -87.53273 Datum: NAD-1983
 Soil Map Unit Name: Weinbach silt loam NWI Classification: PSS

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | |
|---|--|
| Hydrophytic vegetation present? <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID: <u> </u> |
| Hydric soil present? <u>Y</u> | |
| Indicators of wetland hydrology present? <u>Y</u> | |

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

This is a narrow scrub-shrub wetland located south of I-69 and north of an access road to a commercial property.

Field ID: **C2-WTL-03**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|------------------|------------------|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | = Total Cover | | |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | Prevalence Index Worksheet Total % Cover of: OBL species <u>110</u> x 1 = <u>110</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>110</u> (A) <u>110</u> (B) Prevalence Index = B/A = <u>1.00</u> |
| 1 | <u>Salix nigra</u> | <u>25</u> | <u>Y</u> | <u>OBL</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>25</u> | = Total Cover | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Leersia oryzoides</u> | <u>85</u> | <u>Y</u> | <u>OBL</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>85</u> | = Total Cover | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | = Total Cover | | |

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

This narrow wetland has minimal vegetative diversity.

SOIL

Sampling Point: WTL-05

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|---------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 98 | 10YR 6/6 | 2 | C | M | Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

This wetland likely receives runoff from I-69 during heavy rain events.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-05

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | This wetland likely receives runoff from I-69 during heavy rain events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | The wetland's location and size is not optimal. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | There is no pooled/ponded water in this wetland, or evidence that the area is flooded therefore, this wetland has low potential to support aquatic wildlife populations. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-05 (06/27/2017)

Willows (*Salix nigra*) visible from the northern boundary of the wetland.

Photo direction: Southeast



WTL-05 (06/27/2017)

Ricecut grass (*Leersia oryzoides*) along the northern boundary of the wetland.

Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-06
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93568 Long: -87.53592 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | |
|---|--|
| Hydrophytic vegetation present? <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID: <u> </u> |
| Hydric soil present? <u>Y</u> | |
| Indicators of wetland hydrology present? <u>Y</u> | |

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

This is a bottomland hardwood wetland north of Eagle Creek. The southern edge of this wetland is the ordinary high water mark of Eagle Creek.

Field ID: **C2-WTL-02**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>75.00%</u> (A/B) |
|-----------------------|---|-------------------|----------------------|-------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>75</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>10</u> | <u>N</u> | <u>FACW</u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>85</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>85</u> x 2 = <u>170</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>105</u> (A) <u>235</u> (B) Prevalence Index = B/A = <u>2.24</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Toxicodendron radicans</u> | <u>10</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>10</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Campsis radicans</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| | | <u>10</u> | <u>= Total Cover</u> | | |

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

There is minimal vegetation in the herbaceous and sapling/shrub stratum, due to recent flood events and extensive canopy (shade) cover.

SOIL

Sampling Point: WTL-06

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 95 | 10YR 5/8 | 5 | C | M | Clayey loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):
 Type: None
 Depth (inches): N/A
Hydric soil present? Y**Remarks:**

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY**Wetland Hydrology Indicators:**Primary Indicators (minimum of one is required; check all that apply)

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

The southern portion of this wetland abuts Eagle Creek. On the sample date, it was noted that the Ohio River was backing into Eagle Creek. The flow was moving upstream. The area receives frequent overflow flooding. Crayfish burrows are present throughout the wetland.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-06

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The area receives frequent overflow flooding. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland's proximity to I-69 may minimize wildlife usage. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | This wetland is proximal to Eagle Creek which has the potential to contain populations of fish, amphibians, and macroinvertebrates. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | Eagle Creek is visible from this wetland. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-06 (06/27/2017)
 Eagle Creek, visible from the southern boundary of the wetland.
 Photo direction: Southeast



WTL-06 (06/27/2017)
 Vegetation along eastern boundary of wetland.
 Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/6/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-07
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93705 Long: -87.53873 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PEM/PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a narrow seep wetland located south of I-69. It is located west of an unnamed tributary to Eagle Creek.

Field ID: **C1-WTL-09**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>5</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Platanus occidentalis</u> | <u>5</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>10</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>125</u> x 1 = <u>125</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>135</u> (A) <u>145</u> (B) Prevalence Index = B/A = <u>1.07</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u>Cephalanthus occidentalis</u> | <u>30</u> | <u>Y</u> | <u>OBL</u> | |
| 2 | <u>Salix nigra</u> | <u>10</u> | <u>Y</u> | <u>OBL</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>40</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation <input checked="" type="checkbox"/> Dominance test is >50% <input checked="" type="checkbox"/> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Leersia oryzoides</u> | <u>80</u> | <u>Y</u> | <u>OBL</u> | |
| 2 | <u>Hibiscus moscheutos</u> | <u>5</u> | <u>N</u> | <u>OBL</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>85</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum surrounding the wetland includes buttonbush (*Cephalanthus occidentalis*) and rosemallow (*Hibiscus moscheutos*).

SOIL

Sampling Point: WTL-07

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-----------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10YR 5/4 | 10 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):
 Type: None
 Depth (inches): N/A
Hydric soil present? Y**Remarks:**

Soil core was saturated to the surface.

HYDROLOGY

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

- | |
|--|
| <input checked="" type="checkbox"/> Surface Water (A1) |
| <input checked="" type="checkbox"/> High Water Table (A2) |
| <input checked="" type="checkbox"/> Saturation (A3) |
| <input type="checkbox"/> Water Marks (B1) |
| <input type="checkbox"/> Sediment Deposits (B2) |
| <input type="checkbox"/> Drift Deposits (B3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) |
| <input type="checkbox"/> Iron Deposits (B5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Water-Stained Leaves (B9) |

- | |
|---|
| <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Gauge or Well Data (D9) |
| <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|---|-----------------------------|-----------------------------|
| Surface water present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Depth (inches): <u>2-3"</u> |
| Water table present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Depth (inches): <u>8</u> |
| Saturation present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Depth (inches): <u>8</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

The wetland is located west of an unnamed tributary to Eagle Creek. Crayfish burrows are present throughout the wetland. Sediment deposits are visible on vegetation. Iron deposits are present within channels from seep water from adjacent uplands.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-07

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | Due to the presence of I-69, effective flood storage is non-existent upslope of the wetland. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal were observed within the wetland (snake, frogs, macroinvertebrates). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | This wetland has some potential to support aquatic wildlife populations. Habitat is supporting and could continue to support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Highway noise is audible from the wetland. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-07 (07/06/2017)

Vegetation along eastern boundary of wetland showing saturation to the surface.

Photo direction: South



WTL-07 (07/06/2017)

Vegetation and iron deposits along eastern boundary of wetland.

Photo direction: South



WTL-07 (07/06/2017)
 Tributary to Eagle Creek located along eastern boundary of wetland.
 Photo direction: East



WTL-07 (07/06/2017)
 Perennial tributary to Eagle Creek located along eastern boundary of wetland.
 Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/6/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-08
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93659 Long: -87.53921 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a bottomland hardwood forest located south of I-69 and north of Eagle Creek.

Field ID: **C1-WTL-10**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>66.67%</u> (A/B) |
|-----------------------|---|-------------------|----------------------|-------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>50</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>50</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>60</u> (A) <u>135</u> (B) Prevalence Index = B/A = <u>2.25</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Campsis radicans</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>10</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum has minimal species diversity.

SOIL

Sampling Point: WTL-08

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10 YR 5/4 | 10 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input checked="" type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Sediment deposits are visible on the herbaceous vegetation. The southern boundary of this wetland abuts Eagle Creek.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-08

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Given its proximity to Eagle Creek, the habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-08 (07/06/2017)
Eagle Creek wetland with minimally vegetated herbaceous stratum.
Photo direction: South



WTL-08 (07/06/2017)
Eagle Creek bottomland hardwood wetland.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/6/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-09
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93779 Long: -87.54093 Datum: NAD-1983
 Soil Map Unit Name: Weinbach silt loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | |
|---|---|
| Hydrophytic vegetation present? <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? <u>Y</u> | |
| Indicators of wetland hydrology present? <u>Y</u> | |

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

This is a small depressional bottomland hardwood forest located south of the ramp from US-41 to I-69. **Field ID: C1-WTL-11**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|-------------------|----------------------|-------------------|---|
| 1 | <u>Ulmus americana</u> | <u>30</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Celtis occidentalis</u> | <u>25</u> | <u>Y</u> | <u>FAC</u> | |
| 3 | <u>Quercus palustris</u> | <u>5</u> | <u>N</u> | <u>FACW</u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>60</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>35</u> x 2 = <u>70</u> FAC species <u>25</u> x 3 = <u>75</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>60</u> (A) <u>145</u> (B) Prevalence Index = B/A = <u>2.42</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is sparsely vegetated.

SOIL

Sampling Point: WTL-09

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10 YR 5/8 | 10 | C | M | Silty loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

Type: None
Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

(includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Due to the presence of I-69, effective flood storage is non-existent upslope of the wetland; as a result, the wetland likely only receives and retains water during high rain/flood events. An ephemeral channel drains from the eastern boundary off of the wetland toward the east.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-09

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | Due to the presence of I-69, effective flood storage is non-existent upslope of the wetland; as a result, the wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-09 (07/07/2017)

Vegetation along western boundary of wetland. Water-stained leaves and tree debris within wetland. Sparsely vegetated herbaceous stratum. Photo direction: North

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-10
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
 Slope (%): 2 Lat: 37.93740 Long: -87.542153 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

Remarks: (Explain alternative procedures here or in a separate report.)
 This wetland is part of the Eagle Creek floodplain wetlands. It receives local runoff and overflow flooding from Eagle Creek and the Ohio River. This datapoint was collected near the US-41/I-69 interchange ramp.

Field ID: **C1-WTL-43**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30'</u> diameter) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across all Strata: <u>6</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|-------------------|----------------------|-------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>50</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>30</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u>Ulmus americana</u> | <u>30</u> | <u>Y</u> | <u>FACW</u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>140</u> x 2 = <u>280</u> FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>180</u> (A) <u>400</u> (B) Prevalence Index = B/A = <u>2.22</u> |
| | | <u>110</u> | <u>= Total Cover</u> | | |
| Sapling/Shrub stratum | (Plot size: <u>15'</u> diameter) | | | | |
| 1 | <u>Ulmus americana</u> | <u>15</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Acer saccharinum</u> | <u>10</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>25</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5'</u> diameter) | | | | |
| 1 | <u>Toxicodendron radicans</u> | <u>40</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Urtica dioica</u> | <u>5</u> | <u>N</u> | <u>FACW</u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Hydrophytic vegetation present? <u>Y</u> |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Hydrophytic vegetation present? <u>Y</u> |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>45</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30'</u> diameter) | | | | |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

Remarks: (Include photo numbers here or on a separate sheet)
 Approximately 60% of the herbaceous stratum is bare ground. The herbaceous stratum is sparsely vegetated due to flooding and dense canopy cover.

SOIL

Sampling Point: WTL-10

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-----------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-5 | 10YR 5/1 | 95 | 10YR 6/6 | 5 | C | M | Silty clay loam | |
| 5-16 | 10YR 6/6 | 95 | 2.5YR 6/1 | 5 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

Type: None
Depth (inches): N/A

Hydric soil present? Y

Remarks:

The soils are likely disturbed from the construction of the I-69/US-41 interchange ramps.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Sediment deposits, thin coatings of silt, are visible on tree trunk bases.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-10

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events, and during Ohio River backwater flooding. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Large trees within the wetland may provide stabilization for nearby Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located near the US-41/I-69 interchange ramp. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-10 (09/07/2017)

Wetland vegetation and leaf litter. The herbaceous stratum is primarily absent due to shading and possible ponding.
Photo direction: South



WTL-10 (09/07/2017)

Wetland vegetation and leaf litter.
Photo direction: South



WTL-10 (09/07/2017)

Wetland vegetation and leaf litter. The herbaceous stratum is primarily absent due to shading and possible ponding.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/6/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-11-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None
 Slope (%): 0 Lat: 37.93524 Long: -87.53647 Datum: NAD-1983
 Soil Map Unit Name: Huntington silty clay loam NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a bottomland hardwood forest located south of I-69 and Eagle Creek. Portions of the wetland (small rises, and berms) could be excluded in a more detailed survey. **Field ID: C1-WTL-08-1**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>70</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>70</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>70</u> x 2 = <u>140</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>90</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>2.22</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>15</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is minimally vegetated. The herbaceous stratum surrounding the wetland is dominated by poison ivy (*Toxicodendron radicans*). Stinging nettle (*Urtica dioica*) is present on small rises within the wetland; it is also present on the wetland fringe.

SOIL

Sampling Point: WTL-11-1

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10 YR 5/8 | 10 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*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 wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None
 Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

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): >16
 Saturation present? Yes ☐ No ☒ Depth (inches): >16
 (includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout wetland. Eagle Creek parallels the northern boundary of this wetland; a borrow pit is located west of the wetland.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-11-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None
 Slope (%): 0 Lat: 37.93569 Long: -87.54415 Datum: NAD-1983
 Soil Map Unit Name: Newark silt clay loam NWI Classification: PFO/PEM/PSS

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

Remarks: (Explain alternative procedures here or in a separate report.)
 This is a large bottomland hardwood forest. The majority of the wetland is located south of a ramp connecting US-41 to I-69 ramp. A portion of the wetland extends underneath US-41. The wetland connects to three different borrow pits. An old trolley line that is not part of the wetland, forms a rise, partially bisecting the middle of the wetland. **Field ID: C1-WTL-08-2**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>80.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>90</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Celtis occidentalis</u> | <u>25</u> | <u>Y</u> | <u>FAC</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>115</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>15</u> x 1 = <u>15</u> FACW species <u>100</u> x 2 = <u>200</u> FAC species <u>25</u> x 3 = <u>75</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>150</u> (A) <u>330</u> (B) Prevalence Index = B/A = <u>2.20</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u>Cephalanthus occidentalis</u> | <u>15</u> | <u>Y</u> | <u>OBL</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>10</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>25</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Campsis radicans</u> | <u>10</u> | <u>Y</u> | <u>FACU</u> | |
| 2 | | | | | |
| | | <u>10</u> | <u>= Total Cover</u> | | |

Remarks: (Include photo numbers here or on a separate sheet)
 PFO vegetation transitions to PSS/PEM as it forms a fringe around the borrow pits. Maintenance and the use of herbicides near the bridges results in a PSS/PEM habitat as well. The herbaceous stratum is absent.

SOIL

Sampling Point: WTL-11-2

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10YR 5/8 | 10 | C | M | Silty loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

Type: None
Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. Sediment deposits are visible on herbaceous vegetation. The wetland connects to three different borrow pits.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-11-3
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
 Slope (%): 2 Lat: 37.93713 Long: -87.54416 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This wetland is part of the Eagle Creek floodplain wetlands. It receives local runoff and overflow flooding from Eagle Creek. This datapoint was collected near the US-41/I-69 interchange ramp. **Field ID: C1-WTL-08-3**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>80.00%</u> (A/B) |
|-----------------------|------------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>60</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>30</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>90</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>92</u> x 2 = <u>184</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>102</u> (A) <u>219</u> (B) Prevalence Index = B/A = <u>2.15</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Urtica dioica</u> | <u>2</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>7</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Parthenocissus quinquefolia</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is minimally vegetated due to flooding and extensive canopy cover.

SOIL

Sampling Point: WTL-11-3

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 5/2 | 95 | 10YR 5/6 | 5 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):
 Type: None
 Depth (inches): N/A
Hydric soil present? Y**Remarks:**

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

Sediment deposits, thin coatings of silt, are visible on tree trunk bases.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-11-4
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
 Slope (%): 1 Lat: 37.93782 Long: -87.54338 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This wetland is part of the Eagle Creek floodplain wetlands. It receives local runoff and overflow flooding from Eagle Creek. This datapoint was collected near the US-41/I-69 interchange ramp. **Field ID: C1-WTL-08-4**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across all Strata: <u>8</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|---|-------------------|----------------------|-------------------|---|
| 1 | <u>Acer rubrum</u> | <u>40</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Acer saccharinum</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u>Fraxinus pennsylvanica</u> | <u>10</u> | <u>N</u> | <u>FACW</u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Prevalence Index Worksheet Total % Cover of: OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>110</u> x 2 = <u>220</u> FAC species <u>95</u> x 3 = <u>285</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>225</u> (A) <u>555</u> (B) Prevalence Index = B/A = <u>2.47</u> |
| | | <u>90</u> | <u>= Total Cover</u> | | |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u>Celtis occidentalis</u> | <u>25</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Cephalanthus occidentalis</u> | <u>10</u> | <u>Y</u> | <u>OBL</u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>35</u> | <u>= Total Cover</u> | | |
| | | <u> </u> | <u> </u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Leersia virginica</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>20</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u>Toxicodendron radicans</u> | <u>20</u> | <u>Y</u> | <u>FAC</u> | |
| 4 | <u>Campsis radicans</u> | <u>10</u> | <u>N</u> | <u>FACU</u> | |
| 5 | <u>Acer rubrum</u> | <u>5</u> | <u>N</u> | <u>FAC</u> | Hydrophytic vegetation present? <u>Y</u> |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | Hydrophytic vegetation present? <u>Y</u> |
| | | <u>95</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

SOIL

Sampling Point: WTL-11-4

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------|-------|-----------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-7 | 10YR 5/1 | 100 | | | | | Silty loam | |
| 7-16 | 10YR 5/2 | 95 | 10YR 6/1 | 5 | C | M | Silty clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

Type: None
Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on the soil's surface. Clay content increases with depth.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | |
|--|
| <input type="checkbox"/> Surface Water (A1) |
| <input type="checkbox"/> High Water Table (A2) |
| <input type="checkbox"/> Saturation (A3) |
| <input type="checkbox"/> Water Marks (B1) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) |
| <input type="checkbox"/> Drift Deposits (B3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) |
| <input type="checkbox"/> Iron Deposits (B5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Water-Stained Leaves (B9) |

- | |
|---|
| <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Gauge or Well Data (D9) |
| <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Based on the presence of silted vegetation, it appears that there was flooding in the last 30 days.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-11

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 3 | This wetland is part of the Eagle Creek floodplain wetlands. It receives local runoff and overflow flooding from Eagle Creek. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 3 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 3 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 3 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 16

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-11 (07/06/2017)
Vegetation along western boundary of wetland.
Photo direction: South



WTL-11 (07/06/2017)
Vegetation along western boundary of wetland. Area in background is the Eagle Creek stream terrace.
Photo direction: South



WTL-11 (07/06/2017)

Vegetation along western boundary of wetland showing minimally vegetated herbaceous stratum.

Photo direction: North



WTL-11 (07/06/2017)

Borrow pit along western boundary of wetland.

Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-12
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 2 Lat: 37.93851 Long: -87.54311 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a small forested depression within the I-69/US-41 interchange ramps. Based on the size of the trees, this wetland was likely part of the Eagle Creek floodplain wetlands prior to highway construction.

Field ID: **C1-WTL-41**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|---|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Populus deltoides</u> | <u>60</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Quercus palustris</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u>Platanus occidentalis</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 4 | <u>Acer saccharinum</u> | <u>20</u> | <u>N</u> | <u>FACW</u> | |
| 5 | | | | | |
| | | <u>160</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>108</u> x 2 = <u>216</u> FAC species <u>65</u> x 3 = <u>195</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>173</u> (A) <u>411</u> (B) Prevalence Index = B/A = <u>2.38</u> |
| Sapling/Shrub stratum (Plot size: <u>15' diameter</u>) | | | | | |
| 1 | | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| Herb stratum (Plot size: <u>5' diameter</u>) | | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Fraxinus pennsylvanica</u> | <u>8</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | Hydrophytic vegetation present? <u>Y</u> |
| 3 | | | | | |
| 4 | | | | | Hydrophytic vegetation present? <u>Y</u> |
| 5 | | | | | |
| 6 | | | | | Hydrophytic vegetation present? <u>Y</u> |
| 7 | | | | | |
| 8 | | | | | Hydrophytic vegetation present? <u>Y</u> |
| 9 | | | | | |
| 10 | | | | | Hydrophytic vegetation present? <u>Y</u> |
| Woody vine stratum (Plot size: <u>30' diameter</u>) | | | | | |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | Hydrophytic vegetation present? <u>Y</u> |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The understory herbaceous stratum is primarily absent due to shading in closed canopy and possible ponding and water scouring from storm events.

SOIL

Sampling Point: WTL-12

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-----------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-5 | 10YR6/2 | 90 | 10YR5/1 | 10 | C | M | Sandy loam | |
| 5-16 | 10YR5/2 | 85 | 10YR5/8 | 15 | C | M | Silty clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

Type: None
Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a lot more clay below five inches and extensive mottling.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | |
|--|
| <input type="checkbox"/> Surface Water (A1) |
| <input type="checkbox"/> High Water Table (A2) |
| <input type="checkbox"/> Saturation (A3) |
| <input checked="" type="checkbox"/> Water Marks (B1) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) |
| <input checked="" type="checkbox"/> Drift Deposits (B3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) |
| <input type="checkbox"/> Iron Deposits (B5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Water-Stained Leaves (B9) |

- | |
|---|
| <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Gauge or Well Data (D9) |
| <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

A culvert under the US-41 ramp connects to an ephemeral channel. The area drains to the southeast under US-41 ramp towards Eagle Creek.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-12

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland likely receives and retains runoff from the I-69/US-41 interchange ramp. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). The habitat surrounding the wetland is fragmented by roadways. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located near I-69. Highway noise is audible from the wetland. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-12 (09/07/2017)

Wetland vegetation and leaf litter. The herbaceous stratum is primarily absent due to shading and possible ponding.
Photo direction: South



WTL-12 (09/07/2017)

Wetland vegetation and leaf litter.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-13
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
 Slope (%): 1 Lat: 37.93782 Long: -87.54338 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This wetland is part of the Eagle Creek floodplain wetlands. It receives local runoff and frequent overflow flooding from Eagle Creek and the Ohio River. It is likely that this wetland is connected to an adjacent wetland north of the US-41 ramp prior to highway construction.

Field ID: **C1-WTL-42**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>66.67%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>80</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Ulmus americana</u> | <u>10</u> | <u>N</u> | <u>FACW</u> | |
| 3 | <u>Fraxinus pennsylvanica</u> | <u>10</u> | <u>N</u> | <u>FACW</u> | |
| 4 | <u>Salix nigra</u> | <u>10</u> | <u>N</u> | <u>OBL</u> | |
| 5 | | | | | |
| | | <u>110</u> | <u>= Total Cover</u> | | |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | Prevalence Index Worksheet Total % Cover of: OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>105</u> x 2 = <u>210</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>115</u> (A) <u>220</u> (B) Prevalence Index = B/A = <u>1.91</u> |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Acer saccharinum</u> | <u>5</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | <u>5</u> | <u>Y</u> | | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The understory herbaceous stratum is primarily absent due to flooding and extensive canopy cover.

SOIL

Sampling Point: WTL-13

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-----------------|--------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-3 | | | | | | | | Duff and debris present. |
| 3-8 | 10YR 4/2 | 95 | 10YR 6/1 | 5 | C | M | Silty loam | |
| 8-16 | 10YR 5/1 | 95 | 10YR6/6 | 5 | C | M | Silty clay 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 wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None
 Depth (inches): N/A

Hydric soil present? Y**Remarks:**

There is a thick duff/debris layer on the soil's surface. Clay content increases with depth limiting soil permeability and improving the hydrology

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): >16
 Saturation present? Yes ☐ No ☒ Depth (inches): >16
 (includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

A culvert under the I-69 ramp connects to an ephemeral channel.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-13

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The habitat surrounding the wetland is fragmented by roadways. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located near I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 7

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-13 (09/07/2017)

Wetland vegetation and leaf litter. The herbaceous stratum is primarily absent due to shading and possible ponding.
Photo direction: South



WTL-13 (09/07/2017)

Wetland vegetation and leaf litter.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-14
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 10 Lat: 37.93788 Long: -87.54469 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This wetland is located south of I-69 and north of Eagle Creek. It is a depressional area that was likely altered during the construction of the US-41/I-69 interchange ramps. It likely ponds water for long durations during the growing season.

Field ID: **C1-WTL-40**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>75.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>90</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>90</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>90</u> x 2 = <u>180</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>110</u> (A) <u>245</u> (B) Prevalence Index = B/A = <u>2.23</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>10</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Campsis radicans</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>15' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The understory herbaceous stratum is primarily absent due to shading in closed canopy.

SOIL

Sampling Point: WTL-14

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-----------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR4/2 | 95 | 10YR5/6 | 5 | C | M | Clay 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 wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None
 Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter present on the soil's surface.

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): >16
 Saturation present? Yes ☐ No ☒ Depth (inches): >16
 (includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

During heavy rain events, the wetland likely receives overflow flooding from Eagle Creek and backwater flooding from the Ohio River. Silt is visible on vegetation and tree debris is scattered throughout the wetland. There is a low connection to Eagle Creek on the southwest corner of the depression.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-14

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland likely receives and retains runoff from the I-69/US-41 interchange ramp. There is a low connection to Eagle Creek on the southwest corner of the depression; wetland may receive and retain water from Eagle Creek during flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Large trees may help stabilize banks and control erosion. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). The habitat surrounding the wetland is fragmented by roadways. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located near I-69. Highway noise is audible from the wetland. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-14 09/07/17
 Sparse herbaceous stratum due to shading from dense canopy cover.
 Photo direction: West



WTL-14 09/07/17
 Wetland vegetation along southern boundary of wetland. Excluded upland areas are shown in the background of the photograph. Photo direction: Southwest

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-15
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 4, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
 Slope (%): 1 Lat: 37.93855 Long: -87.546511 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This wetland is part of the Eagle Creek floodplain wetlands. It receives local runoff and flow flooding from Eagle Creek and Ohio River. This datapoint was collected near the US-41/I-69 interchange ramp.

Field ID: **C1-WTL-45**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>66.67%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>90</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>90</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>90</u> x 2 = <u>180</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>105</u> (A) <u>230</u> (B) Prevalence Index = B/A = <u>2.19</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>10</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Campsis radicans</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is sparsely vegetated due to flooding and extensive canopy cover. Minimal species diversity is present.

SOIL

Sampling Point: WTL-15

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-----------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 3/2 | 95 | 10YR 5/6 | 5 | C | PL | Silty clay 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 wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None
 Depth (inches): N/A

Hydric soil present? Y

Remarks:

The dark soil matrix partially masks the redox features within the soil core.

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): >16
 Saturation present? Yes ☐ No ☒ Depth (inches): >16
 (includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

Sediment deposits, thin coatings of silt, are visible on tree trunk bases. The area receives frequent overflow flooding from Eagle Creek and backwater from the Ohio River.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-15

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Large trees within the wetland may provide stabilization for nearby Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located near the US-41/I-69 interchange ramp. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-15 (09/07/2017)
Wetland vegetation, leaf litter, and tree debris.
Photo direction: North



WTL-15 (09/07/2017)
Wetland vegetation, leaf litter, and tree debris in the Eagle Creek floodplain wetland.
Photo direction: North

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/7/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-16
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 8, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 2 Lat: 37.93033 Long: -87.54866 Datum: NAD-1983
 Soil Map Unit Name: Lindside silty clay NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a depressional bottomland hardwood forest located north of Shawnee Drive and east of US-41. The eastern portion of the wetland is a bowl shaped depression which may retain water during heavy rain events.

Field ID: **C1-WTL-13**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Fraxinus pennsylvanica</u> | <u>75</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Acer saccharinum</u> | <u>20</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>95</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>95</u> x 2 = <u>190</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>100</u> (A) <u>205</u> (B) Prevalence Index = B/A = <u>2.05</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is minimally vegetated. The herbaceous stratum surrounding the wetland is dominated by poison ivy (*Toxicodendron radicans*). The canopy is dominated by silver maple (*Acer saccharinum*).

SOIL

Sampling Point: WTL-16

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10 YR 5/4 | 10 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|--|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

A1 (surface water) would have been noted outside of this data point due to shallow pools of water within the wetland. Sediment deposits (thin layers of silt) are present on herbaceous vegetation.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-16

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. Area is dominated by stinging nettle and poison ivy. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-16 (07/13/2017)
 Farmed wetland east of US-41.
 Photo direction: South



WTL-16 (07/13/2017)
 Slough adjacent to agricultural field.
 Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 9/8/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-17
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 9, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 4 Lat: 37.92948 Long: -87.54589 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a broad bottomland hardwood forest located east of US-41 that is part of the Eagle Creek floodplain wetlands. This wetland is part of the Eagle Slough Natural Area. **Field ID: C1-WTL-07**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>85</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>5</u> | <u>N</u> | <u>FACW</u> | |
| 3 | | | | <u>FAC</u> | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>90</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>110</u> x 2 = <u>220</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>120</u> (A) <u>250</u> (B) Prevalence Index = B/A = <u>2.08</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u>Fraxinus pennsylvanica</u> | <u>15</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Toxicodendron radicans</u> | <u>10</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Vitis riparia</u> | <u>5</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>15</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | | | | | |
| 2 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herb stratum is sparse due to shading from the dense canopy cover and prolonged flooding. Approximately 5% of mockernut hickory (*Carya tomentosa*) is present in the sapling/shrub stratum. Eastern cottonwood (*Populus deltoides*) proximal to the wetland is rooted outside of the wetland.

SOIL

Sampling Point: WTL-17

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------|-------|-------------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-4 | 10YR 5/1 | 100 | | | | | Clayey loam | |
| 4-16 | 10YR 5/1 | 95 | 10YR 5/4 | 5 | C | M | Silty clayey loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A

 Hydric soil present? Y
Remarks:

Clay content increases four inches below ground surface.

HYDROLOGY
Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)

 Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. Sediment deposits (thin coatings of silt) are visible on tree trunk bases. The area receives frequent overflow flooding from Eagle Creek and backwater from the Ohio River. There is an abundance of trash and debris throughout the wetland.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-17

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The area receives frequent overflow flooding from Eagle Creek and backwater from the Ohio River. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 3 | The visual quality/aesthetics of this wetland is low as it is located west of US-41. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 14

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-17 (09/08/2017)

Vegetation along northern boundary of wetland. Water-stained leaves, water marks, drift and debris within the wetland. Minimal herbaceous layer due to prolonged inundation. Photo direction: East



WTL-17 (09/08/2017)

Abundant crayfish burrows were present throughout the wetland. Photo direction: East



WTL-17 (09/08/2017)

Vegetation along northern boundary of wetland. Water-stained leaves and tree debris within wetland. Minimal herbaceous layer. Photo direction: East



WTL-17 (09/08/2017)

Vegetation along northeastern boundary of wetland included a stand of wood nettle. Drift and debris was present throughout the wetland primarily due to Ohio River backwater flooding. Photo direction: West

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/11/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-18
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 8, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 4 Lat: 37.92720 Long: -87.54932 Datum: NAD-1983
 Soil Map Unit Name: Huntington silty clay NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | |
|---|---|
| Hydrophytic vegetation present? <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? <u>Y</u> | |
| Indicators of wetland hydrology present? <u>Y</u> | |

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

This is primarily a depressional bottomland hardwood wetland. The area near US-41 is frequently maintained, killing most of the trees.

Field ID: **C1-WTL-24**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|--|-----------------------------------|-------------------|----------------------|-------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>95</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>95</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>115</u> x 2 = <u>230</u> FAC species <u>25</u> x 3 = <u>75</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>142</u> (A) <u>313</u> (B) Prevalence Index = B/A = <u>2.20</u> |
| Sapling/Shrub stratum (Plot size: <u>15' diameter</u>) | | | | | |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum (Plot size: <u>5' diameter</u>) | | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Toxicodendron radicans</u> | <u>25</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Carex grayi</u> | <u>20</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u>Ambrosia artemisiifolia</u> | <u>2</u> | <u>N</u> | <u>FACU</u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>47</u> | <u>= Total Cover</u> | | |
| Woody vine stratum (Plot size: <u>30' diameter</u>) | | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

This area is a dense stand of silver maple (*Acer saccharinum*) .

SOIL

Sampling Point: WTL-18

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-------------|---------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 95 | 10YR 5/8 | 5 | C | M | Clayey loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input checked="" type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

At the time of the survey, the area was experiencing general drought conditions for July; however sediment deposits remain.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-18

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Large trees within the wetland may provide stabilization for nearby Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat for aquatic fauna is present in Eagle Creek, south of this wetland. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located south of US-41. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 8

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-18 07/11/2017

A depressional bottomland hardwood wetland showing drift and debris.

Photo direction: West



WTL-18 07/11/2017

A depressional bottomland hardwood wetland showing drift and debris.

Photo direction: West

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/11/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-19
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 9, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 10 Lat: 37.92483 Long: -87.54699 Datum: NAD-1983
 Soil Map Unit Name: Huntington silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a depressional bottomland hardwood forest located north of Shawnee Drive and east of US-41. The eastern portion of the wetland is a bowl-shaped depression which may retain water during heavy rain events. **Field ID: C1-WTL-14**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|---|-------------------|----------------------|-------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>90</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>90</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>105</u> x 2 = <u>210</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>125</u> (A) <u>270</u> (B) Prevalence Index = B/A = <u>2.16</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>20</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Urtica dioica</u> | <u>15</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 4 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 5 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 6 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 7 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 8 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 9 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 10 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>35</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| 2 | <u> </u> | <u> </u> | <u> </u> | <u> </u> | |
| | | <u>0</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum surrounding the wetland is dominated by poison ivy (*Toxicodendron radicans*). The canopy is dominated by silver maple (*Acer saccharinum*).

SOIL

Sampling Point: WTL-19

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10 YR 5/4 | 10 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

Type: None
Depth (inches): N/A

Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | |
|--|
| <input type="checkbox"/> Surface Water (A1) |
| <input type="checkbox"/> High Water Table (A2) |
| <input type="checkbox"/> Saturation (A3) |
| <input type="checkbox"/> Water Marks (B1) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) |
| <input checked="" type="checkbox"/> Drift Deposits (B3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) |
| <input type="checkbox"/> Iron Deposits (B5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Water-Stained Leaves (B9) |

- | |
|---|
| <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Gauge or Well Data (D9) |
| <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|--|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. This wetland likely receives runoff from Shawnee Drive.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-19

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located between a levee and I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. Area is dominated by stinging nettle and poison ivy. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-19 (07/11/2017)
Vegetation along northern boundary of wetland.
Photo direction: North

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 7/11/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-20
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 9, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 10 Lat: 37.92341 Long: -87.54595 Datum: NAD-1983
 Soil Map Unit Name: Huntington silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a depressional bottomland hardwood forest located north of Shawnee Drive and east of US-41. This wetland is part of the Eagle Slough Natural Area. **Field ID: C1-WTL-15**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>85</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>85</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>105</u> x 2 = <u>210</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>135</u> (A) <u>300</u> (B) Prevalence Index = B/A = <u>2.22</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>25</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Urtica dioica</u> | <u>20</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>45</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum surrounding the wetland is dominated by poison ivy (*Toxicodendron radicans*). The canopy is dominated by silver maple (*Acer saccharinum*). The wetland likely receives runoff from Shawnee Drive and the parking lot of the Eagle Slough Natural Area.

SOIL

Sampling Point: WTL-20

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 95 | 10 YR 5/4 | 5 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. This wetland likely receives runoff from Shawnee Drive.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-20

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species, and the small size of the wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. Area is dominated by stinging nettle and poison ivy. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-20 (07/11/2017)
 Vegetation along eastern wetland boundary.
 Photo direction: West



WTL-20 (07/11/2017)
 Vegetation along western wetland boundary.
 Photo direction: West

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-21
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 4
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.92271 Long: -87.54621 Datum: NAD-1983
 Soil Map Unit Name: Melvin silty clay loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located east of US-41 and south of Shawnee Drive. This is primarily a PFO wetland with a small PEM component. A channel runs through the wetland, parallel to Shawnee Drive. The land directly south of this wetland is farmed. Field ID: C1-WTL-18 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: An ephemeral channel enters the wetland through a culvert located under Nugent Drive. The channel extends from east to west under US-41. There appears to be an outfall from the adjacent horse track (Ellis Park) as flow was observed in the wetland near Shawnee Drive. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-21**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------|--------------------------|-------------------------------|----------------------|------------------|
| 1 | <i>Leersia oryzoides</i> | 100 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: 50 | | 20% of total cover: 20 | | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

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: **100.00%** (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|------------------|
| OBL species 100 | x 1 = 100 |
| FACW species 0 | x 2 = 0 |
| FAC species 0 | x 3 = 0 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 100 | (A) 0 (B) |

Prevalence Index = B/A = 0.00

Hydrophytic Vegetation Indicators:

☒ 1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

 At the datapoint, the wetland vegetation is dominated by ricecut grass (*Leersia oryzoides*). Rose mallow (*Hibiscus spp.*) and smartweed (*Polygonum spp.*) are present along the western edge of the wetland.

Sampling Point: **WTL-21**

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

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|--|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) | <input type="checkbox"/> Coast Prairie Redox (A16) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) | <input type="checkbox"/> (MLRA 147,148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> (MLRA 136, 147) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | |
- ³Indicators of hydrophytic vegetation a wetland hydrology must be present, unless disturbed or problematic.

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

Type: _____
Depth (inches): _____

Hydric soil present? Yes **X** No

Remarks:
Soils are depleted.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-21

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The small size of this wetland limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | The small size of this wetland limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | The small size of this wetland limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | The size and location of this wetland limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | So potential to support aquatic wildlife vegetation populations exists, as a channel runs through the center of the wetland. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to Shawnee Drive. |

Total Score 7

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-21 (07/12/2017)
Juvenile white-tailed deer within wetland.
Photo direction: South



WTL-21 (07/12/2017)
Vegetation along southwestern wetland boundary near US-41. A channel cuts through the middle of the wetland.
Photo direction: Northwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-22
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 8
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.92271 Long: -87.54621 Datum: NAD-1983
 Soil Map Unit Name: Melvin silty clay loam NWI classification: PFO/PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located east of US-41 and south of Shawnee Drive. This is primarily a PFO wetland with a small PEM component. This datasheet represents the PFO portion of the wetland. A channel runs through the wetland, parallel to Shawnee Drive. The land directly south of this wetland is farmed with a portion of the area being a farmed wetland. Field ID: C1-WTL-07 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? Yes <u> </u> No <u>X</u> (includes capillary fringe) | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: An ephemeral channel runs through the lowest part of the wetland. The channel flows from the east to the west under US-41. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-22**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 90 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 90 | = Total Cover | |
| 50% of total cover: | | 45 | 20% of total cover: | |
| | | | 18 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | |
|-----------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | | | |
|---------------------|----------------------------------|----|---------------------|------|
| 1 | <i>Toxicodendron radicans</i> | 25 | Y | FAC |
| 2 | <i>Cephalanthus occidentalis</i> | 10 | Y | OBL |
| 3 | <i>Urtica dioica</i> | 5 | N | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 40 | = Total Cover | |
| 50% of total cover: | | 20 | 20% of total cover: | |
| | | | 8 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | | | |
|---------------------|-------------------------------|-----|---------------------|-----|
| 1 | <i>Toxicodendron radicans</i> | 5 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 5 | = Total Cover | |
| 50% of total cover: | | 2.5 | 20% of total cover: | |
| | | | 1 | |

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: | Multiply by: |
| OBL species <u>10</u> | x 1 = <u>10</u> |
| FACW species <u>90</u> | x 2 = <u>180</u> |
| FAC species <u>30</u> | x 3 = <u>90</u> |
| FACU species <u>5</u> | x 4 = <u>20</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>135</u> | (A) <u>300</u> (B) |

Prevalence Index = B/A = 2.22

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 Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

The prevalence of buttonbush (*Cephalanthus occidentalis*) increases around the fringe of the wetland.

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|---------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-6 | 10YR 5 / 2 | 95 | 2.5YR 6 / 2 | 5 | C | M | Silt | Duff layer present on soil surface. |
| 6-16 | 10YR 5 / 1 | 100 | | | | | Silt | Gravel at 10 inches and beyond. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (LRR N)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Umbric Surface (F13) (MLRA 136,122)
☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147,148)
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

A duff layer is present on the soil's surface. Some gravel was present in the core at approximately 10 inches below ground surface.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-22

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for the channel. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). A fawn was observed in the wetland. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | Some potential to support aquatic wildlife vegetation populations exists, as a channel runs through the center of the wetland. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. Trash is strewn throughout the wetland. |

Total Score 8

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-22 (07/12/2017)

Narrow, channelized wetland with standing water. Appears to have an outfall from Ellis Park.

Photo direction: East



WTL-22 (07/12/2017)

Narrow, channelized wetland with standing water.

Photo direction: East

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-23
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.92221 Long: -87.54798 Datum: NAD-1983
 Soil Map Unit Name: Made land NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Yes ☒ Are "normal circumstances" present? Yes ☐ No ☒
 Are vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? No ☐ (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |
| Remarks: This is a farmed wetland in a swale located between US-41 and an agricultural field. During the time of the survey, the field was planted with soy beans. Part of this wetland extends into farmed land. In a dry year, it is likely that the entire wetland is farmed. Vegetation, soils, and hydrology have been altered for farming purposes. Tilling and herbicides had killed the natural vegetation at the time of the survey. Field ID: C1-WTL-16 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <input checked="" type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> True Aquatic Plants (B14) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) | <input type="checkbox"/> Moss Trim Lines (B16) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Iron Deposits (B5) | | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input checked="" type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Microtopographic Relief (D4) |
| <input type="checkbox"/> Aquatic Fauna (B13) | | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): >16 Saturation present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): >16 (includes capillary fringe) | | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Surface soil cracks and crayfish burrows are present throughout the wetland. During heavy rain events, the wetland receives runoff from US-41 and surrounding agricultural field. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-23**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Glycine max</i> | 100 | Y | NI |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: | | 50 | 20% of total cover: 20 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|------------------------|------------------|
| OBL species 0 | x 1 = 0 |
| FACW species 0 | x 2 = 0 |
| FAC species 0 | x 3 = 0 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 0 | (A) 0 (B) |

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☒ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

This wetland is partially farmed with soybeans. The vegetation surrounding the soybean field is regularly mowed. Tilling and herbicides had killed all of the natural vegetation at the data point; however, the area would contain wetland plants if allowed to revegetate naturally.

Sampling Point: **WTL-23**

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

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|--|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) | <input type="checkbox"/> Coast Prairie Redox (A16) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) | <input type="checkbox"/> (MLRA 147,148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> (MLRA 136, 147) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | |
- ³Indicators of hydrophytic vegetation a wetland hydrology must be present, unless disturbed or problematic.

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

Type: _____
Depth (inches): _____

Hydric soil present? Yes **X** No

Heavy clay soils restrict soil permeability. The soil core was located in the plow zone mixing soil layers.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-23

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | Effective flood storage is non-existence upslope of the wetland, due to the presence of US-41. The wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | The wetland does not exhibit a high potential to support terrestrial wildlife as the wetland is adjacent to US-41 and partially farmed. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Crayfish burrows were observed during the survey. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located alone the toe slope of US-41. Highway noise is audible from the wetland. |

Total Score 7

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-23 (07/12/2017)
 Narrow, partially farmed wetland along US-41.
 Photo direction: South



WTL-23 (07/12/2017)
 Narrow, partially farmed wetland along US-41. Surface soil cracks and crayfish burrows throughout wetland.
 Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-24
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.92144 Long: -87.54936 Datum: NAD-1983
 Soil Map Unit Name: Huntington fine sandy loam, 0 to 4 percent slopes NWI classification: PEM/PSS/PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is primarily a fringe wetland surrounding a borrow pit, located west of US-41. The portion of the wetland located at the toeslope of US-41 is PFO. As the wetland extends along the western boundary of the borrow pit, it transitions to PEM/PSS vegetation. The land directly west of the wetland is farmed (soybean). Field ID: C1-WTL-19 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Large trees along the eastern boundary of the wetland help stabilize the borrow pit bank during heavy rain events. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-24**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|----------------------|------------------|
| 1 | <i>Salix nigra</i> | 60 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 60 | = Total Cover | |
| 50% of total cover: | | 30 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|----------------------------------|------------------|----------------------|------------------|
| 1 | <i>Cephalanthus occidentalis</i> | 15 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of 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: | Multiply by: |
| OBL species 75 | x 1 = 75 |
| FACW species 0 | x 2 = 0 |
| FAC species 0 | x 3 = 0 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 75 | (A) 75 (B) |

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☒ 1 -Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0¹
- ☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

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

Rose mallow (*Hibiscus spp.*) is present along the western edge of the wetland. A buttonbush (*Cephalanthus occidentalis*) fringe is present along the wetland boundary.

Sampling Point: **WTL-24**

US Army Corps of Engineers Eastern Mountains and Piedmont - Version 2.0
A-112 **Appendix J-1, page 143**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-24

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Large trees, shrubs, and herbs stabilize sediments and the shoreline of the borrow pit. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | The fringe habitat could support avian populations. Killdeer and herons were observed within the wetland. Animal signs (tracks, scats, burrows) were observed. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 3 | Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. Fish (catfish fry) and amphibian (tadpoles) populations were observed in the borrow pit. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-24 (07/19/2017)
 Fringe wetland vegetation along borrow pit.
 Photo direction: South



WTL-24 (07/19/2017)
 Fringe wetland vegetation along borrow pit.
 Photo direction: North

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-25
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.91616 Long: -87.55029 Datum: NAD-1983
 Soil Map Unit Name: Lindside silty clay loam NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a fringe wetland surrounding a borrow pit, located west of US-41. The portion of the wetland located at the toeslope of US-41 is PFO. The land directly west of the wetland is farmed (soybean). Field ID: C1-WTL-20 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Large trees along the eastern boundary of the wetland help stabilize the borrow pit bank during heavy rain events. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-25**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | <i>Salix nigra</i> | 45 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 45 | = Total Cover | |
| 50% of total cover: | | 22.5 | 20% of total cover: 9 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|----------------------------------|------------------|------------------------------|------------------|
| 1 | <i>Cephalanthus occidentalis</i> | 15 | Y | OBL |
| 2 | <i>Toxicodendron radicans</i> | 5 | Y | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 20 | = Total Cover | |
| 50% of total cover: | | 10 | 20% of total cover: 4 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: | Multiply by: |
|-------------------------|-------------------|
| OBL species 60 | x 1 = 60 |
| FACW species 0 | x 2 = 0 |
| FAC species 5 | x 3 = 15 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 65 | (A) 75 (B) |

Prevalence Index = B/A = **1.15**

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

 Rose mallow (*Hibiscus spp.*) is present along the western edge of the wetland. A buttonbush (*Cephalanthus occidentalis*) fringe is present along the wetland boundary.

Sampling Point: **WTL-25**

US Army Corps of Engineers Eastern Mountains and Piedmont - Version 2.0
A-117 **Appendix J-1, page 148**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-25

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Large trees, shrubs, and herbs stabilize sediments and the shoreline of the borrow pit. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | The fringe habitat could support avian populations. Killdeer and herons were observed within the wetland. Animal signs (tracks, scats, burrows) were observed. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 3 | Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. Fish (catfish fry) and amphibian (tadpoles) populations were observed in the borrow pit. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-25 (07/12/2017)
 Vegetation along northern wetland boundary, south of truck weigh-station.
 Photo direction: South



WTL-25 (07/12/2017)
 Surface soil cracks along western boundary.
 Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-26
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.91137 Long: -87.54998 Datum: NAD-1983
 Soil Map Unit Name: Huntington fine sandy loam, 0 to 4 percent slopes NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|---|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located west of US-41. This is a PFO wetland adjacent to an open water that runs under Old River Road. The open water connects to the Ohio River, as a result, the wetland likely receives and retains backwater flooding from the Ohio River during heavy rain and flood events. Field ID: C1-WTL-21 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? Yes <u> </u> No <u>X</u> (includes capillary fringe) | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The wetland likely receives and retains backwater from the Ohio River during heavy rain/flood events. Drift deposits are present throughout the wetland. | | |

Sampling Point: **WTL-26**

| Tree Stratum | | (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|-------------------------------|----------------------------|---------------------|------------------|-------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 90 | Y | FACW | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| | | 90 | = Total Cover | | | |
| 50% of total cover: | | 45 | 20% of total cover: | | 18 | |
| Sapling/Shrub Stratum | | (Plot Size: 15' diameter) | | | | |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| | | 0 | = Total Cover | | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 | |
| Herb Stratum | | (Plot Size: 5' diameter) | | | | |
| 1 | <i>Toxicodendron radicans</i> | 5 | Y | FAC | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| | | 5 | = Total Cover | | | |
| 50% of total cover: | | 2.5 | 20% of total cover: | | 1 | |
| Woody Vine Stratum | | (Plot Size: 30' diameter) | | | | |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| | | 0 | = Total Cover | | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 | |

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: | Multiply by: |
|-------------------------|--------------------|
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>90</u> | x 2 = <u>180</u> |
| FAC species <u>5</u> | x 3 = <u>15</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>95</u> | (A) <u>195</u> (B) |

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

 1 -Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

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

The herbaceous stratum is minimal due to shading from the dense canopy cover. There are drift deposits throughout the wetland. There is minimal vegetative diversity. Silver maple (*Acer saccharinum*) comprises nearly 100% of the stand.

Sampling Point: **WTL-26**

US Army Corps of Engineers A-122 Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 153

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-26

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains floodwater from the Ohio River during heavy rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Large trees within the wetland may aid in sediment, nutrient, and toxicant removal. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for the channel. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | So potential to support aquatic wildlife vegetation populations exists, as a channel runs through the center of the wetland. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. |

Total Score 10

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-26 07/12/2017

Wetland vegetation and water marks on trees showing evidence of inundation.

Photo direction: South



WTL-26 07/12/2017

Wetland vegetation and water marks on trees showing evidence of inundation.

Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-27
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.91025 Long: -87.55038 Datum: NAD-1983
 Soil Map Unit Name: Egam silty clay loam NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located west of US-41. This is a PFO wetland adjacent to an open water area that runs through a culvert under Old River Road. The open water connects to the Ohio River, as a result, the wetland likely receives and retains backwater flooding from the Ohio River during heavy rain and backwater flood events. Field ID: C1-WTL-22 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The wetland likely receives and retains backwater flooding from the Ohio River during heavy rain and flood events based on the presence of the drift and debris. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-27**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 85 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 85 | = Total Cover | |
| 50% of total cover: | | 42.5 | 20% of total cover: 17 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|-----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|-------------------------|------------------|
| 1 | <i>Toxicodendron radicans</i> | 5 | Y | FAC |
| 2 | <i>Carex grayi</i> | 5 | Y | FACW |
| 3 | <i>Ambrosia trifida</i> | 2 | N | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 12 | = Total Cover | |
| 50% of total cover: | | 6 | 20% of total cover: 2.4 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|-----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: | Multiply by: |
|-------------------------|--------------------|
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>90</u> | x 2 = <u>180</u> |
| FAC species <u>7</u> | x 3 = <u>21</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>97</u> | (A) <u>201</u> (B) |

Prevalence Index = B/A = 2.07

Hydrophytic Vegetation Indicators:

1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

The herbaceous stratum is minimal at this data point due to shading from the dense canopy cover. There is minimal vegetative diversity. Rose mallow (*Hibiscus spp.*) and buttonbush (*Cephalanthus occidentalis*) are growing along northern boundary of the wetland and giant ragweed (*Ambrosia trifida*) is abundant just outside the wetland boundary.

Sampling Point: **WTL-27**

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 158

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-27

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains floodwater from the Ohio River during heavy rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Large trees within the wetland may aid in sediment, nutrient, and toxicant removal. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for the channel. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | Some potential to support aquatic wildlife vegetation populations exists, as it's located adjacent to a waterbody. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-27 07/12/2017

Vegetation along southern boundary of wetland.

Photo direction: North



WTL-27 07/12/2017

Depressional bottomland hardwood wetland in the Ohio River floodplain

Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 18, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-28
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.90076 Long: -87.55455 Datum: NAD-1983
 Soil Map Unit Name: Huntington silt loam, 0 to 4 percent slopes, occasionally flooded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a narrow slough located west of US-41 that may have been excavated to improve drainage in the area. Field ID: C1-WTL-25 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u>X</u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? Yes <u> </u> No <u>X</u> (includes capillary fringe) | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The wetland has deep surface soil cracks and had recently dried up during a dry period. The wetland has deep desiccation soil cracks. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-28**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|-------------------------------|------------------------------|----------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: 5 | | 20% of total cover: 2 | | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------|--------------------------|------------------------------|----------------------|------------------|
| 1 | <i>Glyceria striata</i> | 40 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 40 | = Total Cover | |
| 50% of total cover: 20 | | 20% of total cover: 8 | | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

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: | Multiply by: |
|------------------------|------------------|
| OBL species 1 | x 1 = 1 |
| FACW species 1 | x 2 = 2 |
| FAC species 0 | x 3 = 0 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 2 | (A) 3 (B) |

 Prevalence Index = B/A = **1.50**
Hydrophytic Vegetation Indicators:

- ☒ 1 -Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is $\leq 3.0^1$
- ☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes **X** No

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

60% of the herb stratum is unvegetated. There is a small stand of mixed wetland vegetation nearby including cattail (*Typha spp.*), soft rush (*Juncus effusus*), Indian seaoats (*Chasmanthium latifolium*), and fringed orchid (*Platanthera spp.*).

Sampling Point: **WTL-28**

US Army Corps of Engineers Eastern Mountains and Piedmont - Version 2.0
A-132 **Appendix J-1, page 163**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-28

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Small wetland size limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. |

Total Score 9

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-28 07/18/2017

Cattail (*Typha latifolia*) and desiccation soil cracks in wetland. Notice the succession of cottonwood (*Populus deltoides*) and green ash (*Fraxinus pennsylvanica*) in adjacent areas. Photo direction: West



WTL-28 07/18/2017

Cattail (*Typha latifolia*) in wetland near US-41.
Photo direction: East

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 18, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point WTL-29-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 8
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89956 Long: -87.55396 Datum: NAD-1983
 Soil Map Unit Name: Newark silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland datapoint is located west of US-41. The Ohio River floods this wetland system, scouring out tree roots and leaving drift deposits. Field ID: C1-WTL-26-1 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|--|---|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> | Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> | Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> | Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> | Moss Trim Lines (B16) |
| <u>X</u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> | Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> | Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> | Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> | Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> | Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> | Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> | Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> | FAC-Neutral Test (D5) |
| Field Observations: | | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: The area appears to receive frequent overflow flooding from the Ohio River. | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-29-1**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
|-------------------------------|-------------------------------|-------------------------------|-------------------|------------------|---|
| 1 | <i>Acer saccharinum</i> | 90 | Y | FACW | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| | | 90 | = Total Cover | | Prevalence Index worksheet Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>90</u> x 2 = <u>180</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>120</u> (A) <u>270</u> (B) Prevalence Index = B/A = 2.25 |
| 50% of total cover: <u>45</u> | | 20% of total cover: <u>18</u> | | | |
| | | | | | |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | | |
| 1 | | | | | Hydrophytic Vegetation Indicators: <u>1</u> -Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation¹ (Explain)</u> ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: <u>0</u> | | 20% of total cover: <u>0</u> | | | |
| | | | | | |
| Herb Stratum | (Plot Size: 5' diameter) | | | | |
| 1 | <i>Campsis radicans</i> | 15 | Y | FAC | Definitions of Four Vegetation Strata: Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. |
| 2 | <i>Toxicodendron radicans</i> | 10 | Y | FAC | |
| 3 | <i>Smilax rotundifolia</i> | 5 | N | FAC | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| | | 30 | = Total Cover | | |
| 50% of total cover: <u>15</u> | | 20% of total cover: <u>6</u> | | | |
| | | | | | |
| Woody Vine Stratum | (Plot Size: 30' diameter) | | | | |
| 1 | | | | | Hydrophytic Vegetation Present? Yes <u>X</u> No _____ |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: <u>0</u> | | 20% of total cover: <u>0</u> | | | |

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

Herbaceous stratum is minimal due to canopy cover and prolonged flooding.

SOIL

Sampling Point: **WTL-29-1**

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|----|-------------------|------|---------|---------|
| Depth (inches) | Matrix | | Redox Features | | | | | |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc2 | Texture | Remarks |
| 0-3 | 10YR 5 / 3 | 100 | | | | | Silt | |
| 3-16 | 10YR 5 / 2 | 80 | 10YR 6 / 8 | 10 | C | M | Silt | |
| | | | 2.5YR 4 / 6 | 10 | C | M | Silt | |
| | | | | | | | | |
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| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

| | | | |
|---|---|--|--|
| Hydric Soil Indicators: | | Indicators for Problematic Hydric Soils³: | |
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) | <input type="checkbox"/> Coast Prairie Redox (A16) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) | <input type="checkbox"/> (MLRA 147,148) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) | |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> (MLRA 136, 147) | |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) | | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | | |

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No _____

Remarks:
Soils are frequently scoured from Ohio River flooding.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 1, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point WTL-29-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89783 Long: -87.55413 Datum: NAD-1983
 Soil Map Unit Name: Newark silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland datapoint is located west of US-41. Most of this wetland is a bottomland hardwood wetland system. Frequent US-41 and powerline right-of-way maintenance through the use of mowing and herbicides makes this a herbaceous wetland. Field ID: C1-WTL-26-2 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|--|--|---|--|
| Primary Indicators (minimum of one is required; check all that apply) | | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) | |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Sparsely Vegetated Concave Surface (B8) | |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) | |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) | |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) | |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) | |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) | |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) | |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) | |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) | |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) | |
| | | <u> </u> FAC-Neutral Test (D5) | |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: This area receives frequent overflow flooding from the Ohio River. | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-29-2**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
|-----------------------|----------------------------------|------------------|----------------------|------------------|-----------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |
| Herb Stratum | (Plot Size: 5' diameter) | | | | |
| 1 | <i>Lythrum salicaria</i> | 40 | Y | FACW | |
| 2 | <i>Polygonum hydropiper</i> | 30 | Y | NI | |
| 3 | <i>Cephalanthus occidentalis</i> | 25 | Y | OBL | |
| 4 | <i>Saururus cernuus</i> | 15 | N | OBL | |
| 5 | <i>Fraxinus pennsylvanica</i> | 10 | N | FACW | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| | | 120 | = Total Cover | | |
| 50% of total cover: | | 60 | 20% of total cover: | | 24 |
| Woody Vine Stratum | (Plot Size: 30' diameter) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across all Strata: 3 (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|------------------------|------------------|
| OBL species <u>2</u> | x 1 = <u>2</u> |
| FACW species <u>2</u> | x 2 = <u>4</u> |
| FAC species <u>0</u> | x 3 = <u>0</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>4</u> | (A) <u>6</u> (B) |

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:
☒ 1 -Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

 The area is maintained for US-41 and a utility right-of-way. 5% of the herb stratum contains rosemallow (*Hibiscus spp.*).

SOIL

Sampling Point: WTL-29-2

[illegible]

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-29

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 3 | The wetland likely receives and retains water from the Ohio River during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Overall potential for sediment trapping exists in this wetland. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). The relatively large size of this wetland could support large mammal species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in the wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. Highway noise is audible from the wetland. |

Total Score 13

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-29 07/18/2017

PFO portion of the wetland with sparsely vegetated herbaceous layer. This wetland photo is east of US-41.

Photo direction: West



WTL-29 07/18/2017

PFO portion of the wetland with sparsely vegetated herbaceous layer, likely due to scouring, and water marls with US-41 in the background. Photo direction: Southwest



WTL-29 07/18/2017

PEM wetland vegetation under US-41. A dense stand of purple loosestrife (*Lythrum salicaria*) is present.

Photo direction: South



WTL-29 07/18/2017

PEM wetland vegetation west of US-41 with a dense stand of purple loosestrife (*Lythrum salicaria*) present in the background on the photograph. Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 12, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-30
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 4
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89765 Long: -87.55306 Datum: NAD-1983
 Soil Map Unit Name: Sciotoville fine sandy loam, 0 to 2 percent NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This small wetland is located east of US-41. The Ohio River floods this wetland system, scouring out tree roots and leaving drift deposits. Field ID: C1-WTL-27 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The area appears to receive frequent overflow flooding from the Ohio River. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-30**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 85 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 85 | = Total Cover | |
| 50% of total cover: | | 42.5 | 20% of total cover: | |
| | | | 17 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | |
|-----------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | | | |
|---------------------|-------------------------------|------|---------------------|-----|
| 1 | <i>Toxicodendron radicans</i> | 20 | Y | FAC |
| 2 | <i>Smilax rotundifolia</i> | 5 | Y | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 25 | = Total Cover | |
| 50% of total cover: | | 12.5 | 20% of total cover: | |
| | | | 5 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | | | |
|---------------------|-------------------------------|-----|---------------------|-----|
| 1 | <i>Toxicodendron radicans</i> | 5 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 5 | = Total Cover | |
| 50% of total cover: | | 2.5 | 20% of total cover: | |
| | | | 1 | |

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: | Multiply by: |
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>85</u> | x 2 = <u>170</u> |
| FAC species <u>30</u> | x 3 = <u>90</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>115</u> | (A) <u>260</u> (B) |

Prevalence Index = B/A = 2.26

Hydrophytic Vegetation Indicators:

- 1 -Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

The herbaceous layer is sparse due to canopy cover and prolonged flooding.

Sampling Point: **WTL-30**

US Army Corps of Engineers A-146 Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 177

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-30

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Animal signs were observed within the wetland (tracks, scat, burrows). |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-30

Water-stained leaves and tree debris within wetland. Sparsely vegetated herbaceous stratum.

Photo direction: East



WTL-30

Water-stained leaves and tree debris within wetland. Sparsely vegetated herbaceous stratum.

Photo direction: East

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 1, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-31-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 5
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89581 Long: -87.55595 Datum: NAD-1983
 Soil Map Unit Name: Newark silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|---|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a large broad bottomland hardwood forested wetland located west of US-41. Portions of the wetland form a fringe around a borrow pit, located south of the wetland. Field ID: C1-WTL-33-1 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? Yes <u> </u> No <u>X</u> (includes capillary fringe) | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: During heavy rain events, the wetland receives runoff from US-41, and in receives overflow flooding from the borrow pit and the Ohio River. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-31-1**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Acer rubrum</i> | 70 | Y | FAC |
| 2 | <i>Acer saccharinum</i> | 20 | N | FACW |
| 3 | <i>Fraxinus pennsylvanica</i> | 20 | N | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 110 | = Total Cover | |
| 50% of total cover: | | 55 | 20% of total cover: | |
| | | | 22 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Celtis laevigata</i> | 15 | Y | FACW |
| 2 | <i>Quercus lyrata</i> | 10 | Y | OBL |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 25 | = Total Cover | |
| 50% of total cover: | | 12.5 | 20% of total cover: | |
| | | | 5 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------|------------------|---------------------|------------------|
| 1 | <i>Campsis radicans</i> | 70 | Y | FAC |
| 2 | <i>Leersia virginica</i> | 20 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 90 | = Total Cover | |
| 50% of total cover: | | 45 | 20% of total cover: | |
| | | | 18 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

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

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>10</u> | x 1 = <u>10</u> |
| FACW species <u>75</u> | x 2 = <u>150</u> |
| FAC species <u>140</u> | x 3 = <u>420</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>225</u> | (A) <u>580</u> (B) |

 Prevalence Index = B/A = 2.58
Hydrophytic Vegetation Indicators:

- 1 -Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

The wetland had a dense herbaceous layer at this datapoint.

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

| Depth (inches) | Matrix | | | Redox Features | | | | Texture | Remarks | |
|-------------------|---------------|-------|----|----------------|-------|-------------------|------|---------|------------|------------------------------------|
| | Color (moist) | % | | Color (moist) | % | Type ¹ | Loc2 | | | |
| 0-3 | 10YR | 5 / 2 | 90 | 10YR | 5 / 6 | 10 | C | M | Silty clay | This duff layer on soil's surface. |
| 3-16 | 10YR | 5 / 2 | 75 | 10YR | 6 / 6 | 25 | C | M | Silty clay | |
| | | | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

A thin duff layer is present on the soil's surface. Redox features increase with depth.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 1, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-31-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89526 Long: -87.55568 Datum: NAD-1983
 Soil Map Unit Name: Sciotoville fine sandy loam, 0 to 2 percent slopes NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | | |
|---|-----------------------------|---------------------------------------|-----------------------------|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? | Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | | |
| Remarks: This is a large broad bottomland hardwood forested wetland located west of US-41. Portions of the wetland form a fringe around a borrow pit, located south of this wetland data point. Field ID: C1-WTL-33-2 | | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|--|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) | |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) | |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) | |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) | |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) | |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) | |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) | |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) | |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) | |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) | |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) | |
| Field Observations: | | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: During heavy rain events, the wetland may receive runoff from US-41, and it receives overflow flooding from the borrow pit and the Ohio River. Crayfish burrows are present near this datapoint. A culvert that runs under US-41 drains into the wetland toward the borrow pit. Drift and debris is strewn throughout the wetland. Evidence of beaver activity was observed at this point. | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-31-2**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 85 | Y | FACW |
| 2 | <i>Betula nigra</i> | 20 | N | FACW |
| 3 | <i>Fraxinus pennsylvanica</i> | 10 | N | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 115 | = Total Cover | |
| 50% of total cover: | | 57.5 | 20% of total cover: | |
| | | | 23 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | |
|-----------------------|-------------------------------|-----|---------------------|------|
| 1 | <i>Fraxinus pennsylvanica</i> | 15 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |
| | | | 3 | |

| Herb Stratum | (Plot Size: 5' diameter) | | | |
|---------------------|-------------------------------|----|---------------------|-----|
| 1 | <i>Campsis radicans</i> | 10 | Y | FAC |
| 2 | <i>Toxicodendron radicans</i> | 5 | Y | FAC |
| 3 | <i>Smilax rotundifolia</i> | 5 | Y | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 20 | = Total Cover | |
| 50% of total cover: | | 10 | 20% of total cover: | |
| | | | 4 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | | | |
|---------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

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

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>130</u> | x 2 = <u>260</u> |
| FAC species <u>20</u> | x 3 = <u>60</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>150</u> | (A) <u>320</u> (B) |

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

1 -Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

The wetland transitions to a buttonbush (*Cephalanthus occidentalis*) fringe around the borrow pit. The herb stratum is sparsely vegetated due to shading from the dense canopy cover. River birch (*Betula nigra*) is present along the the bank of the borrow pit.

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

| Depth (inches) | Matrix | | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|-------|-----|----------------|-------|----|-------------------|------|------------|---------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | Loc2 | | |
| 0-3 | 10YR | 4 / 3 | 100 | | | | | | Sandy loam | |
| 3-16 | 10YR | 4 / 2 | 90 | 10YR | 5 / 8 | 10 | C | M | Sandy loam | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|---|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|--|
| <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Coast Prairie Redox (A16) |
| <input type="checkbox"/> (MLRA 147,148) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) |
| <input type="checkbox"/> (MLRA 136, 147) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators 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:

Redox features increase with depth.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-31

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | During heavy rain events, the wetland may receive runoff from US-41 and overflow from the borrow pit. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). Evidence of beaver activity was observed. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | The borrow pit adjacent to the wetland may provide habitat for aquatic species. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 3 | |

Total Score 14

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-31 (08/01/2017)

Dense vegetation along the western boundary of the wetland.

Photo direction: West



WTL-31 (08/01/2017)

Wetland vegetation along the western boundary of the wetland and drift and debris strewn throughout wetland from overflow flooding. Photo direction: West

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 3, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-32-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 5
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89230 Long: -87.54997 Datum: NAD-1983
 Soil Map Unit Name: Alford silt loam, 30 to 60 percent slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located north of Wolf Hills Road and east of Mound Slough. North of this point, the wetland transitions into willow dominated scrub-shrub habitat. This wetland had both a PFO and PEM component. This datasheet represents a PEM portion of the wetland. Field ID: C1-WTL-28-1 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u>X</u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0-3</u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: The wetland likely receives and retains water during heavy rain/flood events and backwater flooding from the Ohio River. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-32-1**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
|-----------------------|----------------------------------|------------------|----------------------|------------------|-----------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | <i>Cephalanthus occidentalis</i> | 10 | Y | OBL | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| | | 10 | = Total Cover | | |
| 50% of total cover: | | 5 | 20% of total cover: | | 2 |
| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | <i>Persicaria pensylvanica</i> | 85 | Y | FACW | |
| 2 | <i>Typha latifolia</i> | 5 | N | OBL | |
| 3 | <i>Salix nigra</i> | 5 | N | OBL | |
| 4 | | | | | |
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| 10 | | | | | |
| 11 | | | | | |
| | | 95 | = Total Cover | | |
| 50% of total cover: | | 47.5 | 20% of total cover: | | 19 |
| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |

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

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
 Total Number of Dominant Species Across all Strata: _____ (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|---------------------|---------------------|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column totals _____ | (A) _____ (B) _____ |

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
☒ 1 -Rapid Test for Hydrophytic Vegetation
 _____ 2 - Dominance Test is >50%
 _____ 3 - Prevalence Index is ≤3.0¹
 _____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No _____

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|-------------------|------------|----------------|---|-------------------|------------------|-------------------|--|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-16 | 10YR 5 / 1 | 100 | | | | | Silty clay | Some organic matter within core |
| | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

Some organic matter is present within the top two inches of the soil sample.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 2, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-32-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88937 Long: -87.54136 Datum: NAD-1983
 Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located north of Wolf Hills Road and east of Mound Slough. The wetland was inundated at the time of observations. It is likely dry most of the year, however, recent heavy rain has caused temporary inundation. This wetland had both a PFO and PEM component. This datasheet represents a PEM portion of the wetland. Field ID: C1-WTL-28-2 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u>X</u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0-3</u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: The wetland likely receives and retains water during heavy rain/flood events and overflow flooding from the Ohio River. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-32-2**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
|-----------------------|--------------------------------|------------------|----------------------|------------------|-----------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | <i>Salix nigra</i> | 15 | Y | OBL | |
| 2 | <i>Populus deltoides</i> | 10 | Y | FAC | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| | | 25 | = Total Cover | | |
| 50% of total cover: | | 12.5 | 20% of total cover: | | 5 |
| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | <i>Phyla lanceolata</i> | 80 | Y | OBL | |
| 2 | <i>Persicaria pensylvanica</i> | 10 | N | FACW | |
| 3 | <i>Penthorum sedoides</i> | 5 | N | OBL | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| | | 95 | = Total Cover | | |
| 50% of total cover: | | 47.5 | 20% of total cover: | | 19 |
| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: | | 0 | 20% of total cover: | | 0 |

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: | Multiply by: | |
| OBL species | <u>100</u> | x 1 = <u>100</u> |
| FACW species | <u>10</u> | x 2 = <u>20</u> |
| FACU species | <u>0</u> | x 3 = <u>0</u> |
| UPL species | <u>0</u> | x 4 = <u>0</u> |
| Column totals | <u>120</u> | (A) <u>150</u> (B) |

Prevalence Index = B/A = 1.25

Hydrophytic Vegetation Indicators:
1 -Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

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

 Succession of eastern cottonwood (*Populus deltoides*) and willows (*Salix spp.*) will likely revert this area to PFO.

Sampling Point: WTL-32-2

US Army Corps of Engineers A-162 Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 193

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 18, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-32-3
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 4
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89617 Long: -87.55362 Datum: NAD-1983
 Soil Map Unit Name: Huntington fine sandy loam, 0 to 4 percent slopes NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland is located north of Wolf Hills Road and east of Mound Slough in the Ohio River floodplain. This wetland had both a PFO and PEM component. This datasheet represents a PFO portion of the wetland. Field ID: C1-WTL-28-3 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0-3</u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: The wetland likely receives and retains water during heavy rain and flood events and overflow flooding from the Ohio River. Drift deposits and water-stained leaves were present throughout the wetland. This data point may be part of an old creek bed. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-32-3**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------------|------------------|---------------------|------------------|
| 1 | <i>Liquidambar styraciflua</i> | 80 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |
| 50% of total cover: | | 40 | 20% of total cover: | |
| | | | 16 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Laportea canadensis</i> | 15 | Y | FAC |
| 2 | <i>Campsis radicans</i> | 10 | Y | FAC |
| 3 | <i>Toxicodendron radicans</i> | 5 | N | FAC |
| 4 | <i>Symphotrichum dumosum</i> | 5 | N | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 35 | = Total Cover | |
| 50% of total cover: | | 17.5 | 20% of total cover: | |
| | | | 7 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

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: | Multiply by: |
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>0</u> | x 2 = <u>0</u> |
| FAC species <u>115</u> | x 3 = <u>345</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>115</u> | (A) <u>345</u> (B) |

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

1 -Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

The succession of sweetgum (*Liquidambar styraciflua*) in this area limits the herbaceous layer.

Sampling Point: **WTL-32-3**

US Army Corps of Engineers

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-32

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 3 | The wetland likely receives and retains floodwater from the Ohio River during heavy rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 3 | Large trees within the wetland may aid in sediment, nutrient, and toxicant removal. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 3 | Large trees within the wetland may provide stabilization and erosion control. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland is large enough to support a variety of terrestrial species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 3 | Some potential to support aquatic wildlife vegetation populations exists. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 3 | |

Total Score 18

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-32 08/03/2017
Wetland vegetation along Wolf Hills Road showing the scrub-shrub habitat.
Photo direction: East



WTL-32 08/03/2017
Wetland vegetation along Wolf Hills Road.
Photo direction: West



WTL-32 08/03/2017

Ponded water along toeslope of Wolf Hills Road showing a diverse scrub-shrub swamp habitat.

Photo direction: North



WTL-32 08/03/2017

Wetland vegetation along Wolf Hills Road showing scrub-shrub habitat on the margins and a monotypic smartweed in the water areas. Photo direction: Northeast



WTL-32 08/03/2017
PFO vegetation and inundation near the toe slope of US-41.
Photo direction: East



WTL-32 08/03/2017
PFO vegetation near the toe slope of US-41, notice the non-vegetated concave surfaces.
Photo direction: East

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 1, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-33-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 7
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89271 Long: -87.55665 Datum: NAD-1983
 Soil Map Unit Name: Melvin silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PEM/PSS/PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a large wetland complex located west of US-41 and Stratman Road. Portions of the wetland are bottomland hardwood forest, while other portions contain strictly emergent vegetation. This datasheet represents a forested portion of the wetland complex. Field ID: C1-WTL-32-1 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: During heavy rain events, the wetland may receive runoff from US-41. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-33-1**

| Tree Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|-------------------------------|------------------------|----------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 75 | Y | FACW |
| 2 | <i>Celtis laevigata</i> | 20 | N | FACW |
| 3 | <i>Fraxinus pennsylvanica</i> | 20 | N | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 115 | = Total Cover | |
| 50% of total cover: 57.5 | | 20% of total cover: 23 | | |

| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---|-------------------------|-----------------------|----------------------|------------------|
| 1 | <i>Asimina triloba</i> | 10 | Y | FAC |
| 2 | <i>Acer saccharinum</i> | 5 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: 7.5 | | 20% of total cover: 3 | | |

| Herb Stratum (Plot Size: 5' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------------|-------------------------------|------------------------|----------------------|------------------|
| 1 | <i>Smilax rotundifolia</i> | 25 | Y | FAC |
| 2 | <i>Toxicodendron radicans</i> | 20 | Y | FAC |
| 3 | <i>Laportea canadensis</i> | 15 | Y | FAC |
| 4 | <i>Campsis radicans</i> | 10 | N | FAC |
| 5 | <i>Carex grayi</i> | 5 | N | FACW |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 75 | = Total Cover | |
| 50% of total cover: 37.5 | | 20% of total cover: 15 | | |

| Woody Vine Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|--|-----------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

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

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>125</u> | x 2 = <u>250</u> |
| FAC species <u>80</u> | x 3 = <u>240</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>205</u> | (A) <u>490</u> (B) |

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

1 -Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

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

 The wetland had a dense herbaceous layer at this datapoint. Some swamp white oak (*Quercus bicolor*) is present east of the datapoint.

SOIL

Sampling Point: WTL-33-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks | |
|-------------------|---------------|-------|----------------|------|-------------------|------|---|---------|------------|--|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc2 | | | | |
| 0-3 | 10YR | 5 / 3 | 95 | 10YR | 5 / 6 | 5 | C | M | Silty clay | |
| 3-16 | 10YR | 5 / 2 | 80 | 10YR | 6 / 6 | 10 | C | M | Silty clay | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

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

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

Redox features increase with depth.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 1, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-33-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89038 Long: -87.55833 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI classification: PEM/PSS/PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a large wetland complex located west of US-41 and Stratman Road. Portions of the wetland are bottomland hardwood forest, while other portions contain strictly emergent vegetation. This datasheet represents a PEM portion of the wetland complex. Field ID: C1-WTL-32-2 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: This datapoint is located within the plowzone of a previously cleared site. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-33-2**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
|---------------------------------|------------------------------|------------------------------|----------------------|------------------|--|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | | |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | <i>Platanus occidentalis</i> | 10 | Y | FACW | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| | | 10 | = Total Cover | | |
| 50% of total cover: 5 | | 20% of total cover: 2 | | | |
| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | <i>Carex frankii</i> | 25 | Y | OBL | |
| 2 | <i>Scirpus cyperinus</i> | 20 | Y | FACW | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| | | 45 | = Total Cover | | |
| 50% of total cover: 22.5 | | 20% of total cover: 9 | | | |
| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | 0 | = Total Cover | | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | | |

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
 Total Number of Dominant Species Across all Strata: _____ (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|---------------------|---------------------|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column totals _____ | (A) _____ (B) _____ |

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
☒ 1 -Rapid Test for Hydrophytic Vegetation
 _____ 2 - Dominance Test is >50%
 _____ 3 - Prevalence Index is ≤3.0¹
 _____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No _____

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

 This data point is located near a stand of *Phragmites*. Cottonwood (*Populus deltoides*) succession is beginning to take over the site.

Sampling Point: **WTL-33-2**

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

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____
Depth (inches): _____

Hydric soil present? Yes **X** No

Remarks:
This datapoint is located within the plowzone of a previously cleared site.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 2, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-33-3
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88763 Long: -87.56122 Datum: NAD-1983
 Soil Map Unit Name: Newark silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PEM/PSS/PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|---|--|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Remarks: This is a large wetland complex located west of US-41 and Stratman Road. Portions of the wetland are bottomland hardwood forest, while other portions contain strictly emergent vegetation. This datasheet represents a scrub-shrub portion of the wetland complex. The datapoint is located behind a pump station off of Stratman Road. Field ID: C1-WTL-32-3 | |

HYDROLOGY

| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | |
| <u> </u> Surface Water (A1) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u>X</u> Drainage Patterns (B10) |
| <u>X</u> Water Marks (B1) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | <u> </u> Microtopographic Relief (D4) |
| | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: The wetland has some inundation near this point. During heavy rain events, the wetland would be inundated at this sample point. | |

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

| Depth (inches) | Matrix | | Redox Features | | | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------|---|---|-----------------|---------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc2 | | | | |
| 0-6 | 10YR | 3 / 2 | 95 | 10YR | 5 / 6 | 5 | C | M | Silty clay loam | |
| 6-16 | 10YR | 5 / 4 | 50 | 2.5YR | 5 / 1 | 50 | C | M | Silty clay loam | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
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| | | | | | | | | | | |

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

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (LRR N)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Umbric Surface (F13) (MLRA 136,122)
☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147,148)
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

Redox features increase with depth.

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-33-3**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|----------------------------------|------------------|----------------------|------------------|
| 1 | <i>Populus deltoides</i> | 40 | Y | FAC |
| 2 | <i>Cephalanthus occidentalis</i> | 10 | N | OBL |
| 3 | <i>Fraxinus pennsylvanica</i> | 10 | N | FACW |
| 4 | <i>Platanus occidentalis</i> | 10 | N | FACW |
| 5 | <i>Acer saccharinum</i> | 5 | N | FACW |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 75 | = Total Cover | |
| 50% of total cover: | | 37.5 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|----------------------------|------------------|----------------------|------------------|
| 1 | <i>Leersia oryzoides</i> | 40 | Y | OBL |
| 2 | <i>Laportea canadensis</i> | 10 | Y | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 50 | = Total Cover | |
| 50% of total cover: | | 25 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of 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: | Multiply by: |
| OBL species 50 | x 1 = 50 |
| FACW species 25 | x 2 = 50 |
| FAC species 50 | x 3 = 150 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 125 | (A) 250 (B) |

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0¹
- ☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

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

There is a dense stand of early successional light mast saplings near this datapoint.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 26, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-33-4
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88466 Long: -87.56743 Datum: NAD-1983
 Soil Map Unit Name: Newark silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PEM/PSS/PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a large wetland complex located west of US-41 and Stratman Road. Portions of the wetland are bottomland hardwood forest, while other portions contain strictly emergent vegetation. This datasheet represents a scrub-shrub portion of the wetland complex. The datapoint is located in a powerline right-of-way. Field ID: C1-WTL-32-4 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The wetland has some inundation near this point. During heavy rain events, the wetland would be inundated at this sample point. A stream connects to the eastern boundary of the wetland near this datapoint. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-33-4**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

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: | Multiply by: |
|-------------------------|-------------------|
| OBL species 0 | x 1 = 0 |
| 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 40 | (A) 80 (B) |

Prevalence Index = B/A = **2.00**

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|-------------------------------|------------------------------|----------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: 5 | | 20% of total cover: 2 | | |

Hydrophytic Vegetation Indicators:

☒ 1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------|--------------------------------|-------------------------------|----------------------|------------------|
| 1 | <i>Panicum miliaceum</i> | 40 | Y | NI |
| 2 | <i>Persicaria pensylvanica</i> | 30 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 70 | = Total Cover | |
| 50% of total cover: 35 | | 20% of total cover: 14 | | |

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

Sampling Point: **WTL-33-4**

US Army Corps of Engineers

A-181

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 212

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-33

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|----------|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 4 | |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 3 | |

Total Score 14

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-33 (08/01/2017)

Wetland vegetation near inundated portion of the wetland. Duckweed is present on the water's surface. The cleared area appears to be a road cut through the successional trees. Photo direction: West



WTL-33 (08/01/2017)

Wetland vegetation in forested portion of the wetland.
Photo direction: West



WTL-33 (08/01/2017)
 Herbaceous wetland vegetation within a powerline right-of-way.
 Photo direction: Northeast



WTL-33 (08/01/2017)
 Herbaceous wetland vegetation within a powerline right-of-way and successional growth of light mast producing trees on the right of the photograph. Photo direction: Southwest



WTL-33 (08/01/2017)

Wetland vegetation along US-41 in a previously cleared/farmed area. Note the early succession of cottonwood (*Populus deltoides*) trees in the background of the photograph. Photo direction: Southeast



WTL-33 (08/01/2017)

Wetland vegetation beginning at the toe of US-41.
Photo direction: Northeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 30, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-36
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 5
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.85553 Long: -87.57372 Datum: NAD-1983
 Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small depressional wetland located along the toe of slope of US-41 and its connection to Hwy-60. During heavy rain events, the wetland likely receives and retains runoff from US-41, Hwy-60, and Elk Ave. Field ID: C1-WTL-39 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|--|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: A culvert drains into the southwestern boundary of the wetland. A second culvert, under US-41, drains into the northern boundary of the wetland; standing water is present in a scour hole directly in front of this culvert. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-36**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix nigra</i> | 30 | Y | OBL |
| 2 | <i>Populus deltoides</i> | 15 | Y | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 45 | = Total Cover | |
| 50% of total cover: | | 22.5 | 20% of total cover: | |
| | | | 9 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix nigra</i> | 5 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 5 | = Total Cover | |
| 50% of total cover: | | 2.5 | 20% of total cover: | |
| | | | 1 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------|------------------|---------------------|------------------|
| 1 | <i>Leersia oryzoides</i> | 40 | Y | OBL |
| 2 | <i>Typha latifolia</i> | 25 | Y | OBL |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 65 | = Total Cover | |
| 50% of total cover: | | 32.5 | 20% of total cover: | |
| | | | 13 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|------------------------------------|------------------|---------------------|------------------|
| 1 | <i>Parthenocissus quinquefolia</i> | 5 | Y | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 5 | = Total Cover | |
| 50% of total cover: | | 2.5 | 20% of total cover: | |
| | | | 1 | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 83.33% (A/B)

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>100</u> | x 1 = <u>100</u> |
| FACW species <u>0</u> | x 2 = <u>0</u> |
| FAC species <u>15</u> | x 3 = <u>45</u> |
| FACU species <u>5</u> | x 4 = <u>20</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>120</u> | (A) <u>165</u> (B) |

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

- 1 -Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

Upland vegetation adjacent to the wetland is mowed.

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

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks | |
|-------------------|---------------|-------|----------------|---------------|-------|----|-------------------|---------|------------|------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | | | Loc2 |
| 0-3 | 10YR | 4 / 3 | 100 | | | | | | Silty clay | |
| 3-16 | 10YR | 5 / 2 | 85 | 10YR | 5 / 6 | 15 | C | M | Silty clay | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |

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

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

Mottles increase with depth. Top soil layer appears to have eroded into the site from the adjacent roadway fill.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-36

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Effective flood storage is non-existence upslope of the wetland, due to the presence of US-41. The wetland likely only receives and retains water during high rain/flood events; however the small watershed limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | The wetland does not exhibit a high potential to support terrestrial wildlife as the wetland is adjacent to US-41, Hwy, 60, and Elk Ave. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is some pooled/ponded water in this wetland, therefore, this wetland has some potential to support aquatic wildlife populations. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located along the toe slope of the US-41/Hwy-60 interchange. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-36 08/30/2017
 Cattail (*Typha latifolia*) within wetland.
 Photo direction: Northwest



WTL-36 08/30/2017
 Wetland vegetation
 Photo direction: Southeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 30, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-37
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.84998 Long: -87.56841 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small depressional wetland located west of US-41 and northeast of Kimsey Lane. Field ID: C1-WTL-38 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u>X</u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? (includes capillary fringe) Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Water marks are visible, extending 12 inches above ground surface. A ephemeral channel enters the wetland at the southeast corner, providing hydrology to this area. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-37**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix nigra</i> | 65 | Y | OBL |
| 2 | <i>Acer negundo</i> | 10 | N | FAC |
| 3 | <i>Acer saccharinum</i> | 5 | N | FACW |
| 4 | <i>Populus deltoides</i> | 5 | N | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 85 | = Total Cover | |
| 50% of total cover: | | 42.5 | 20% of total cover: | |
| | | | 17 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | |
|-----------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | | | |
|---------------------|--------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | | | |
|---------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

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: 100.00% (A/B)

Prevalence Index worksheet

| | |
|------------------------|------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>1</u> | x 1 = <u>1</u> |
| FACW species <u>1</u> | x 2 = <u>2</u> |
| FAC species <u>2</u> | x 3 = <u>6</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>4</u> | (A) <u>9</u> (B) |

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

- ☒ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

There is no vegetation within the herb stratum. Water stained leaves, moss, and tree debris are present throughout the wetland.

Sampling Point: **WTL-37**

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

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____
Depth (inches): _____

Hydric soil present? Yes **X** No

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 224

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-37

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Effective flood storage is non-existence upslope of the wetland, due to the presence of US-41. The wetland likely only receives and retains water during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | The wetland does not exhibit a high potential to support terrestrial wildlife as the wetland is adjacent to US-41 and Kimsey Lane. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located alone the toe slope of US-41. Highway noise is audible from the wetland. |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-37 (08/30/2017)

Water marks and sparse herbaceous layer in the depressional wetland.

Photo direction: North



WTL-37 (08/30/2017)

Water marks on tree bases. Leaf litter throughout wetland.

Photo direction: Northwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-38
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.83592 Long: -87.56522 Datum: NAD-1983
 Soil Map Unit Name: Uniontown silty clay loam, 2 to 6 percent slopes, severely eroded NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---------------------------------|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |

Remarks: This is a small roadside ditch wetland west of US-41, between a culvert outfall and a right-of-way fence.

Field ID: W-2

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|--|-----------------------------|-------------------------------|--|
| Surface water present? | Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u> </u> No <u>X</u> | Depth (inches): <u>>21</u> | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> | Depth (inches): <u>>21</u> | |

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

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-38**

| Tree Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|-------------------------------|-----------------------|-------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: 5 | | 20% of total cover: 2 | | |

| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---|-------------------------------|-----------------------|-------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 5 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 5 | = Total Cover | |
| 50% of total cover: 2.5 | | 20% of total cover: 1 | | |

| Herb Stratum (Plot Size: 5' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------------|-------------------------------|------------------------|-------------------|------------------|
| 1 | <i>Leersia virginica</i> | 80 | Y | FACW |
| 2 | <i>Echinochloa crus-galli</i> | 5 | N | FAC |
| 3 | <i>Setaria pumila</i> | 5 | N | FAC |
| 4 | <i>Sorghum halepense</i> | 5 | N | FACU |
| 5 | <i>Festuca arundinacea</i> | 5 | N | NI |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: 50 | | 20% of total cover: 20 | | |

| Woody Vine Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|--|-----------------------|-------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

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

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: | Multiply by: |
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>95</u> | x 2 = <u>190</u> |
| FAC species <u>10</u> | x 3 = <u>30</u> |
| FACU species <u>5</u> | x 4 = <u>20</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>110</u> | (A) <u>240</u> (B) |

 Prevalence Index = B/A = 2.18

Hydrophytic Vegetation Indicators:
☒ 1 -Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

| Depth (inches) | Matrix | | Redox Features | | | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------------------|------------------|--|--|-----------------|---------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | | | |
| 0-3 | 2.5Y 3 / 2 | 80 | 7.5YR 4 / 6 | 20 | C | M | | | Silty clay loam | |
| 3-6 | 10YR 5 / 2 | 80 | 7.5YR 4 / 6 | 20 | C | M | | | Silty clay loam | |
| 6-21 | 10YR 5 / 4 | 50 | | | | | | | | |
| + | 10YR 5 / 2 | 30 | 7.5YR 4 / 6 | 20 | C | M | | | Silty clay loam | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

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

- | | |
|---|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147,148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators 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:

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-38

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-38 (10/19/2017)
Wetland vegetation and shovel pit.
Photo direction: West



WTL-38 (10/19/2017)
Wetland vegetation.
Photo direction: North

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point WTL-39
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.83352 Long: -87.56561 Datum: NAD-1983
 Soil Map Unit Name: Alford silt loam, 6 to 12 percent slopes, eroded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil X, or Hydrology significantly disturbed? Yes Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch wetland in the center median of US-41. Field ID: W-3 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u>X</u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u>X</u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? | Yes <u>X</u> No <u> </u> Depth (inches): <u>3</u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>6</u> | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>6</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-39**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Echinochloa crus-galli</i> | 40 | Y | FAC |
| 2 | <i>Leersia virginica</i> | 20 | Y | FACW |
| 3 | <i>Typha angustifolia</i> | 5 | N | OBL |
| 4 | <i>Carex grayi</i> | 5 | N | FACW |
| 5 | <i>Setaria pumila</i> | 5 | N | FAC |
| 6 | <i>Plantago lanceolata</i> | 3 | N | UPL |
| 7 | <i>Setaria viridis</i> | 2 | N | NI |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 80 | = Total Cover | |
| 50% of total cover: | | 40 | 20% of total cover: 16 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: | Multiply by: |
|-------------------------|--------------------|
| OBL species 5 | x 1 = 5 |
| FACW species 25 | x 2 = 50 |
| FAC species 45 | x 3 = 135 |
| FACU species 0 | x 4 = 0 |
| UPL species 3 | x 5 = 15 |
| Column totals 78 | (A) 205 (B) |

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

☐ 1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

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

20% of the herbaceous stratum is unvegetated.

Sampling Point: **WTL-39**

US Army Corps of Engineers Eastern Mountains and Piedmont - Version 2.0
A-203 **Appendix J-1, page 234**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-39

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-39 (10/19/2017)
Emergent vegetation in narrow wetland. The wetland is located in the median of US-41.
Photo direction: Northeast



WTL-39 (10/19/2017)
Emergent vegetation in narrow wetland. The wetland is located in the median of US-41.
Photo direction: Southwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point WTL-40
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.83111 Long: -87.56736 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil X, or Hydrology significantly disturbed? Yes Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is an narrow emergent wetland west of US-41, adjacent to a highschool. Field ID: W-1 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|--|--|---|--|
| Primary Indicators (minimum of one is required; check all that apply) | | | |
| <u>X</u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) | |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) | |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) | |
| <u>X</u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) | |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) | |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) | |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) | |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) | |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) | |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) | |
| <u>X</u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) | |
| Field Observations: | | | |
| Surface water present? | Yes <u>X</u> No <u> </u> Depth (inches): <u>3</u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>4</u> | | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>4</u> | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: Three inches of surface water was present; however, problematic soils did not allow a soil pit to be dug. During heavy rain events, the wetland would receive runoff from US-41. | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-40**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Persicaria pensylvanica</i> | 78 | Y | FACW |
| 2 | <i>Typha angustifolia</i> | 5 | N | OBL |
| 3 | <i>Poa pratensis</i> | 5 | N | FACU |
| 4 | <i>Phalaris arundinacea</i> | 5 | N | FACW |
| 5 | <i>Schedonorus arundinaceus</i> | 5 | N | FACU |
| 6 | <i>Glechoma hederacea</i> | 2 | N | FACU |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: | | 50 | 20% of total cover: 20 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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

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: 100.00% (A/B)

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>5</u> | x 1 = <u>5</u> |
| FACW species <u>83</u> | x 2 = <u>166</u> |
| FAC species <u>0</u> | x 3 = <u>0</u> |
| FACU species <u>12</u> | x 4 = <u>48</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>100</u> | (A) <u>219</u> (B) |

Prevalence Index = B/A = 2.19

Hydrophytic Vegetation Indicators:
☒ 1 -Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

SOIL

Sampling Point: WTL-40

[illegible]

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-40

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-40 (10/19/2017)
Wetland vegetation and riprap.
Photo direction: Southeast



WTL-40 (10/19/2017)
Wetland vegetation and riprap.
Photo direction: Northwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-41
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.83070 Long: -87.56526 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch swale east of US-41. Field ID: W-4 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u>X</u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u>X</u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u>X</u> No <u> </u> | Depth (inches): <u>1</u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? (includes capillary fringe) Yes <u>X</u> No <u> </u> | Depth (inches): <u>12"</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-41**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Persicaria pensylvanica</i> | 60 | Y | FACW |
| 2 | <i>Poa pratensis</i> | 30 | Y | FACU |
| 3 | <i>Digitaria ischaemum</i> | 10 | N | UPL |
| 4 | <i>Setaria pumila</i> | 5 | N | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 105 | = Total Cover | |
| 50% of total cover: | | 52.5 | 20% of total cover: 21 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

Dominance Test worksheet:

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

Total Number of Dominant Species Across all Strata: **2** (B)

Percent of Dominant Species that are OBL, FACW, or FAC: **50.00%** (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species 0 | x 1 = 0 |
| FACW species 60 | x 2 = 100 |
| FAC species 5 | x 3 = 15 |
| FACU species 30 | x 4 = 120 |
| UPL species 10 | x 5 = 50 |
| Column totals 105 | (A) 310 (B) |

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes **X** No

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

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

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks | |
|-------------------|---------------|-------|----------------|---------------|-------|----|-------------------|---------|-----------|------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | | | Loc2 |
| 0-8 | 2.5Y | 3 / 2 | 80 | 7.5YR | 4 / 6 | 20 | C | M | Silt loam | |
| 8-16 | 2.5Y | 4 / 3 | 90 | 7.5YR | 4 / 6 | 10 | C | M | Silt loam | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

- | | |
|---|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|--|
| <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Coast Prairie Redox (A16) |
| <input type="checkbox"/> (MLRA 147,148) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) |
| <input type="checkbox"/> (MLRA 136, 147) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: Gravel
 Depth (inches): 16"
Hydric soil present? Yes X No

Remarks:

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-41

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-41 (10/19/2017)
Emergent vegetation and culvert.
Photo direction: Southeast



WTL-41 (10/19/2017)
Emergent vegetation in narrow wetland near US-41.
Photo direction: West

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-42
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.83045 Long: -87.56450 Datum: NAD-1983
 Soil Map Unit Name: Henshaw silt loam, 0 to 2 percent slopes, rarely flooded NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch emergent wetland north of Zion Road and east of US-41. Field ID: W-5 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-42**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|----------------------------|-----------------------|----------------------|---------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Sapling/Shrub Stratum | | (Plot Size: 15' diameter) | | |
|-----------------------|--------------------------------|---------------------------|-----------------------|------|
| 1 | <i>Salix interior</i> | 10 | Y | FACW |
| 2 | <i>Liquidambar styraciflua</i> | 5 | Y | FAC |
| 3 | <i>Acer saccharinum</i> | 5 | Y | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 20 | = Total Cover | |
| 50% of total cover: | | 10 | 20% of total cover: 4 | |

| Herb Stratum | (Plot Size: 5' diameter) | | | |
|---------------------|-----------------------------------|-----|------------------------|------|
| 1 | <i>Typha angustifolia</i> | 55 | Y | OBL |
| 2 | <i>Dichanthelium clandestinum</i> | 20 | N | FAC |
| 3 | <i>Persicaria pensylvanica</i> | 10 | N | FACW |
| 4 | <i>Poa pratensis</i> | 10 | N | FACU |
| 5 | <i>Echinochloa crus-galli</i> | 5 | N | FAC |
| 6 | <i>Setaria viridis</i> | 5 | N | NI |
| 7 | <i>Cyperus esculentus</i> | 5 | N | FACW |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 110 | = Total Cover | |
| 50% of total cover: | | 55 | 20% of total cover: 22 | |

| Woody Vine Stratum | | (Plot Size: 30' diameter) | | |
|---------------------|--|---------------------------|-----------------------|--|
| 1 | | | | |
| 2 | | | | |
| | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: | Multiply by: |
| OBL species 55 | x 1 = 55 |
| FACW species 30 | x 2 = 60 |
| FAC species 30 | x 3 = 90 |
| FACU species 10 | x 4 = 40 |
| UPL species 0 | x 5 = 0 |
| Column totals 125 | (A) 245 (B) |

Prevalence Index = B/A = 1.96

Hydrophytic Vegetation Indicators:

☐ 1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes **X** No

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

Sampling Point: **WTL-42**

US Army Corps of Engineers

A-218

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 249

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-42

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-42 (10/19/2017)
Emergent vegetation within roadside wetland.
Photo direction: Southeast



WTL-42 (10/19/2017)
Emergent vegetation within roadside wetland.
Photo direction: Northwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-43
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.82992 Long: -87.56735 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | | |
|---|-----------------------------|---------------------------------------|-----------------------------|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? | Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | | |
| Remarks: This is a small roadside ditch emergent wetland at a culvert east of US-41 and south of Zion Road. Field ID: W-6 | | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|--|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) | |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) | |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) | |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) | |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) | |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) | |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) | |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) | |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) | |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) | |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) | |
| Field Observations: | | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-43**

| Tree Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|-------------------------------|-----------------------|-------------------|------------------|
| 1 | <i>Catalpa speciosa</i> | 10 | Y | FAC |
| 2 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 | = Total Cover | |
| 50% of total cover: 10 | | 20% of total cover: 4 | | |

| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---|--------------------|-----------------------|-------------------|------------------|
| 1 | <i>Rhus glabra</i> | 10 | Y | NI |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: 5 | | 20% of total cover: 2 | | |

| Herb Stratum (Plot Size: 5' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------------|--------------------------------|------------------------|-------------------|------------------|
| 1 | <i>Echinochloa crus-galli</i> | 45 | Y | FAC |
| 2 | <i>Persicaria pensylvanica</i> | 15 | Y | FACW |
| 3 | <i>Festuca arundinacea</i> | 10 | N | NI |
| 4 | <i>Lonicera japonica</i> | 10 | N | FAC |
| 5 | <i>Dipsacus fullonum</i> | 5 | N | FACU |
| 6 | <i>Glechoma hederacea</i> | 5 | N | FACU |
| 7 | <i>Sorghum halepense</i> | 5 | N | FACU |
| 8 | <i>Carex grayi</i> | 5 | N | FACW |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: 50 | | 20% of total cover: 20 | | |

| Woody Vine Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|--|-----------------------|-------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

Dominance Test worksheet:

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

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>30</u> | x 2 = <u>60</u> |
| FAC species <u>65</u> | x 3 = <u>195</u> |
| FACU species <u>15</u> | x 4 = <u>60</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>110</u> | (A) <u>315</u> (B) |

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

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

Sampling Point: **WTL-43**

US Army Corps of Engineers

A-223

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 254

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-43

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-43 (10/19/2017)
Emergent vegetation and soil pit.
Photo direction: West



WTL-43 (10/19/2017)
Emergent vegetation and soil pit.
Photo direction: Southeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-44
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.82807 Long: -87.56665 Datum: NAD-1983
 Soil Map Unit Name: Uniontown silt loam, 2 to 6 percent slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|---|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch emergent wetland east of US-41, south of Zion Road. Field ID: W-8 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u>X</u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u>X</u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u>X</u> No <u> </u> | Depth (inches): <u>21"</u> | |
| Saturation present? Yes <u>X</u> No <u> </u> (includes capillary fringe) | Depth (inches): <u>20"</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: There is one inch of water within the soil pit. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-44**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------------|------------------|---------------------------------|------------------|
| 1 | <i>Echinochloa crus-galli</i> | 88 | Y | FAC |
| 2 | <i>Setaria pumila</i> | 10 | N | FAC |
| 3 | <i>Poa pratensis</i> | 5 | N | FACU |
| 4 | <i>Schedonorus arundinaceus</i> | 5 | N | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 108 | = Total Cover | |
| 50% of total cover: | | 54 | 20% of total cover: 21.6 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: **100.00%** (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species 0 | x 1 = 0 |
| FACW species 0 | x 2 = 0 |
| FAC species 98 | x 3 = 294 |
| FACU species 10 | x 4 = 40 |
| UPL species 0 | x 5 = 0 |
| Column totals 108 | (A) 334 (B) |

Prevalence Index = B/A = **3.09**

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

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

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks | |
|-------------------|---------------|-------|----------------|-------|-------------------|------|---|---------|-----------------|--|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc2 | | | | |
| 0-8 | 2.5Y | 3 / 1 | 95 | 7.5YR | 4 / 6 | 5 | C | M | Silty clay loam | |
| 8-21 | 2.5Y | 4 / 2 | 80 | 7.5YR | 4 / 6 | 20 | C | M | Silty clay loam | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (LRR N)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Umbric Surface (F13) (MLRA 136,122)
☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147,148)
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A
 Depth (inches): N/A

Hydric soil present? Yes X No

Remarks:

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-44

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-44 (10/20/2017)
Emergent vegetation.
Photo direction: North



WTL-44 (10/20/2017)
Emergent vegetation.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-45
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.82723 Long: -87.56650 Datum: NAD-1983
 Soil Map Unit Name: Hosmer silt loam, 2 to 6 percent slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | | |
|---|-----------------------------|---------------------------------------|-----------------------------|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? | Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | | |
| Remarks: This is a small roadside ditch emergent wetland south of Zion Road, east of US-41. Field ID: W-9 | | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-45**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------|---------------------------------|-------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |
| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
| 1 | <i>Typha angustifolia</i> | 50 | Y | OBL |
| 2 | <i>Poa pratensis</i> | 15 | N | FACU |
| 3 | <i>Dipsacus fullonum</i> | 10 | N | FACU |
| 4 | <i>Schedonorus arundinaceus</i> | 5 | N | FACU |
| 5 | <i>Setaria pumila</i> | 5 | N | FAC |
| 6 | <i>Paspalum dilatatum</i> | 5 | N | FAC |
| 7 | <i>Setaria viridis</i> | 5 | N | NI |
| 8 | <i>Echinochloa crus-galli</i> | 5 | N | FAC |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: 50 | | 20% of total cover: 20 | | |
| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
| 1 | <i>Lonicera japonica</i> | 15 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: 7.5 | | 20% of total cover: 3 | | |

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: | Multiply by: |
|--------------------------|--------------------|
| OBL species 50 | x 1 = 50 |
| FACW species 0 | x 2 = 0 |
| FAC species 30 | x 3 = 90 |
| FACU species 30 | x 4 = 120 |
| UPL species 0 | x 5 = 0 |
| Column totals 110 | (A) 260 (B) |

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

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

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks | |
|-------------------|---------------|-------|----------------|---------------|-------|----|-------------------|---------|-----------------|------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | | | Loc2 |
| 0-8 | 2.5Y | 4 / 2 | 90 | 7.5YR | 4 / 6 | 10 | C | M | Silty clay loam | |
| 8-21 | 10YR | 4 / 3 | 80 | 7.5YR | 4 / 6 | 20 | C | M | Silty clay loam | |
| | | | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (LRR N)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Umbric Surface (F13) (MLRA 136,122)
☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147,148)
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A
 Depth (inches): N/A

Hydric soil present? Yes X No

Remarks:

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-45

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-45 (10/20/2017)
Emergent vegetation.
Photo direction: Northwest



WTL-45 (10/20/2017)
Emergent vegetation.
Photo direction: Northwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-46
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.82597 Long: -87.56588 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | | |
|--|-----------------------------|---------------------------------------|-----------------------------|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? | Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | | |
| Remarks: This is a small roadside ditch emergent wetland south of Zion Road, east of US-41. Field ID: W-10 | | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|--|---|---|--|
| Primary Indicators (minimum of one is required; check all that apply) | | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) | |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) | |
| <u>X</u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) | |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) | |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) | |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) | |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) | |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) | |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) | |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) | |
| <u> </u> Aquatic Fauna (B13) | | <u>X</u> FAC-Neutral Test (D5) | |
| Field Observations: | | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Yes <u>X</u> No <u> </u> | |
| Water table present? | Yes <u>X</u> No <u> </u> Depth (inches): <u>20"</u> | | |
| Saturation present? (includes capillary fringe) | Yes <u>X</u> No <u> </u> Depth (inches): <u>19"</u> | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-46**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------|--------------------------------|-------------------------------|----------------------|------------------|
| 1 | <i>Phalaris arundinacea</i> | 75 | Y | FACW |
| 2 | <i>Toxicodendron radicans</i> | 6 | N | FAC |
| 3 | <i>Persicaria pensylvanica</i> | 5 | N | FACW |
| 4 | <i>Echinochloa crus-galli</i> | 5 | N | FAC |
| 5 | <i>Campsis radicans</i> | 5 | N | FAC |
| 6 | <i>Typha angustifolia</i> | 2 | N | OBL |
| 7 | <i>Poa pratensis</i> | 2 | N | FACU |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: 50 | | 20% of total cover: 20 | | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | <i>Lonicera japonica</i> | 5 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 5 | = Total Cover | |
| 50% of total cover: 2.5 | | 20% of total cover: 1 | | |

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: | Multiply by: |
|--------------------------|--------------------|
| OBL species 2 | x 1 = 2 |
| FACW species 80 | x 2 = 160 |
| FAC species 21 | x 3 = 63 |
| FACU species 2 | x 4 = 8 |
| UPL species 0 | x 5 = 0 |
| Column totals 105 | (A) 233 (B) |

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes **X** No

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

Sampling Point: **WTL-46**

US Army Corps of Engineers Eastern Mountains and Piedmont - Version 2.0
A-238 **Appendix J-1, page 269**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-46

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-46 (10/20/2017)
Emergent vegetation.
Photo direction: Northwest



WTL-46 (10/20/2017)
Emergent vegetation.
Photo direction: Southeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-47
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.82465 Long: -87.56789 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a roadside ditch. Field ID: W-7 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|--|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u>X</u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u>X</u> No <u> </u> Depth (inches): <u>6"</u> | |
| Saturation present? (includes capillary fringe) | Yes <u>X</u> No <u> </u> Depth (inches): <u>6"</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-47**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|----------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|-------------------------------|------------------|----------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 5 | Y | FACW |
| 2 | <i>Salix interior</i> | 5 | Y | FACW |
| 3 | <i>Acer saccharinum</i> | 5 | Y | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------------|------------------|----------------------|------------------|
| 1 | <i>Typha angustifolia</i> | 71 | Y | OBL |
| 2 | <i>Phalaris arundinacea</i> | 20 | Y | FACW |
| 3 | <i>Carex brachyglossa</i> | 5 | N | NI |
| 4 | <i>Conoclinium coelestinum</i> | 2 | N | FAC |
| 5 | <i>Plantago lanceolata</i> | 2 | N | UPL |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: | | 50 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **5** (A)

Total Number of Dominant Species Across all Strata: **5** (B)

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

Prevalence Index worksheet

| | |
|--------------------------|-------------------|
| Total % Cover of: | Multiply by: |
| OBL species 71 | x 1 = 5 |
| FACW species 35 | x 2 = 70 |
| FAC species 2 | x 3 = 6 |
| FACU species 0 | x 4 = 0 |
| UPL species 2 | x 5 = 10 |
| Column totals 110 | (A) 91 (B) |

Prevalence Index = B/A = 0.83

Hydrophytic Vegetation Indicators:

☒ 1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

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

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

| Depth (inches) | Matrix | | Redox Features | | | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|---------------|-------|----|-------------------|------|-----------------|---------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | Loc2 | | |
| 0-6 | 2.5Y | 3 / 2 | 80 | 7.5YR | 4 / 6 | 20 | C | M | Silty clay loam | |
| 6-16 | 2.5Y | 4 / 1 | 70 | 10YR | 4 / 6 | 30 | C | M | Silty clay loam | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

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

☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A
 Depth (inches): N/A

Hydric soil present? Yes X No

Remarks:

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-47

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-47 (10/19/2017)
Emergent vegetation.
Photo direction: Southeast



WTL-47 (10/19/2017)
Emergent vegetation.
Photo direction: Southwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-48
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.81815 Long: -87.56317 Datum: NAD-1983
 Soil Map Unit Name: Henshaw silt loam, 0 to 2 percent slopes, rarely flooded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|-----------------------------------|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: Field ID: W-14 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u>X</u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u>X</u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u>X</u> No <u> </u> Depth (inches): <u>16"</u> | |
| Saturation present? (includes capillary fringe) | Yes <u>X</u> No <u> </u> Depth (inches): <u>14"</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-48**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: | | 5 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix interior</i> | 10 | Y | FACW |
| 2 | <i>Fraxinus pennsylvanica</i> | 5 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Typha angustifolia</i> | 50 | Y | OBL |
| 2 | <i>Scirpus atrovirens</i> | 15 | Y | OBL |
| 3 | <i>Setaria pumila</i> | 10 | N | FAC |
| 4 | <i>Poa pratensis</i> | 5 | N | FACU |
| 5 | <i>Echinochloa crus-galli</i> | 5 | N | FAC |
| 6 | <i>Carex grayi</i> | 5 | N | FACW |
| 7 | <i>Cyperus esculentus</i> | 5 | N | FACW |
| 8 | <i>Sorghum halepense</i> | 2 | N | FACU |
| 9 | <i>Plantago lanceolata</i> | 2 | N | UPL |
| 10 | <i>Solidago altissima</i> | 2 | N | FACU |
| 11 | <i>Eupatorium serotinum</i> | 2 | N | FAC |
| | | 103 | = Total Cover | |
| 50% of total cover: | | 51.5 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

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

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species <u>65</u> | x 1 = <u>65</u> |
| FACW species <u>35</u> | x 2 = <u>70</u> |
| FAC species <u>17</u> | x 3 = <u>51</u> |
| FACU species <u>9</u> | x 4 = <u>36</u> |
| UPL species <u>2</u> | x 5 = <u>10</u> |
| Column totals <u>128</u> | (A) <u>232</u> (B) |

 Prevalence Index = B/A = 1.81
Hydrophytic Vegetation Indicators:

- ☒ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- 3 - Prevalence Index is $\leq 3.0^1$
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

Sampling Point: **WTL-48**

US Army Corps of Engineers

A-248

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 279

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-48

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-48 (10/20/2017)
Emergent vegetation in narrow road-side wetland.
Photo direction: Southwest



WTL-48 (10/20/2017)
Emergent vegetation in narrow road-side wetland.
Photo direction: Northwest

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-49
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.81786 Long: -87.56290 Datum: NAD-1983
 Soil Map Unit Name: Patton silty clay loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil X, or Hydrology naturally problematic? Yes (If needed, explain any answers in Remarks.)

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

| | |
|---|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch within the median of US-41, north of Airline Road. Field ID: W-13 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? (includes capillary fringe) Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-49**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: | | 5 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix interior</i> | 10 | Y | FACW |
| 2 | <i>Fraxinus pennsylvanica</i> | 5 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Carex alopecoidea</i> | 30 | Y | FACW |
| 2 | <i>Typha angustifolia</i> | 20 | Y | OBL |
| 3 | <i>Echinochloa crus-galli</i> | 15 | Y | FAC |
| 4 | <i>Setaria pumila</i> | 15 | Y | FAC |
| 5 | <i>Setaria viridis</i> | 10 | N | NI |
| 6 | <i>Festuca arundinacea</i> | 10 | N | NI |
| 7 | <i>Plantago lanceolata</i> | 5 | N | UPL |
| 8 | <i>Cyperus esculentus</i> | 5 | N | NI |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 110 | = Total Cover | |
| 50% of total cover: | | 55 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

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

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>20</u> | x 1 = <u>20</u> |
| FACW species <u>55</u> | x 2 = <u>110</u> |
| FAC species <u>30</u> | x 3 = <u>90</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>5</u> | x 5 = <u>25</u> |
| Column totals <u>110</u> | (A) <u>245</u> (B) |

 Prevalence Index = B/A = 2.23
Hydrophytic Vegetation Indicators:

1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤ 3.0 ¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

Sampling Point: **WTL-49**

US Army Corps of Engineers A-253 Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 284

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-49

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-49 (10/20/2017)

Emergent vegetation in narrow wetland. The wetland is located in the median of US-41.

Photo direction: North



WTL-49 (10/20/2017)

Emergent vegetation in narrow wetland. The wetland is located in the median of US-41.

Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-50
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.81717 Long: -87.56300 Datum: NAD-1983
 Soil Map Unit Name: Henshaw silt loam, 0 to 2 percent slopes, rarely flooded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil X, or Hydrology naturally problematic? Yes (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch within the median of US-41, north of Airline Road. Field ID: W-12 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u>X</u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? | Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> | Yes <u>X</u> No <u> </u> |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-50**

| Tree Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|-------------------------------|-----------------------|----------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: 5 | | 20% of total cover: 2 | | |

| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---|-------------------------------|-----------------------|----------------------|------------------|
| 1 | <i>Salix interior</i> | 10 | Y | FACW |
| 2 | <i>Fraxinus pennsylvanica</i> | 5 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: 7.5 | | 20% of total cover: 3 | | |

| Herb Stratum (Plot Size: 5' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------------|-------------------------------|------------------------|----------------------|------------------|
| 1 | <i>Typha angustifolia</i> | 70 | Y | OBL |
| 2 | <i>Echinochloa crus-galli</i> | 25 | Y | FAC |
| 3 | <i>Setaria pumila</i> | 5 | N | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 100 | = Total Cover | |
| 50% of total cover: 50 | | 20% of total cover: 20 | | |

| Woody Vine Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|--|-----------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

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

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species <u>70</u> | x 1 = <u>70</u> |
| FACW species <u>25</u> | x 2 = <u>50</u> |
| FAC species <u>30</u> | x 3 = <u>90</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>125</u> | (A) <u>210</u> (B) |

Prevalence Index = B/A = 1.68

Hydrophytic Vegetation Indicators:

 1 -Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

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

Sampling Point: **WTL-50**

US Army Corps of Engineers

A-258

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 289

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-50

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-50 (10/20/2017)

Emergent vegetation in narrow wetland. The wetland is located in the median of US-41.

Photo direction: South



WTL-50 (10/20/2017)

Emergent vegetation in narrow wetland. The wetland is located in the median of US-41.

Photo direction: North

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 20, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-51
 Investigator(s): Gregory Moushon; Hannah Marriott Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.81658 Long: -87.56258 Datum: NAD-1983
 Soil Map Unit Name: Dekoven silt loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|---|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This is a small roadside ditch emergent wetland east of US-41, north of Airline Road. Field ID: W-11 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u>X</u> No <u> </u> | Depth (inches): <u>18"</u> | |
| Saturation present? Yes <u>X</u> No <u> </u> (includes capillary fringe) | Depth (inches): <u>16"</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: There is three inches of water in the soil pit. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-51**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Fraxinus pennsylvanica</i> | 10 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |
| 50% of total cover: | | 5 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix interior</i> | 10 | Y | FACW |
| 2 | <i>Fraxinus pennsylvanica</i> | 5 | Y | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-----------------------------------|------------------|---------------------|------------------|
| 1 | <i>Echinochloa crus-galli</i> | 20 | Y | FAC |
| 2 | <i>Phalaris arundinacea</i> | 15 | Y | FACW |
| 3 | <i>Dichanthelium clandestinum</i> | 15 | Y | FAC |
| 4 | <i>Cyperus esculentus</i> | 10 | N | FACW |
| 5 | <i>Poa pratensis</i> | 5 | N | FACU |
| 6 | <i>Toxicodendron radicans</i> | 5 | N | FAC |
| 7 | <i>Setaria pumila</i> | 5 | N | FAC |
| 8 | <i>Setaria viridis</i> | 5 | N | NI |
| 9 | <i>Campsis radicans</i> | 5 | N | FAC |
| 10 | <i>Solidago altissima</i> | 5 | N | FACU |
| 11 | <i>Schizachyrium scoparium</i> | 2 | N | FACU |
| | | 92 | = Total Cover | |
| 50% of total cover: | | 46 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

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

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>50</u> | x 2 = <u>100</u> |
| FAC species <u>50</u> | x 3 = <u>150</u> |
| FACU species <u>12</u> | x 4 = <u>48</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>112</u> | (A) <u>298</u> (B) |

 Prevalence Index = B/A = 2.66
Hydrophytic Vegetation Indicators:

 1 -Rapid Test for Hydrophytic Vegetation

 X 2 - Dominance Test is >50%

 X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

Sampling Point: **WTL-51**

US Army Corps of Engineers

A-263

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 294

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-51

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 0 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 5

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-51 (10/20/2017)
Emergent vegetation.
Photo direction: Southeast



WTL-51 (10/20/2017)
Emergent vegetation.
Photo direction: Southeast

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-52
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 2, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 5 Lat: 37.93877 Long: -87.50651 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|--|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID: <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a bottomland hardwood forest located south of I-69 and north of Eagle Creek. During rain events, the wetland likely receives runoff from I-69. The wetland may provide effective flood water storage for Eagle Creek. **Field ID: C1-WTL-03**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>75</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>75</u> | <u>= Total Cover</u> | | |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>77</u> x 2 = <u>154</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>82</u> (A) <u>169</u> (B) Prevalence Index = B/A = <u>2.06</u> |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Carex grayi</u> | <u>2</u> | <u>N</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>2</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is a sparsely vegetated concave surface at this data point.

SOIL

Sampling Point: WTL-52

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-16 | 10YR 4/2 | 90 | 10 YR 5/8 | 10 | C | M | Clayey loam | Thin leaf litter on soil's surface. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. The southern portion of this wetland abuts the Eagle Creek stream terrace.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-52

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 3 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 3 | This floodplain wetland had frequent overflow flooding from Eagle Creek which is affected by the Ohio River. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for nearby Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species. I-69 disturbance limits the quality of the wetland. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. The wetland benefits ephemeral species, especially during spring floods. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located south of I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 14

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-52 (06/27/17)

Vegetation along eastern boundary of wetland. Water-stained leaves and tree debris within wetland. Sparsely vegetated herbaceous layer. Photo direction: West



WTL-52 (06/27/17)

Vegetation along south western boundary of wetland.
Photo direction: North

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-53
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 2, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave
 Slope (%): 4 Lat: 37.93884 Long: -87.50728 Datum: NAD-1983
 Soil Map Unit Name: Newark silty clay loam NWI Classification: PFO

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? No Are "normal circumstances" present? Yes
 Are vegetation , soil , or hydrology naturally problematic? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a bottomland hardwood forest located south of I-69 and north of Eagle Creek. During rain events, the wetland likely receives runoff from I-69. The wetland may provide effective flood water storage for Eagle Creek. **Field ID: C1-WTL-04**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>4</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>80</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>80</u> | <u>= Total Cover</u> | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>82</u> x 2 = <u>164</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>92</u> (A) <u>194</u> (B) Prevalence Index = B/A = <u>2.11</u> |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>0</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | <u>Carex grayi</u> | <u>2</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>7</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>5</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |

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

The herbaceous stratum is a minimally vegetated. The forest floor is covered with leaf litter, tree debris, and river trash and debris.

SOIL

Sampling Point: WTL-53

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------|-------|-------------|-------------------------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-2 | 10YR 3/3 | 100 | | | | | Clayey loam | Thin leaf litter on soil's surface. |
| 2-16 | 10YR 4/2 | 90 | 10 YR 5/8 | 10 | C | M | Clayey loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

There is a thin layer of leaf litter on top of the soil's surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input checked="" type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|---|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? (includes capillary fringe) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

Indicators of wetland hydrology present? Y

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

Remarks:

Water-stained leaves demarcate low-lying areas where water is retained during rain/flood events. Crayfish burrows are present throughout the wetland. The southern portion of this wetland abuts the Eagle Creek stream terrace. Sediment deposits (thin coatings of silt) are visible on tree trunk bases.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-53

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains water from Eagle Creek during high rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | The area receives overflow flooding from Eagle Creek, which is affected by the Ohio River. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for nearby Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The wetland does not exhibit a high degree of plant diversity to support a variety of species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | There is no pooled/ponded water in this wetland, therefore, this wetland has low potential to support aquatic wildlife populations. Habitat for aquatic fauna is present in Eagle Creek, south of this wetland. The wetland would support ephemeral species. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located south of I-69. Trash is strewn throughout the wetland. Highway noise is audible from the wetland. |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-53 (06/27/17)

Vegetation along northern boundary of wetland. Water-stained leaves and woody debris within wetland. Sparsely vegetated herbaceous layer. Photo direction: North



WTL-53 (06/27/17)

Vegetation along northern boundary of wetland.
Photo direction: South

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: I-69 Ohio River Crossing City/County: Evansville/Vanderburgh Sampling Date: 6/27/2017
 Applicant/Owner: INDOT; KYTC State: Indiana Sampling Point: WTL-57
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: Section 3, Township 7S, Range 10W
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex
 Slope (%): 2 Lat: 37.93483 Long: -87.52591 Datum: NAD-1983
 Soil Map Unit Name: Borrow pits NWI Classification: PFO

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? No

Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? No

present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

| | | |
|--|----------|---|
| Hydrophytic vegetation present? | <u>Y</u> | Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID <u> </u> |
| Hydric soil present? | <u>Y</u> | |
| Indicators of wetland hydrology present? | <u>Y</u> | |

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

This is a bottomland hardwood wetland parallel to Eagle Creek. The area primarily receives overflow flooding from Eagle Creek and the Ohio River. Borrow pits and spoil from ditch maintenance affect the area's hydrology.

Field ID: **C2-WTL-01**

VEGETATION -- Use scientific names of plants.

| Tree Stratum | (Plot size: <u>30' diameter</u>) | Absolute % Cover | Dominant Species | Indicator Status | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across all Strata: <u>5</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>80.00%</u> (A/B) |
|-----------------------|-----------------------------------|------------------|----------------------|------------------|---|
| 1 | <u>Acer saccharinum</u> | <u>60</u> | <u>Y</u> | <u>FACW</u> | |
| 2 | <u>Fraxinus pennsylvanica</u> | <u>40</u> | <u>Y</u> | <u>FACW</u> | |
| 3 | <u>Plantanus occidentalis</u> | <u>18</u> | <u>N</u> | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>118</u> | <u>= Total Cover</u> | | |
| Sapling/Shrub stratum | (Plot size: <u>15' diameter</u>) | | | | Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>100</u> x 2 = <u>200</u> FAC species <u>90</u> x 3 = <u>270</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>195</u> (A) <u>490</u> (B) Prevalence Index = B/A = <u>2.51</u> |
| 1 | <u>Morus rubra</u> | <u>5</u> | <u>Y</u> | <u>FACU</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | <u>5</u> | <u>= Total Cover</u> | | |
| Herb stratum | (Plot size: <u>5' diameter</u>) | | | | Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* Morphological 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 |
| 1 | <u>Toxicodendron radicans</u> | <u>80</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| | | <u>80</u> | <u>= Total Cover</u> | | |
| Woody vine stratum | (Plot size: <u>30' diameter</u>) | | | | Hydrophytic vegetation present? <u>Y</u> |
| 1 | <u>Toxicodendron radicans</u> | <u>10</u> | <u>Y</u> | <u>FAC</u> | |
| 2 | | | | | |
| | | <u>10</u> | <u>= Total Cover</u> | | |

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

Dense stand of poison ivy (*Toxicodendron radicans*) in the herbaceous stratum and 90% tree cover.

SOIL

Sampling Point: WTL-57

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

| Depth (Inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|----|----------------|---|-------|-------|---------|-----------------------|
| | Color (moist) | % | Color (moist) | % | Type* | Loc** | | |
| 0-6 | 10YR 4/2 | 98 | 10YR 6/6 | 2 | C | M | Loam | |
| 6-16 | 10YR 5/2 | 95 | 10YR 6/6 | 5 | C | M | Loam | More clay with depth. |
| | | | | | | | | |
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*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- | |
|--|
| <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (explain in remarks) |

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

Restrictive Layer (if observed):

 Type: None
 Depth (inches): N/A
Hydric soil present? Y

Remarks:

Soils contain more clay at deeper depths.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | | |
|------------------------|------------------------------|--|-----------------------------------|
| Surface water present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u> </u> |
| Water table present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |
| Saturation present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Depth (inches): <u>>16</u> |

 (includes capillary fringe)
Indicators of wetland hydrology present? Y

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

Remarks:

On the sample date, it was noted that the Ohio River was backing into Eagle Creek. The flow was moving upstream. The area receives frequent overflow flooding based on drift and trash debris present.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-57

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The area receives frequent overflow flooding. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization for Eagle Creek. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 3 | Animal signs were observed within the wetland (tracks, scat, burrows). Wildlife food sources are available within the wetland. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | This wetland is proximal to Eagle Creek and an open-water borrow pit, both of which have the potential to contain populations of fish, amphibians, and macroinvertebrates. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 3 | Open water is visible from an easily accessible road along Eagle Creek. |

Total Score 14

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-57 (06/27/2017)
 Eagle Creek, visible from the northern boundary of the wetland.
 Photo direction: Northwest



WTL-57 (06/27/2017)
 Vegetation along northern boundary of borrow pit.
 Photo direction: South

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 13, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-58-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89982 Long: -87.51799 Datum: NAD-1983
 Soil Map Unit Name: Melvin silty clay loam NWI classification: PFO/PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|---|--|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Remarks: This wetland system is located south of the Ohio River and Green River #2 Road. This wetland system has PFO and PEM components. Portions of the wetland are farmed. This datasheet represents the PFO portion of the wetland. Field ID: C1-WTL-23-1 | |

HYDROLOGY

| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | |
| <u> </u> Surface Water (A1) | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Dry-Season Water Table (C2) |
| <u>X</u> Drift Deposits (B3) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | <u>X</u> Geomorphic Position (D2) |
| <u>X</u> Water-Stained Leaves (B9) | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | <u> </u> Microtopographic Relief (D4) |
| | <u>X</u> FAC-Neutral Test (D5) |
| Field Observations: | |
| Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | |
| Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: Drift deposits are present throughout the wetland. | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-58-1**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Acer saccharinum</i> | 80 | Y | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |
| 50% of total cover: | | 40 | 20% of total cover: | |
| | | | 16 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | | | |
|-----------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | | | |
|---------------------|--------------------------|-----|---------------------|------|
| 1 | <i>Carex grayi</i> | 10 | Y | FACW |
| 2 | <i>Campsis radicans</i> | 5 | Y | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 15 | = Total Cover | |
| 50% of total cover: | | 7.5 | 20% of total cover: | |
| | | | 3 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | | | |
|---------------------|---------------------------|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

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: | Multiply by: |
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>90</u> | x 2 = <u>180</u> |
| FAC species <u>5</u> | x 3 = <u>15</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>95</u> | (A) <u>195</u> (B) |

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- 1 -Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is $\leq 3.0^1$
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

The wetland fringe contains buttonbush (*Cephalanthus occidentalis*) and rosemallow (*Hibiscus spp.*).

SOIL

Sampling Point: WTL-58-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix | | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|-------|----|----------------|-------|---|-------------------|------|-----------|---------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | Loc2 | | |
| 0-6 | 10YR | 5 / 2 | 98 | 2.5YR | 5 / 6 | 2 | C | M | Silt loam | |
| 6-16 | 10YR | 3 / 2 | 95 | 10YR | 5 / 6 | 5 | C | M | Silt loam | |
| | | | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|---|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|--|
| <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Coast Prairie Redox (A16) |
| <input type="checkbox"/> (MLRA 147,148) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) |
| <input type="checkbox"/> (MLRA 136, 147) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators 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:**

A thin leaf litter layer is present on the soil's surface.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 13, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-58-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89813 Long: -87.51942 Datum: NAD-1983
 Soil Map Unit Name: Melvin silty clay loam NWI classification: PFO/PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Remarks: This wetland system is located south of the Ohio River and Green River #2 Road. This wetland system has PFO and PEM components. Portions of the wetland are farmed. This datasheet represents the PEM portion of the wetland. This area is an herbaceous swale farmed with soybeans. Field ID: C1-WTL-23-2 | |

HYDROLOGY

| Wetland Hydrology Indicators: | Secondary Indicators (minimum of two required) |
|--|--|
| Primary Indicators (minimum of one is required; check all that apply) <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <u> </u> Surface Water (A1) <u> </u> High Water Table (A2) <u> </u> Saturation (A3) <u> </u> Water Marks (B1) <u> </u> Sediment Deposits (B2) <u> </u> Drift Deposits (B3) <u> </u> Algal Mat or Crust (B4) <u> </u> Iron Deposits (B5) <u> </u> Inundation Visible on Aerial Imagery (B7) <u> </u> Water-Stained Leaves (B9) <u> </u> Aquatic Fauna (B13) </div> <div style="width: 48%;"> <u> </u> True Aquatic Plants (B14) <u> </u> Hydrogen Sulfide Odor (C1) <u> </u> Oxidized Rhizospheres on Living Roots (C3) <u> </u> Presence of Reduced Iron (C4) <u> </u> Recent Iron Reduction in Tilled Soils (C6) <u> </u> Thin Muck Surface (C7) <u> </u> Other (Explain in Remarks) </div> </div> | <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <u>X</u> Surface Soil Cracks (B6) <u> </u> Sparsely Vegetated Concave Surface (B8) <u> </u> Drainage Patterns (B10) <u> </u> Moss Trim Lines (B16) <u> </u> Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) <u> </u> Saturation Visible on Aerial Imagery (C9) <u> </u> Stunted or Stressed Plants (D1) <u> </u> Geomorphic Position (D2) <u> </u> Shallow Aquitard (D3) <u> </u> Microtopographic Relief (D4) <u> </u> FAC-Neutral Test (D5) </div> </div> |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Surface soil cracks are present throughout the wetlands. Crayfish burrows were observed between rows of soybeans. | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-58-2**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------|-----------------------------|-------------------------------|----------------------|------------------|
| 1 | <i>Eleocharis palustris</i> | 80 | Y | OBL |
| 2 | <i>Glycine max</i> | 10 | N | NI |
| 3 | <i>Juncus acuminatus</i> | 5 | N | OBL |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 95 | = Total Cover | |
| 50% of total cover: 47.5 | | 20% of total cover: 19 | | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|------------------------------|---------------------------|------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

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: **100.00%** (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|------------------------|------------------|
| OBL species 2 | x 1 = 2 |
| FACW species 0 | x 2 = 0 |
| FAC species 0 | x 3 = 0 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 2 | (A) 0 (B) |

Prevalence Index = B/A = 0.00

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

Approximately 10% of the herb stratum is farmed with soybeans.

Sampling Point: **WTL-58-2**

US Army Corps of Engineers

A-283

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 314

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 13, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-58-3
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89735 Long: -87.51885 Datum: NAD-1983
 Soil Map Unit Name: Melvin silty clay loam NWI classification: PFO/PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | |
|--|---|
| Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Remarks: This wetland system is located south of the Ohio River and Green River #2 Road. This wetland system has PFO and PEM components. Portions of the wetland are farmed. This datasheet represents the PEM portion of the wetland. This area is an herbaceous swale farmed with soybeans. Field ID: C1-WTL-23-3 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: | | |
| Surface water present? Yes <u> </u> No <u>X</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Water table present? Yes <u> </u> No <u>X</u> | Depth (inches): <u>>16</u> | |
| Saturation present? Yes <u> </u> No <u>X</u> (includes capillary fringe) | Depth (inches): <u>>16</u> | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Surface soil cracks are present throughout the wetlands. Crayfish burrows were observed between rows of soybeans. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-58-3**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------------------|-----------------------------|-------------------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |
| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |
| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
| 1 | <i>Glycine max</i> | 60 | Y | NI |
| 2 | <i>Eleocharis palustris</i> | 20 | N | OBL |
| 3 | <i>Echinochloa muricata</i> | 20 | N | FACW |
| 4 | <i>Juncus acuminatus</i> | 15 | N | OBL |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 115 | = Total Cover | |
| 50% of total cover: 57.5 | | 20% of total cover: 23 | | |
| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: 0 | | 20% of total cover: 0 | | |

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)
 Total Number of Dominant Species Across all Strata: **1** (B)
 Percent of Dominant Species that are OBL, FACW, or FAC: **0.00%** (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|-------------------------|-------------------|
| OBL species 35 | x 1 = 35 |
| FACW species 20 | x 2 = 40 |
| FAC species 0 | x 3 = 0 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 55 | (A) 75 (B) |

Prevalence Index = B/A = 1.36

Hydrophytic Vegetation Indicators:
 ___ 1 -Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:
Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.
Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)
 Approximately 60% of the herb stratum is farmed with soybeans. All of the vegetation, except for the soybeans, appears to have been treated with Roundup. No-till soybeans were planted after June 20th.

Sampling Point: **WTL-58-3**

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 317

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-58

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | The wetland likely receives and retains floodwater from the Ohio River during heavy rain/flood events. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | Large trees within the wetland may aid in sediment, nutrient, and toxicant removal. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Large trees within the wetland may provide stabilization and erosion control. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). A deer was observed within the wetland. Crayfish burrows were present throughout the wetland. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | Some potential to support aquatic wildlife vegetation populations exists. Habitat could also support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 2 | The visual quality/aesthetics of this wetland is low as it is located adjacent to agricultural fields and Green River #2 Road. |

Total Score 12

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-58 07/13/2017

Wetland vegetation at the northwest corner of the wetland. Drift and trash in wetland from Ohio River flooding.
Photo direction: North



WTL-58 07/13/2017

Bottomland hardwoods in the wetland swale in the Ohio River floodplain.
Photo direction: North



WTL-58 07/13/2017
 Farmed portion wetland with surface soil cracks.
 Photo direction: West



WTL-58 07/13/2017
 Bottomland hardwoods with a minimal understory in the wetland.
 Photo direction: South



WTL-58 07/13/2017

Farmed wetland showing spike rush that had been treated with herbicide.

Photo direction: West



WTL-58 07/13/2017

Farmed wetland with started soybeans in the lower (wetter) portions of the swale.

Photo direction: East

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-59-1
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89544 Long: -87.51699 Datum: NAD-1983
 Soil Map Unit Name: Ashton silt loam NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a large predominantly bottomland hardwood forest located in the Ohio River floodplain that is bisected by and parallel to a pipeline right-of-way, south of Green River #2 Road. The land directly north of the wetland is farmed. Field ID: C1-WTL-29 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Crayfish burrows are present throughout the wetland. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-59-1**

| Tree Stratum (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | | | | | | | | | | | | | | | |
|---|---------------------|-------------------|-------------------------------|--|-------------------|--------------|-------------------|-------------|--------------------|-------------|-------------------|-------------|--------------------|-------------|-------------------|-------------|---------------------|---------------------|
| 1 <i>Acer saccharinum</i> | 60 | Y | FACW | 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) | | | | | | | | | | | | | | |
| 2 <i>Quercus palustris</i> | 20 | Y | FACW | | | | | | | | | | | | | | | |
| 3 <i>Ulmus americana</i> | 10 | N | FACW | | | | | | | | | | | | | | | |
| 4 <i>Liquidambar styraciflua</i> | 5 | N | FAC | | | | | | | | | | | | | | | |
| 5 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 6 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 7 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| | | | 95 = Total Cover | Prevalence Index worksheet <table style="width: 100%;"> <thead> <tr> <th style="width: 60%;">Total % Cover of:</th> <th style="width: 40%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column totals _____</td> <td>(A) _____ (B) _____</td> </tr> </tbody> </table> Prevalence Index = B/A = _____ | 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) _____ |
| 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) _____ | | | | | | | | | | | | | | | | | |
| 50% of total cover: 47.5 | | | 20% of total cover: 19 | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | | | | | | | | | | | | | | | | | |
| 1 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 2 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 3 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 4 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 5 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 6 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 7 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 8 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 9 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| | | | 0 = Total Cover | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 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) | | | | | | | | | | | | | | |
| 50% of total cover: 0 | | | 20% of total cover: 0 | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5' diameter) | | | | | | | | | | | | | | | | | | |
| 1 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 2 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 3 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 4 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 5 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 6 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 7 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 8 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 9 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 10 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 11 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| | | | 0 = Total Cover | Definitions of Four Vegetation Strata: Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. | | | | | | | | | | | | | | |
| 50% of total cover: 0 | | | 20% of total cover: 0 | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: 30' diameter) | | | | | | | | | | | | | | | | | | |
| 1 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 2 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 3 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 4 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| 5 _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | |
| | | | 0 = Total Cover | | | | | | | | | | | | | | | |
| 50% of total cover: 0 | | | 20% of total cover: 0 | | | | | | | | | | | | | | | |
| Remarks: (Include photo numbers here or on a separate sheet.) There herb stratum is primarily unvegetated. | | | | | | | | | | | | | | | | | | |

Sampling Point: **WTL-59-1**

US Army Corps of Engineers

A-293

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 324

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 25, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-59-2
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.89474 Long: -87.51961 Datum: NAD-1983
 Soil Map Unit Name: Ashton silt loam NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a large predominantly bottomland hardwood forest located in the Ohio River floodplain that is bisected by and parallel to a pipeline right-of-way, south of Green River #2 Road. The land directly north of the wetland is farmed. Field ID: C1-WTL-29 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u>X</u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u>X</u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Crayfish burrows are present throughout the wetland. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-59-2**

| Tree Stratum (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | | | | | | | | | | | | | | | |
|--|--------------------|-------------------------------|----------------------|---|-------------------|--------------|----------------------|----------------|------------------------|------------------|----------------------|-----------------|-----------------------|----------------|----------------------|----------------|-------------------------|--------------------|
| 1 <i>Acer saccharinum</i> | 60 | Y | FACW | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) | | | | | | | | | | | | | | |
| 2 <i>Ulmus americana</i> | 30 | Y | FACW | | | | | | | | | | | | | | | |
| 3 <i>Liquidambar styraciflua</i> | 5 | N | FAC | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | |
| | | 95 | = Total Cover | Prevalence Index worksheet <table style="width: 100%;"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>90</u></td> <td>x 2 = <u>180</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column totals <u>95</u></td> <td>(A) <u>195</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = 2.05 | Total % Cover of: | Multiply by: | OBL species <u>0</u> | x 1 = <u>0</u> | FACW species <u>90</u> | x 2 = <u>180</u> | FAC species <u>5</u> | x 3 = <u>15</u> | FACU species <u>0</u> | x 4 = <u>0</u> | UPL species <u>0</u> | x 5 = <u>0</u> | Column totals <u>95</u> | (A) <u>195</u> (B) |
| Total % Cover of: | Multiply by: | | | | | | | | | | | | | | | | | |
| OBL species <u>0</u> | x 1 = <u>0</u> | | | | | | | | | | | | | | | | | |
| FACW species <u>90</u> | x 2 = <u>180</u> | | | | | | | | | | | | | | | | | |
| FAC species <u>5</u> | x 3 = <u>15</u> | | | | | | | | | | | | | | | | | |
| FACU species <u>0</u> | x 4 = <u>0</u> | | | | | | | | | | | | | | | | | |
| UPL species <u>0</u> | x 5 = <u>0</u> | | | | | | | | | | | | | | | | | |
| Column totals <u>95</u> | (A) <u>195</u> (B) | | | | | | | | | | | | | | | | | |
| 50% of total cover: <u>47.5</u> | | 20% of total cover: <u>19</u> | | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| | | 0 | = Total Cover | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 -Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) | | | | | | | | | | | | | | |
| 50% of total cover: <u>0</u> | | 20% of total cover: <u>0</u> | | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5' diameter) | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | |
| | | 0 | = Total Cover | | | | | | | | | | | | | | | |
| 50% of total cover: <u>0</u> | | 20% of total cover: <u>0</u> | | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: 30' diameter) | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| | | 0 | = Total Cover | | | | | | | | | | | | | | | |
| 50% of total cover: <u>0</u> | | 20% of total cover: <u>0</u> | | | | | | | | | | | | | | | | |
| Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | | | | | | | | | | | | | | |
| Remarks: (Include photo numbers here or on a separate sheet.) There herb stratum is primarily unvegetated. | | | | | | | | | | | | | | | | | | |

Sampling Point: **WTL-59-2**

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

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____
Depth (inches): _____

Hydric soil present? Yes **X** No

Eastern Mountains and Piedmont - Version 2.0
Appendix J-1, page 327

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-59

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|---|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 2 | |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 2 | |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). The size of the wetland could support large terrestrial species. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 2 | Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 11

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-59 07/19/2017

Rosemallow (*Hibiscus spp.*) and other wetland vegetation within right-of-way. Succession of cottonwood (*Populus deltoides*) and other light mast producing species has begun. Photo direction: East



WTL-59 07/19/2017

Crayfish burrows within wetland demonstrate the high water table throughout the wetland. Photo direction: East



WTL-59 07/19/2017

Rosemallow (*Hibiscus spp.*) and other wetland vegetation within right-of-way. Succession of cottonwood (*Populus deltoides*) and other light mast producing species has begun. Photo direction: North



WTL-59 07/19/2017

Wetland vegetation within a pipeline right-of-way.
Photo direction: Northeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 25, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-61
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88216 Long: -87.51328 Datum: NAD-1983
 Soil Map Unit Name: Wakeland silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? No Are "normal circumstances" present? Yes ☒
 Are vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? No (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |
| Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |
| Remarks: This is a swale in the middle of an agricultural field, currently being farmed with soybeans. Field ID: C1-WTL-34 | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|---|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> True Aquatic Plants (B14) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Moss Trim Lines (B16) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | | <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Aquatic Fauna (B13) | | <input type="checkbox"/> Microtopographic Relief (D4) |
| | | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): >16 Saturation present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): >16 (includes capillary fringe) | | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The wetland receives runoff from the surrounding agricultural fields. Recent rain has created small pools of standing water in the deepest portion of the wetland. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-61**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Echinochloa crus-galli</i> | 95 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 95 | = Total Cover | |
| 50% of total cover: | | 47.5 | 20% of total cover: 19 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: **100.00%** (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|-------------------------|--------------------|
| OBL species 0 | x 1 = 0 |
| FACW species 0 | x 2 = 0 |
| FAC species 95 | x 3 = 285 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 95 | (A) 285 (B) |

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes **X** No

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

Upland vegetation adjacent to the wetland is farmed (soybeans). A stand of common reed (*Phragmites australis*) is located in the wetland, just outside of the datapoint area.

Sampling Point: **WTL-61**

US Army Corps of Engineers Eastern Mountains and Piedmont - Version 2.0
A-302 **Appendix J-1, page 333**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-61

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | The wetland receives runoff from the surrounding agricultural fields. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 1 | Small watershed and lack of connectivity to other waters limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 1 | |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 6

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-61 (10/25/2017)

Wetland vegetation within swale located in an agricultural field.

Photo direction: South



WTL-61 (10/25/2017)

Wetland vegetation within swale located in an agricultural field. Photo direction: North

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-62
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88158 Long: -87.51591 Datum: NAD-1983
 Soil Map Unit Name: Wakeland silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | | |
|---|-----------------------------|---------------------------------------|-----------------------------|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? | Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | | |
| Remarks: This is a narrow herbaceous wetland located in an agricultural field. Field ID: C1-WTL-31 | | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) | |
|---|---|--|--|
| Primary Indicators (minimum of one is required; check all that apply) | | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) | |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Drainage Patterns (B10) | |
| <u> </u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) | |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) | |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) | |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) | |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) | |
| <u> </u> Iron Deposits (B5) | | <u>X</u> Geomorphic Position (D2) | |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) | |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) | |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) | |
| Field Observations: | | | |
| Surface water present? | Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> | |
| Water table present? | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Saturation present? (includes capillary fringe) | Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> | | |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | | |
| Remarks: The wetland likely receives runoff from the adjacent agricultural fields. A channel forms at the southern edge of the wetland that dries that area, thereby eliminating wetland hydrology to the southeast. | | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-62**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Juncus acuminatus</i> | 20 | Y | OBL |
| 2 | <i>Polygonum pensylvanicum</i> | 20 | Y | FACW |
| 3 | <i>Toxicodendron radicans</i> | 5 | N | FAC |
| 4 | <i>Phalaris arundinacea</i> | 5 | N | FACW |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 50 | = Total Cover | |
| 50% of total cover: | | 25 | 20% of total cover: 10 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: | Multiply by: |
|------------------------|------------------|
| OBL species 1 | x 1 = 1 |
| FACW species 2 | x 2 = 4 |
| FAC species 1 | x 3 = 3 |
| FACU species 0 | x 4 = 0 |
| UPL species 0 | x 5 = 0 |
| Column totals 4 | (A) 8 (B) |

Prevalence Index = B/A = **2.00**

Hydrophytic Vegetation Indicators:

☒ 1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

 The wetland is bordered by sawtooth blackberry (*Rubus argutus*). The land directly adjacent to the wetland is farmed with soybeans.

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

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|------|-------------------|------|---|------------|------------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc2 | | | |
| 0-3 | 10YR | 4 / 2 | 100 | | | | | Silty clay | |
| 3-16 | 10YR | 5 / 2 | 80 | 10YR | 5 / 6 | 20 | C | M | Silty clay |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

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

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

Soils were strongly reduced below three inches.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-62

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Small wetland size limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). A fawn lay-down area was observed in the wetland. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | Habitat could support ephemeral species, such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 8

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-62 (07/19/2017)
 Herbaceous swale wetland that lies in an agricultural field.
 Photo direction: Northeast



WTL-62 (07/19/2017)
 Typical wetland vegetation found in the wetland swale. Frequent use of herbicides limits woody succession.
 Photo direction: Northeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: July 19, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-63
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88115 Long: -87.51773 Datum: NAD-1983
 Soil Map Unit Name: Dekoven and Wakeland silt loams NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a narrow herbaceous wetland located in an agricultural field that is connected to an ephemeral channel that eventually drains into a tributary to North Fork Canoe Creek. Field ID: C1-WTL-30 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|---|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | <u>X</u> Surface Soil Cracks (B6) |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u>X</u> Crayfish Burrows (C8) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Microtopographic Relief (D4) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The wetland likely receives runoff from the adjacent agricultural field. There is a great deal of evidence that the area remains saturated for a long duration during the growing season, including crayfish burrows and very deep tractor ruts. As an eroded ephemeral channel begins, the area dries out and wetland hydrology is lost. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-63**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|--------------------------------|------------------|----------------------|------------------|
| 1 | <i>Salix nigra</i> | 40 | Y | OBL |
| 2 | <i>Liquidambar styraciflua</i> | 15 | Y | FAC |
| 3 | <i>Salix interior</i> | 2 | N | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 57 | = Total Cover | |
| 50% of total cover: | | 28.5 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-----------------------------|------------------|----------------------|------------------|
| 1 | <i>Phalaris arundinacea</i> | 25 | Y | FACW |
| 2 | <i>Juncus interior</i> | 10 | Y | FACU |
| 3 | <i>Eleocharis obtusa</i> | 10 | Y | OBL |
| 4 | <i>Rumex crispus</i> | 5 | N | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 50 | = Total Cover | |
| 50% of total cover: | | 25 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|----------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of 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: **5** (B)

Percent of Dominant Species that are OBL, FACW, or FAC: **80.00%** (A/B)

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species 50 | x 1 = 50 |
| FACW species 27 | x 2 = 54 |
| FACU species 10 | x 3 = 30 |
| UPL species 0 | x 4 = 0 |
| Column totals 107 | (A) 204 (B) |

Prevalence Index = B/A = 1.91

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

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

The wetland is bordered by *Rubus argutus*. The land directly adjacent to the wetland is farmed with soybeans. Although willows (*Salix spp.*) and cottonwoods (*Populus spp.*) are starting to populate the wetland, heavy use of herbicides for the agricultural fields would likely prevent their succession.

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

| Depth (inches) | Matrix | | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|-------|-----|----------------|-------|----|-------------------|------------------|------------|---------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | Loc ² | | |
| 0-3 | 10YR | 4 / 2 | 100 | | | | | | Silty clay | |
| 3-16 | 10YR | 5 / 2 | 80 | 10YR | 4 / 6 | 20 | C | M | Silty clay | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

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

- | | |
|---|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147,148) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators 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:**

Soils strongly reduced below three inches.

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-63

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small wetland size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small wetland size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Small wetland size limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Animal signs were observed within the wetland (tracks, scat, burrows). White-tailed deer lay-down areas were observed in the wetland. One doe was flushed from the site. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | Habitat could support ephemeral species such as frogs, salamanders, and aquatic macrophytes. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | |

Total Score 8

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-63 07/19/2017

Narrow herbaceous wetland located in an agricultural field. Notice deep tractor ruts from farming activities during the wet season. Photo direction: Northeast



WTL-63 07/19/2017

Narrow herbaceous wetland located in an agricultural field. Willows (*Salix spp.*) and cottonwood (*Populus deltoides*) are beginning to populate the wetland. Photo direction: Northeast

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 29, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: WTL-64
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.87641 Long: -87.52052 Datum: NAD-1983
 Soil Map Unit Name: Wakeland silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u>X</u> No <u> </u> | |
| Remarks: This is a swale that has a raised access road blocking the downstream end. This causes the area to pond water. The soils are being reduced, it has wetland vegetation, and the requisite hydrology to be considered a wetland. Field ID: C1-WTL-36 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u>X</u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u>X</u> Drainage Patterns (B10) |
| <u>X</u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u>X</u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u>X</u> No <u> </u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Bowl-shaped swale ponds water for a long duration during the growing season. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **WTL-64**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix nigra</i> | 60 | Y | OBL |
| 2 | <i>Populus deltoides</i> | 20 | Y | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |
| 50% of total cover: | | 40 | 20% of total cover: | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|---------------------|------------------|
| 1 | <i>Salix nigra</i> | 30 | Y | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 30 | = Total Cover | |
| 50% of total cover: | | 15 | 20% of total cover: | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|--------------------------------|------------------|---------------------|------------------|
| 1 | <i>Juncus acuminatus</i> | 20 | Y | OBL |
| 2 | <i>Echinochloa crus-galli</i> | 15 | Y | FAC |
| 3 | <i>Liquidambar styraciflua</i> | 5 | N | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 40 | = Total Cover | |
| 50% of total cover: | | 20 | 20% of total cover: | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|---------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

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

Prevalence Index worksheet

| | |
|--------------------------|--------------------|
| Total % Cover of: | Multiply by: |
| OBL species <u>110</u> | x 1 = <u>110</u> |
| FACW species <u>0</u> | x 2 = <u>0</u> |
| FAC species <u>40</u> | x 3 = <u>120</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>150</u> | (A) <u>230</u> (B) |

 Prevalence Index = B/A = 1.53
Hydrophytic Vegetation Indicators:

- 1 -Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤ 3.0 ¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

Eastern cottonwood (*Populus deltoides*) trees are located along the wetland margin. The deepest concave surfaces are not vegetated.

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

| Depth (inches) | Matrix | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|--------------|----------------|---------------|--------------|-----------|-------------------|----------|------------------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | | |
| 0-6 | 10YR | 5 / 2 | 80 | 10YR | 6 / 6 | 20 | C | M | Silt loam |
| 6-16 | 10YR | 6 / 2 | 98 | 10YR | 5 / 8 | 2 | C | M | Silt loam |
| | | | | | | | | | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N**,
MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N**,
MLRA 136)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16)
(MLRA 147,148)
☐ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:****Soils are being reduced.**

WETLAND FUNCTIONS & VALUES FORM

Wetland I.D.: WTL-64

Project/Site: I-69 Ohio River Crossing

| Function/Value | Score | Comments |
|--|-------|--|
| Floodwater Alteration/Retention - Considers the effectiveness (wetland size, water capacity in wetland, location in watershed, wetland juxtaposition, etc.) of the wetland in reducing flood damage and the flow of floodwaters by attenuation of floodwaters for prolonged periods following precipitation events. | 1 | Small watershed size limits this function. |
| Sediment, Nutrient, & Toxicant Removal - Considers the effectiveness (wetland configuration, vegetative cover, wetland size, etc.) of the wetland in reducing or preventing degradation of water quality by trapping sediments, excess nutrients, and toxicants. | 1 | Small watershed size limits this function. |
| Erosion Control and Stabilization - Considers the effectiveness (vegetative cover, size, substrate, etc.) of the wetland in reducing erosion of stream channels or stream banks down gradient of the wetland, along shorelines if associated with a lake or tidally influenced water body, or within the wetland itself. | 2 | Small watershed size limits this function. |
| Wildlife Habitat (Terrestrial) - Considers the effectiveness (wetland's size, connectivity with other habitats, wetland juxtaposition, human-caused disturbance, etc.) of the wetland to provide habitat for various types and populations of terrestrial animals. | 2 | Small wetland size limits this function. |
| Wildlife Habitat (Aquatic) - Considers the effectiveness (wetland's size, substrate, water quality, wetland juxtaposition, human-caused disturbance, pollution, etc.) of the wetland to provide habitat for various types and populations of aquatic animals. | 1 | Small wetland size limits this function. |
| Visual Quality/Aesthetics - Considers the visual and aesthetic qualities of the wetland. | 1 | The visual quality/aesthetics of this wetland is low as it is located adjacent to US-41. Trash is strewn throughout the wetland. |

Total Score 8

| Score | Potential to Provide Desirable Wetland Functions and Values |
|-------|---|
| 0 | None |
| 1 | Poor |
| 2 | Low |
| 3 | Moderate |
| 4 | High |
| 5 | Very High |



WTL-64 (08/29/2017)

Herbaceous vegetation with some sparsely vegetated areas near a stand of saplings.

Photo direction: North



WTL-64 (08/29/2017)

Sparsely vegetation herbaceous stratum near a stand of saplings.

Photo direction: East

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 3, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: NON-WTL-01
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.88830 Long: -87.53319 Datum: NAD-1983
 Soil Map Unit Name: Sharon silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> |
| Hydric Soil Present? | Yes <u> </u> No <u>X</u> | |
| Wetland Hydrology Present? | Yes <u> </u> No <u>X</u> | |
| Remarks: This is an herbaceous swale below a Wolf Hills Road culvert that has some wetland characteristics, but lacks hydric soils and hydrology. The area was a farm field that is now fallow. A datasheet was prepared because the area is shown as a wetland on the NWI maps. Field ID: NON-WTL-01 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u> </u> No <u>X</u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: The area receives runoff from a culvert and road ditch, but overall, the hydrology is insufficient to be considered a wetland. There were recent heavy rains and the area is not saturated, indicating that it drains fairly well. The fallow field may be tilled. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **NON-WTL-01**

| Tree Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Sapling/Shrub Stratum | (Plot Size: 15' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|-----------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

| Herb Stratum | (Plot Size: 5' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|-------------------------------|------------------|-------------------------------|------------------|
| 1 | <i>Echinochloa crus-galli</i> | 95 | Y | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 95 | = Total Cover | |
| 50% of total cover: | | 47.5 | 20% of total cover: 19 | |

| Woody Vine Stratum | (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status |
|---------------------|---------------------------|------------------|------------------------------|------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: 0 | |

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: 100.00% (A/B)

Prevalence Index worksheet

| Total % Cover of: | Multiply by: |
|-------------------------|--------------------|
| OBL species <u>0</u> | x 1 = <u>0</u> |
| FACW species <u>0</u> | x 2 = <u>0</u> |
| FAC species <u>95</u> | x 3 = <u>285</u> |
| FACU species <u>0</u> | x 4 = <u>0</u> |
| UPL species <u>0</u> | x 5 = <u>0</u> |
| Column totals <u>95</u> | (A) <u>285</u> (B) |

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

1 -Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

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

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

| Depth (inches) | Matrix | | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|-------|-----|----------------|-------|----|-------------------|------|-----------|---------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | Loc2 | | |
| 0-10 | 10YR | 5 / 4 | 100 | | | | | | Silt loam | |
| 10-16 | 10YR | 5 / 3 | 90 | 10YR | 5 / 6 | 10 | C | M | Silt loam | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histisol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Mucky Mineral (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136,122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (**F21**) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147,148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators 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:**

Most of the core sample is in the plow zone of the fallow field.



NON-WTL-01 (08/03/2017)

Echinochloa crus-galli in fallow field. This is an herbaceous swale that has some wetland characteristics, but lacks hydric soils and hydrology.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: August 3, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: NON-WTL-02
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.90189 Long: -87.55319 Datum: NAD-1983
 Soil Map Unit Name: Made land NWI classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|---|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> |
| Hydric Soil Present? | Yes <u> </u> No <u>X</u> | |
| Wetland Hydrology Present? | Yes <u> </u> No <u>X</u> | |
| Remarks: This is a bottomland hardwood forest that has some wetland characteristics, but lacks hydric soils and hydrology. Field ID: NON-WTL-02 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u> </u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u> </u> No <u>X</u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: Overall, the hydrology is insufficient to be considered a wetland. There were recent heavy rains and the area is not saturated, indicating that it drains fairly well. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **NON-WTL-02**

| Tree Stratum (Plot Size: 30' diameter) | | Absolute % Cover | Dominant Species? | Indicator Status |
|--|-------------------------------|------------------|---------------------|------------------|
| 1 | <i>Populus deltoides</i> | 85 | Y | FAC |
| 2 | <i>Fraxinus pennsylvanica</i> | 5 | N | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 90 | = Total Cover | |
| 50% of total cover: | | 45 | 20% of total cover: | |
| | | | 18 | |

| Sapling/Shrub Stratum (Plot Size: 15' diameter) | | | | |
|---|--|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

| Herb Stratum (Plot Size: 5' diameter) | | | | |
|---------------------------------------|-------------------------------|------|---------------------|------|
| 1 | <i>Toxicodendron radicans</i> | 20 | Y | FAC |
| 2 | <i>Campsis radicans</i> | 5 | N | FAC |
| 3 | <i>Smilax glauca</i> | 2 | N | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| | | 27 | = Total Cover | |
| 50% of total cover: | | 13.5 | 20% of total cover: | |
| | | | 5.4 | |

| Woody Vine Stratum (Plot Size: 15' diameter) | | | | |
|--|--|---|---------------------|--|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| | | 0 | = Total Cover | |
| 50% of total cover: | | 0 | 20% of total cover: | |
| | | | 0 | |

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: | | Multiply by: | |
|-------------------|------------|--------------|----------------|
| OBL species | <u>0</u> | x 1 = | <u>0</u> |
| FACW species | <u>5</u> | x 2 = | <u>10</u> |
| FAC species | <u>110</u> | x 3 = | <u>330</u> |
| FACU species | <u>2</u> | x 4 = | <u>8</u> |
| UPL species | <u>0</u> | x 5 = | <u>0</u> |
| Column totals | <u>117</u> | (A) | <u>348</u> (B) |

 Prevalence Index = B/A = 2.97
Hydrophytic Vegetation Indicators:

 1 -Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes No X

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

SOIL

Sampling Point: **NON-WTL-02**

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Mucky Mineral (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N,**
MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136,122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material **(F21) (MLRA 127, 147)**

- 2 cm Muck (A10) **(MLRA 147)**
 — Coast Prairie Redox (A16)
(MLRA 147,148)
 — Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
 — Very Shallow Dark Surface (TF12)
 — Other (Explain in Remarks)

³Indicators 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:

The soils are well drained at this data point.



NON-WTL-02 (07/18/2017)

Bottomland hardwood forest that has some wetland characteristics, but lacks hydric soils and hydrology.

Photo direction: West

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: I-69 Ohio River Crossing City/County: Henderson/Henderson Sampling Date: October 2, 2017
 Applicant/Owner: INDOT; KYTC State: KY Sampling Point: NON-WTL-03
 Investigator(s): Luke Eggering; Lindsey Postaski Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): None Slope (%): 4
 Subregion (LRR or MLRA): MLRA 120A Lat: 37.85338 Long: -87.56702 Datum: NAD-1983
 Soil Map Unit Name: Water NWI classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of the year? Yes X No (If no, explain in Remarks.)
 Are vegetation , Soil , or Hydrology significantly disturbed? No Are "normal circumstances" present? Yes X No
 Are vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

| | | |
|--|-----------------------------|---|
| Hydrophytic Vegetation Present? | Yes <u>X</u> No <u> </u> | Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> |
| Hydric Soil Present? | Yes <u>X</u> No <u> </u> | |
| Wetland Hydrology Present? | Yes <u> </u> No <u>X</u> | |
| Remarks: This depressional area was marked as an NWI wetland. The area is now well drained and does not appear to pond water for long durations. It has been affected by adjacent to development including the Wal-Mart and roadway. The area is not likely to be jurisdictional. Field ID: NON-WTL-03 | | |

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (minimum of two required) |
|--|--|---|
| Primary Indicators (minimum of one is required; check all that apply) | | |
| <u> </u> Surface Water (A1) | <u> </u> True Aquatic Plants (B14) | <u> </u> Surface Soil Cracks (B6) |
| <u> </u> High Water Table (A2) | <u> </u> Hydrogen Sulfide Odor (C1) | <u> </u> Sparsely Vegetated Concave Surface (B8) |
| <u> </u> Saturation (A3) | <u>X</u> Oxidized Rhizospheres on Living Roots (C3) | <u> </u> Drainage Patterns (B10) |
| <u> </u> Water Marks (B1) | <u> </u> Presence of Reduced Iron (C4) | <u> </u> Moss Trim Lines (B16) |
| <u> </u> Sediment Deposits (B2) | <u> </u> Recent Iron Reduction in Tilled Soils (C6) | <u> </u> Dry-Season Water Table (C2) |
| <u> </u> Drift Deposits (B3) | <u> </u> Thin Muck Surface (C7) | <u> </u> Crayfish Burrows (C8) |
| <u> </u> Algal Mat or Crust (B4) | <u> </u> Other (Explain in Remarks) | <u> </u> Saturation Visible on Aerial Imagery (C9) |
| <u> </u> Iron Deposits (B5) | | <u> </u> Stunted or Stressed Plants (D1) |
| <u> </u> Inundation Visible on Aerial Imagery (B7) | | <u> </u> Geomorphic Position (D2) |
| <u> </u> Water-Stained Leaves (B9) | | <u> </u> Shallow Aquitard (D3) |
| <u> </u> Aquatic Fauna (B13) | | <u> </u> Microtopographic Relief (D4) |
| | | <u> </u> FAC-Neutral Test (D5) |
| Field Observations: Surface water present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> Water table present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> Saturation present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>16</u> (includes capillary fringe) | | Wetland Hydrology Present? Yes <u> </u> No <u>X</u> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: The area probably ponded water in the past, but now it is draining to a deeply incised drainage ditch. Data point was at the lowest portion of the depression. Oxidized rhizospheres begin at 13 inches. | | |

VEGETATION (Four Strata) - Use scientific names of plants

 Sampling Point: **NON-WTL-03**

| Tree Stratum (Plot Size: 30' diameter) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: | |
|---|------------------|-------------------|---------------------------------|--|--|
| 1 <i>Populus deltoides</i> | 90 | Y | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) | |
| 2 | | | | Total Number of Dominant Species Across all Strata: <u>3</u> (B) | |
| 3 | | | | Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B) | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| | | | 90 = Total Cover | | |
| 50% of total cover: <u>45</u> | | | 20% of total cover: <u>18</u> | | |
| Sapling/Shrub Stratum (Plot size: 15' diameter) | | | | | |
| 1 <i>Populus deltoides</i> | 20 | Y | FAC | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| | | | 20 = Total Cover | | |
| 50% of total cover: <u>10</u> | | | 20% of total cover: <u>4</u> | | |
| Herb Stratum (Plot Size: 5' diameter) | | | | | |
| 1 <i>Phragmites australis</i> | 45 | Y | FACW | | |
| 2 <i>Solidago canadensis</i> | 10 | N | FACU | | |
| 3 <i>Toxicodendron radicans</i> | 2 | N | FAC | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| | | | 57 = Total Cover | | |
| 50% of total cover: <u>28.5</u> | | | 20% of total cover: <u>11.4</u> | | |
| Woody Vine Stratum (Plot Size: 30' diameter) | | | | | |
| 1 <i>Lonicera japonica</i> | 4 | | FAC | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | | 4 = Total Cover | | |
| 50% of total cover: <u>2</u> | | | 20% of total cover: <u>0.8</u> | | |
| Prevalence Index worksheet Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>45</u> x 2 = <u>90</u> FAC species <u>116</u> x 3 = <u>348</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>171</u> (A) <u>478</u> (B) Prevalence Index = B/A = 2.80 | | | | | |
| Hydrophytic Vegetation Indicators: ___ 1 -Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 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) | | | | | |
| Definitions of Four Vegetation Strata: Tree - Woody plants, excluding vines 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. | | | | | |
| Hydrophytic Vegetation Present? Yes <u>X</u> No ___ | | | | | |
| Remarks: (Include photo numbers here or on a separate sheet.) Common reed (<i>Phragmites australis</i>) extends from the data point toward the south. | | | | | |

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

| Depth (inches) | Matrix | | | Redox Features | | | | | Texture | Remarks |
|-------------------|---------------|-------|-----|----------------|-------|----|-------------------|------|-----------|---------|
| | Color (moist) | | % | Color (moist) | | % | Type ¹ | Loc2 | | |
| 0-5 | 10YR | 6 / 3 | 100 | | | | | | Loam | |
| 5-16 | 10YR | 5 / 2 | 90 | 10YR | 5 / 8 | 10 | C | M | Silt loam | |
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¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- | | |
|---|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 2 cm Mucky Mineral (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136,122) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147,148) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators 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:**

The soils are well drained at this data point. Leaf litter is present on the soil's surface.



NON-WTL-03 (10/02/2017)

Depressional area that has some wetland characteristics, but lacks wetland hydrology.

Photo direction: West



NON-WTL-03 (10/02/2017)

Depressional area that has some wetland characteristics, but lacks wetland hydrology.

Photo direction: West

B STREAM DATA

The I-69 ORX streams and watercourses were evaluated in the field and mapped with a handheld GPS unit. The streams were photographed, and stream data sheets were prepared for the intermittent and perennial streams. These streams would be jurisdictional and regulated as WOTUS. All ephemeral channels were mapped and photographed; however, their jurisdictional status was not determined. Some of the ephemeral channels, such as roadside ditches located in uplands, would likely not be regulated. The waters report that will be completed for the Preferred Alternative will be used to document each resource to allow the USACE to complete a formal jurisdictional determination. Table B-1 lists all the streams/channels that fall within the construction limits of the alternatives.

Table B-1. Stream Data Summary

| STREAM ID | STREAM NAME ¹ | STREAM TYPE ² | LATITUDE ³ | LONGITUDE ³ | STREAM IMPACT ⁴ | | |
|-----------|--------------------------|--------------------------|-----------------------|------------------------|----------------------------|----------|----------|
| | | | | | CentAlt1 | WestAlt1 | WestAlt2 |
| STR-02 | UNT | Ephemeral | 37.93702 | -87.52690 | 0.0 | 35.8 | 35.8 |
| STR-03 | UNT | Ephemeral | 37.93673 | -87.52617 | 0.0 | 514.1 | 514.1 |
| STR-04 | UNT | Ephemeral | 37.93525 | -87.52671 | 0.3 | 0.0 | 0.0 |
| STR-05 | UNT | Ephemeral | 37.93536 | -87.53378 | 0.0 | 130.8 | 130.8 |
| STR-06 | UNT | Ephemeral | 37.93714 | -87.53543 | 0.0 | 1185.4 | 1185.4 |
| STR-08 | UNT | Ephemeral | 37.93794 | -87.53732 | 458.7 | 319.5 | 319.5 |
| STR-09 | UNT | Ephemeral | 37.93856 | -87.53877 | 136.9 | 0.0 | 0.0 |
| STR-10 | UNT | Ephemeral | 37.93824 | -87.53808 | 160.4 | 66.3 | 66.3 |
| STR-11 | UNT | Ephemeral | 37.93767 | -87.53993 | 0.0 | 546.0 | 546.0 |
| STR-12 | Tributary to Eagle Creek | Ephemeral/ Intermittent | 37.93681 | -87.53879 | 0.0 | 400.8 | 377.3 |
| STR-13 | Eagle Creek | Perennial | 37.93519 | -87.52548 | 944.2 | 1035.3 | 887.0 |
| STR-15 | UNT | Ephemeral | 37.93804 | -87.54203 | 0.0 | 46.8 | 46.8 |
| STR-17 | UNT | Ephemeral | 37.93752 | -87.54550 | 0.0 | 203.1 | 124.5 |
| STR-18 | UNT | Ephemeral | 37.93541 | -87.54659 | 0.0 | 240.8 | 183.7 |
| STR-19 | UNT | Ephemeral | 37.93366 | -87.54747 | 0.0 | 561.2 | 561.2 |
| STR-20 | Tributary to Ohio River | Perennial | 37.92286 | -87.54817 | 0.0 | 309.3 | 192.4 |
| STR-22 | UNT | Ephemeral | 37.91234 | -87.54885 | 0.0 | 458.2 | 458.2 |
| STR-23 | Tributary to Ohio River | Perennial | 37.91087 | -87.55000 | 0.0 | 144.9 | 171.0 |
| STR-26 | Ohio River | Perennial | 37.90445 | -87.51727 | 93.5 | 133.7 | 133.7 |
| STR-27 | Mound Slough | Intermittent | 37.89568 | -87.55246 | 0.0 | 133.5 | 133.5 |
| STR-30 | UNT | Ephemeral | 37.88976 | -87.55615 | 0.0 | 55.4 | 21.8 |

| | | | | | | | |
|---------|---------------------------|--------------|----------|-----------|--------|--------|--------|
| STR-31 | UNT | Ephemeral | 37.88670 | -87.56018 | 0.0 | 191.5 | 252.7 |
| STR-32 | UNT | Ephemeral | 37.88753 | -87.56072 | 0.0 | 157.4 | 0.0 |
| STR-33 | UNT | Ephemeral | 37.88465 | -87.56420 | 0.0 | 169.3 | 0.0 |
| STR-36 | UNT | Ephemeral | 37.88328 | -87.56612 | 0.0 | 178.9 | 0.0 |
| STR-37 | UNT | Ephemeral | 37.88158 | -87.56327 | 0.0 | 0.0 | 3.2 |
| STR-40 | UNT | Ephemeral | 37.87953 | -87.56793 | 0.0 | 487.2 | 0.0 |
| STR-41 | UNT | Ephemeral | 37.87994 | -87.56693 | 0.0 | 250.0 | 0.0 |
| STR-42 | UNT | Ephemeral | 37.87948 | -87.56681 | 0.0 | 25.8 | 0.0 |
| STR-45 | UNT | Ephemeral | 37.87865 | -87.56903 | 0.0 | 463.8 | 339.6 |
| STR-53 | UNT | Ephemeral | 37.87402 | -87.56266 | 0.0 | 0.0 | 33.1 |
| STR-56 | UNT | Ephemeral | 37.87206 | -87.56926 | 0.0 | 0.0 | 2.8 |
| STR-60 | Sugar Creek | Intermittent | 37.86467 | -87.57527 | 0.0 | 255.4 | 0.0 |
| STR-61 | UNT | Ephemeral | 37.86504 | -87.57448 | 0.0 | 0.0 | 14.6 |
| STR-63 | UNT | Ephemeral | 37.86100 | -87.57520 | 0.0 | 2515.7 | 2210.2 |
| STR-65 | UNT | Ephemeral | 37.86030 | -87.57565 | 0.0 | 995.7 | 639.6 |
| STR-66 | UNT | Ephemeral | 37.85856 | -87.57450 | 0.0 | 472.3 | 472.3 |
| STR-67 | UNT | Ephemeral | 37.85862 | -87.57338 | 0.0 | 1033.2 | 1033.2 |
| STR-68 | UNT | Ephemeral | 37.85830 | -87.57202 | 0.0 | 285.1 | 285.1 |
| STR-70 | UNT | Ephemeral | 37.85624 | -87.57102 | 0.0 | 601.4 | 601.4 |
| STR-71 | UNT | Ephemeral | 37.85458 | -87.57141 | 0.0 | 56.3 | 58.5 |
| STR-72 | UNT | Ephemeral | 37.85437 | -87.57065 | 0.0 | 608.9 | 608.9 |
| STR-73 | UNT | Ephemeral | 37.84957 | -87.56760 | 1365.1 | 3210.9 | 3205.2 |
| STR-74 | UNT | Ephemeral | 37.84995 | -87.56723 | 1636.9 | 2595.9 | 2875.3 |
| STR-75 | UNT | Ephemeral | 37.84982 | -87.56790 | 0.0 | 36.7 | 38.5 |
| STR-76 | UNT | Ephemeral | 37.84952 | -87.56858 | 25.7 | 32.8 | 62.6 |
| STR-78 | North Fork Canoe Creek | Perennial | 37.84522 | -87.56506 | 570.0 | 176.2 | 172.3 |
| STR-79 | UNT | Ephemeral | 37.84274 | -87.56503 | 1065.5 | 203.7 | 203.7 |
| STR-80 | UNT | Ephemeral | 37.84220 | -87.56582 | 0.0 | 1475.7 | 1475.7 |
| STR-82 | UNT | Ephemeral | 37.82646 | -87.56620 | 399.2 | 399.2 | 399.2 |
| STR-83 | UNT | Ephemeral | 37.82569 | -87.56568 | 0.1 | 0.1 | 0.1 |
| STR-84 | UNT | Ephemeral | 37.82559 | -87.56643 | 71.0 | 71.0 | 71.0 |
| STR-87 | UNT | Ephemeral | 37.82218 | -87.56858 | 4.9 | 4.9 | 4.9 |
| STR-92 | UNT | Ephemeral | 37.92954 | -87.52328 | 696.0 | 0.0 | 0.0 |
| STR-93 | UNT | Ephemeral | 37.93014 | -87.52536 | 265.7 | 0.0 | 0.0 |
| STR-94 | UNT | Ephemeral | 37.93244 | -87.52598 | 1027.3 | 0.0 | 0.0 |
| STR-95 | UNT | Ephemeral | 37.89083 | -87.51518 | 21.2 | 0.0 | 0.0 |
| STR-98 | UNT | Ephemeral | 37.88906 | -87.51767 | 230.3 | 0.0 | 0.0 |
| STR-104 | UNT | Ephemeral | 37.88864 | -87.51712 | 180.9 | 0.0 | 0.0 |
| STR-105 | UNT | Ephemeral | 37.88741 | -87.51541 | 998.8 | 0.0 | 0.0 |
| STR-106 | UNT | Ephemeral | 37.88755 | -87.51645 | 259.7 | 0.0 | 0.0 |

| | | | | | | | |
|---------------|---|--------------|----------|-----------|----------------|----------------|----------------|
| STR-108 | UNT | Ephemeral | 37.88610 | -87.51627 | 229.7 | 0.0 | 0.0 |
| STR-109 | UNT | Ephemeral | 37.88597 | -87.51426 | 31.0 | 0.0 | 0.0 |
| STR-112 | UNT | Ephemeral | 37.88432 | -87.51481 | 877.0 | 0.0 | 0.0 |
| STR-113 | UNT | Ephemeral | 37.88441 | -87.51439 | 48.5 | 0.0 | 0.0 |
| STR-114 | UNT | Ephemeral | 37.88459 | -87.51591 | 262.1 | 0.0 | 0.0 |
| STR-115 | UNT | Ephemeral | 37.88478 | -87.51626 | 14.3 | 0.0 | 0.0 |
| STR-118 | UNT | Ephemeral | 37.88022 | -87.51602 | 417.0 | 0.0 | 0.0 |
| STR-119 | UNT | Ephemeral | 37.87921 | -87.51701 | 232.7 | 0.0 | 0.0 |
| STR-121 | UNT | Ephemeral | 37.87793 | -87.51786 | 235.4 | 0.0 | 0.0 |
| STR-122 | UNT | Ephemeral | 37.87330 | -87.52148 | 238.2 | 0.0 | 0.0 |
| STR-125 | UNT | Ephemeral | 37.87095 | -87.52383 | 235.7 | 0.0 | 0.0 |
| STR-128 | UNT | Ephemeral | 37.86014 | -87.53539 | 426.8 | 0.0 | 0.0 |
| STR-129 | UNT | Ephemeral | 37.86329 | -87.53711 | 15.2 | 0.0 | 0.0 |
| STR-130 | UNT | Ephemeral | 37.86360 | -87.53140 | 105.6 | 0.0 | 0.0 |
| STR-131 | UNT | Ephemeral | 37.86080 | -87.52852 | 1086.5 | 0.0 | 0.0 |
| STR-133 | UNT | Ephemeral | 37.85861 | -87.52848 | 111.0 | 0.0 | 0.0 |
| STR-136 | UNT | Ephemeral | 37.86207 | -87.51561 | 27.8 | 0.0 | 0.0 |
| STR-137 | UNT | Ephemeral | 37.86127 | -87.51497 | 361.8 | 0.0 | 0.0 |
| STR-138 | UNT | Ephemeral | 37.86132 | -87.51640 | 110.5 | 0.0 | 0.0 |
| STR-139 | UNT | Ephemeral | 37.86098 | -87.51726 | 65.5 | 0.0 | 0.0 |
| STR-140 | UNT | Ephemeral | 37.86125 | -87.51735 | 78.6 | 0.0 | 0.0 |
| STR-144 | UNT | Ephemeral | 37.85810 | -87.53069 | 130.4 | 0.0 | 0.0 |
| STR-145 | UNT | Ephemeral | 37.85246 | -87.54894 | 427.6 | 0.0 | 0.0 |
| STR-146 | UNT | Ephemeral | 37.85506 | -87.54757 | 156.5 | 0.0 | 0.0 |
| STR-147 | UNT | Ephemeral | 37.85376 | -87.54603 | 101.6 | 0.0 | 0.0 |
| STR-148 | UNT | Ephemeral | 37.85471 | -87.55295 | 283.6 | 0.0 | 0.0 |
| STR-155 | UNT | Ephemeral | 37.84943 | -87.56337 | 484.7 | 0.0 | 0.0 |
| STR-158 | Tributary to North Fork Canoe Creek | Intermittent | 37.84737 | -87.56349 | 682.6 | 0.0 | 0.0 |
| STR-161 | UNT | Ephemeral | 37.84389 | -87.56253 | 133.4 | 0.0 | 0.0 |
| STR-162 | UNT | Ephemeral | 37.84380 | -87.56248 | 103.3 | 0.0 | 0.0 |
| TOTALS | | | | | 18326.3 | 23475.5 | 21152.6 |

Source: Parsons, 2017.

Table Notes:

1. UNT = Unnamed tributary
2. Some intermittent streams transitioned to ephemeral in their upper reaches and were mapped as ephemeral/intermittent.
3. The latitude and longitude pin-points the midpoint of the stream.
4. Stream impact is the overall length of the stream within the construction limits, expressed as linear feet.



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

73

SITE NAME/LOCATION Tributary to Eagle Creek

STR-07 SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1.0

LENGTH OF STREAM REACH (ft) 200 LAT. 37.93909 LONG. -87.53720 RIVER CODE N/A RIVER MILE N/A

DATE 07/06/17 SCORER L.E./L.P. COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL

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

MODIFICATIONS:

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 |
|--|---------|---|---------|
| <input type="checkbox"/> BLDR SLABS [16 pts] | 0 | <input type="checkbox"/> SILT [3 pt] | 70 |
| <input type="checkbox"/> BOULDER (>256 mm) [16 pts] | 10 | <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts] | 0 |
| <input type="checkbox"/> BEDROCK [16 pt] | 0 | <input type="checkbox"/> FINE DETRITUS [3 pts] | 0 |
| <input type="checkbox"/> COBBLE (65-256 mm) [12 pts] | 0 | <input type="checkbox"/> CLAY or HARDPAN [0 pt] | 0 |
| <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts] | 5 | <input type="checkbox"/> MUCK [0 pts] | 0 |
| <input checked="" type="checkbox"/> SAND (<2 mm) [6 pts] | 15 | <input type="checkbox"/> ARTIFICIAL [3 pts] | 0 |

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

(A) 9

(B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

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

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

23

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

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

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

5

HHEI Metric Points

Substrate
Max = 40

13

A + B

Pool Depth
Max = 30

30

Bankfull
Width
Max=30

30

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) |
|-------------------------------------|-------------------------------------|----------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Wide >10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Moderate 5-10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Narrow <5m |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None |

FLOODPLAIN QUALITY

| L | R | (Most Predominant per Bank) |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Mature Forest, Wetland |
| <input type="checkbox"/> | <input type="checkbox"/> | Immature Forest, Shrub or Old Field |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Residential, Park, New Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Fenced Pasture |

| L | R | |
|--------------------------|--------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial |
| <input type="checkbox"/> | <input type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

COMMENTS Bank vegetation is mowed and maintained.

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

| | |
|---|--|
| <input checked="" type="checkbox"/> Stream Flowing | <input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent) |
| <input type="checkbox"/> Subsurface flow with isolated pools (Interstitial) | <input type="checkbox"/> Dry channel, no water (Ephemeral) |

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

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

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Eagle Creek Distance from Evaluated Stream 200 feet
☐ 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: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 100
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) Yes Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) Yes Voucher? (Y/N) No

Comments Regarding Biology:

This is a tributary to Eagle Creek that flows under I-69 via a box culvert and pump/lift station. Crayfish burrows were observed along the bank. At this data point, the riparian buffer is a mowed field. A pump station is located at the end of Lodge Avenue. Downstream from the pump station, south of I-69, STR-14 drains into Eagle Creek.

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 





STR-07 Tributary to Eagle Creek (07/06/2017)
 Tributary to Eagle Creek. Notice the pump station in the upper left hand corner.
 Photo direction: West



STR-07 Tributary to Eagle Creek (07/06/2017)
 Pump station along the Tributary to Eagle Creek.
 Photo direction: South



STR-07 Tributary to Eagle Creek (07/06/2017)
 Tributary to Eagle Creek with riparian and instream vegetation.
 Photo direction: West



STR-07 Tributary to Eagle Creek (07/06/2017)
 Tributary to Eagle Creek with riparian vegetation. The stand of scouringrush (*Equisetum hyemale*) indicated that the stream rarely had prolonged bankfull conditions. Photo direction: Southeast



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

68

SITE NAME/LOCATION Tributary to Eagle Creek

STR-12 SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1.0 mile

LENGTH OF STREAM REACH (ft) 200 LAT. 37.93699 LONG. -87.53862 RIVER CODE N/A RIVER MILE N/A

DATE 07/06/17 SCORER L.E./L.P. COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL

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

MODIFICATIONS:

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 |
|--|---------|---|---------|
| <input type="checkbox"/> BLDR SLABS [16 pts] | 0 | <input type="checkbox"/> SILT [3 pt] | 65 |
| <input checked="" type="checkbox"/> BOULDER (>256 mm) [16 pts] | 20 | <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts] | 0 |
| <input type="checkbox"/> BEDROCK [16 pt] | 0 | <input type="checkbox"/> FINE DETRITUS [3 pts] | 0 |
| <input type="checkbox"/> COBBLE (65-256 mm) [12 pts] | 0 | <input type="checkbox"/> CLAY or HARDPAN [0 pt] | 0 |
| <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts] | 5 | <input type="checkbox"/> MUCK [0 pts] | 0 |
| <input type="checkbox"/> SAND (<2 mm) [6 pts] | 10 | <input type="checkbox"/> ARTIFICIAL [3 pts] | 0 |

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 20

(A) 19

(B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

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

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

10

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

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

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

3.0

HHEI Metric Points

Substrate
Max = 40

23

A + B

Pool Depth
Max = 30

25

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) |
|-------------------------------------|-------------------------------------|----------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Wide >10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Moderate 5-10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Narrow <5m |
| <input type="checkbox"/> | <input type="checkbox"/> | None |

COMMENTS

FLOODPLAIN QUALITY

| L | R | (Most Predominant per Bank) |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Mature Forest, Wetland |
| <input type="checkbox"/> | <input type="checkbox"/> | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Residential, Park, New Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Fenced Pasture |

| L | R | |
|--------------------------|--------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial |
| <input type="checkbox"/> | <input type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

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

| | |
|---|--|
| <input checked="" type="checkbox"/> Stream Flowing | <input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent) |
| <input type="checkbox"/> Subsurface flow with isolated pools (Interstitial) | <input type="checkbox"/> Dry channel, no water (Ephemeral) |

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

☒ 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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Eagle Creek Distance from Evaluated Stream 55 feet
☐ 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: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: Unknown Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 45
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) Yes Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) Yes Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) Yes Voucher? (Y/N) No

Comments Regarding Biology:

This is a tributary to Eagle Creek, which passed under I-69 via four circular culverts. Crayfish burrows were observed along the bank. At this data point, the riparian buffer is bottomland hardwood forest. A small wetland swale is located west of the stream. There is a pump station north of I-69 and the interchange ramps that likely drain STR-09 and other ephemeral channels.

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 ↓





STR-12 Tributary to Eagle Creek (07/06/2017) Tributary to Eagle Creek showing rip-rap and riparian vegetation. Photo direction: South



STR-12 Tributary to Eagle Creek (07/06/2017) Tributary to Eagle Creek showing the gated culverts under I-69. Photo direction: Northwest



STR-12 Tributary to Eagle Creek (07/06/2017)

Tributary to Eagle Creek with riparian vegetation near the confluence with Eagle Creek.

Photo direction: North



STR-12 Tributary to Eagle Creek (07/06/2017)

Tributary to Eagle Creek with riparian vegetation.

Photo direction: South

Stream & Location: STR- 13 (Eagle Creek)

RM: NA

Date: 06/26/2017

Scorers Full Name & Affiliation: L. Eggering; L. Postaski

River Code: NA

STORET #: NA

Lat./ Long.: 37.93856, -87.50720

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

Check ONE (Or 2 & average)

| BEST TYPES | | POOL RIFFLE | | OTHER TYPES | | POOL RIFFLE | |
|-------------------------------------|------------------|-------------|---|--|----------------|-------------|---|
| <input type="checkbox"/> | BLDR /SLABS [10] | 0 | 0 | <input type="checkbox"/> | HARDPAN [4] | 0 | 0 |
| <input type="checkbox"/> | BOULDER [9] | 0 | 0 | <input type="checkbox"/> | DETRITUS [3] | 0 | 0 |
| <input type="checkbox"/> | COBBLE [8] | 0 | 0 | <input type="checkbox"/> | MUCK [2] | 0 | 0 |
| <input type="checkbox"/> | GRAVEL [7] | 5 | 0 | <input type="checkbox"/> | SILT [2] | 70 | 0 |
| <input checked="" type="checkbox"/> | SAND [6] | 25 | 0 | <input type="checkbox"/> | ARTIFICIAL [0] | 0 | 0 |
| <input type="checkbox"/> | BEDROCK [5] | 0 | 0 | (Score natural substrates; ignore sludge from point-sources) | | | |

| ORIGIN | |
|-------------------------------------|-----------------|
| <input type="checkbox"/> | LIMESTONE [1] |
| <input type="checkbox"/> | TILLS [1] |
| <input checked="" type="checkbox"/> | WETLANDS [0] |
| <input type="checkbox"/> | HARDPAN [0] |
| <input type="checkbox"/> | SANDSTONE [0] |
| <input type="checkbox"/> | RIP/RAP [0] |
| <input type="checkbox"/> | LACUSTURINE [0] |
| <input type="checkbox"/> | SHALE [-1] |
| <input type="checkbox"/> | COAL FINES [-2] |

| QUALITY | |
|-------------------------------------|----------------|
| <input type="checkbox"/> | HEAVY [-2] |
| <input type="checkbox"/> | MODERATE [-1] |
| <input checked="" type="checkbox"/> | NORMAL [0] |
| <input type="checkbox"/> | FREE [1] |
| <input type="checkbox"/> | EXTENSIVE [-2] |
| <input type="checkbox"/> | MODERATE [-1] |
| <input checked="" type="checkbox"/> | NORMAL [0] |
| <input type="checkbox"/> | NONE [1] |

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

Comments

Substrate
8
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] |
| 2 | OVERHANGING VEGETATION [1] |
| 0 | SHALLOWS (IN SLOW WATER) [1] |
| 0 | ROOTMATS [1] |

| | |
|---|------------------|
| 1 | POOLS > 70cm [2] |
| 0 | ROOTWADS [1] |
| 0 | BOULDERS [1] |

| | |
|---|--------------------------|
| 0 | OXBOWS, BACKWATERS [1] |
| 0 | AQUATIC MACROPHYTES [1] |
| 1 | LOGS OR WOODY DEBRIS [1] |

| AMOUNT | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | EXTENSIVE >75% [11] |
| <input checked="" type="checkbox"/> | MODERATE 25-75% [7] |
| <input type="checkbox"/> | SPARSE 5-<25% [3] |
| <input type="checkbox"/> | NEARLY ABSENT <5% [1] |

Comments

Cover
Maximum
20
11

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

| SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY |
|--|--|--|--|
| <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> NONE [6] | <input type="checkbox"/> HIGH [3] |
| <input type="checkbox"/> MODERATE [3] | <input checked="" type="checkbox"/> GOOD [5] | <input checked="" type="checkbox"/> RECOVERED [4] | <input checked="" type="checkbox"/> MODERATE [2] |
| <input type="checkbox"/> LOW [2] | <input type="checkbox"/> FAIR [3] | <input type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> LOW [1] |
| <input checked="" type="checkbox"/> NONE [1] | <input type="checkbox"/> POOR [1] | <input type="checkbox"/> 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)

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

Comments

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

Riparian
Maximum
10
9

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

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

Comments

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

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

Comments

Riffle /
Run
Maximum
8
4

| | |
|---|--|
| 6] GRADIENT (1.0 ft/mi) | <input checked="" type="checkbox"/> VERY LOW - LOW [2-4] |
| DRAINAGE AREA (10.74 mi ²) | <input type="checkbox"/> MODERATE [6-10] |
| | <input type="checkbox"/> HIGH - VERY HIGH [10-6] |

| | |
|----------|------------|
| %POOL: 5 | %GLIDE: 5 |
| %RUN: 85 | %RIFFLE: 0 |

Gradient
Maximum
10
2

AJ SAMPLED REACH

Check ALL that apply

METHOD

☐ BOAT

☐ WADE

☐ L. LINE

☐ OTHER

STAGE

1st -sample pass-- 2nd

☐ HIGH

☐ UP

☐ NORMAL

☐ LOW

☐ DRY

DISTANCE

☐ 0.5 Km

☐ 0.2 Km

☐ 0.15 Km

☐ 0.12 Km

☐ OTHER

CLARITY

1st --sample pass-- 2nd

☐ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

CANOPY

1st pass

☐ > 85%- OPEN

☐ 55%-<85%

☐ 30%-<55%

☒ 10%-<30%

☐ <10%- CLOSED

2nd pass

☐ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.
This is Eagle Creek, which is located south of I-69. A levee located north of I-69 may impact hydrology during high water events.

Fish (blue gill, bass, and gar) and turtles were present within the stream and crayfish burrows were observed along the bank.

A beaver dam was observed along Eagle Creek.

Photos are attached.

BJ AESTHETICS

☐ NUISANCE ALGAE

☐ INVASIVE MACROPHYTES

☐ EXCESS TURBIDITY

☐ DISCOLORATION

☐ FOAM / SCUM

☐ OIL SHEEN

☐ TRASH / LITTER

☐ NUISANCE ODOR

☐ SLUDGE DEPOSITS

☐ CSOs/SSOs/OUTFALLS

DJ 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

EJ ISSUES

WWTP / CSO / NPDES / INDUSTRY

HARDENED / URBAN / DIRT&GRIME

CONTAMINATED / LANDFILL

BMPs-CONSTRUCTION-SEDIMENT

LOGGING / IRRIGATION / COOLING

BANK / EROSION / SURFACE

FALSE BANK / MANURE / LAGOON

WASH H2O / TILE / H2O TABLE

ACID / MINE / QUARRY / FLOW

NATURAL / WETLAND / STAGNANT

PARK / GOLF / LAWN / HOME

ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

\bar{x} width

\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:





STR-13 Eagle Creek (06/27/2017)

Eagle Creek and riparian vegetation. At the time of observation, Eagle Creek was receiving backwater flow from the Ohio River. Photo direction: East



STR-13 Eagle Creek (06/27/2017)

Beaver dam located across Eagle Creek approximately within the proposed interchange of the Central Alternative 1. Photo direction: South



STR-13 Eagle Creek (07/06/2017)
Eagle Creek showing the channelized nature of the stream.
Photo direction: East



STR-13 Eagle Creek (07/06/2017)
Eagle Creek showing the channelized nature of the stream.
Photo direction: East



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

41

SITE NAME/LOCATION Tributary to Ohio River

STR-20

SITE NUMBER N/A

RIVER BASIN N/A

DRAINAGE AREA (mi²) <1.0 mile

LENGTH OF STREAM REACH (ft) 200

LAT. 37.92215

LONG. -87.54479

RIVER CODE N/A

RIVER MILE N/A

DATE 07/12/17

SCORER L.E./L.P.

COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL

☐ NONE / NATURAL CHANNEL

☒ RECOVERED

☐ RECOVERING

☐ RECENT OR NO RECOVERY

MODIFICATIONS:

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 |
|--|---------|---|---------|
| <input type="checkbox"/> BLDR SLABS [16 pts] | 0 | <input type="checkbox"/> SILT [3 pt] | 75 |
| <input type="checkbox"/> BOULDER (>256 mm) [16 pts] | 0 | <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts] | 0 |
| <input type="checkbox"/> BEDROCK [16 pt] | 0 | <input type="checkbox"/> FINE DETRITUS [3 pts] | 0 |
| <input type="checkbox"/> COBBLE (65-256 mm) [12 pts] | 0 | <input type="checkbox"/> CLAY or HARDPAN [0 pt] | 0 |
| <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts] | 0 | <input type="checkbox"/> MUCK [0 pts] | 0 |
| <input checked="" type="checkbox"/> SAND (<2 mm) [6 pts] | 20 | <input type="checkbox"/> ARTIFICIAL [3 pts] | 0 |

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

(A) 9

(B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

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

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

10

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

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

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

1.4

**HHEI
Metric
Points**

Substrate
Max = 40

11

A + B

Pool Depth
Max = 30

15

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

| L | R | (Per Bank) |
|-------------------------------------|--------------------------|----------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Wide >10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Moderate 5-10m |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Narrow <5m |
| <input type="checkbox"/> | <input type="checkbox"/> | None |

COMMENTS

FLOODPLAIN QUALITY

| L | R | (Most Predominant per Bank) |
|--------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Mature Forest, Wetland |
| <input type="checkbox"/> | <input type="checkbox"/> | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Residential, Park, New Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Fenced Pasture |

| L | R | |
|-------------------------------------|--------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

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

| | |
|---|--|
| <input checked="" type="checkbox"/> Stream Flowing | <input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent) |
| <input type="checkbox"/> Subsurface flow with isolated pools (Interstitial) | <input type="checkbox"/> Dry channel, no water (Ephemeral) |

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

☒ 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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Eagle Creek Distance from Evaluated Stream <1.0 mile
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): Yes Date of last precipitation: Unknown Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 90
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) Yes Voucher? (Y/N) No

Comments Regarding Biology:

At this data point, the stream passes under Nugent Drive via a culvert. Wetland vegetation is present along the banks. The stream parallels Waterworks Road until it eventually flows into the Ohio River.

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 





STR-20 Tributary to Ohio River (07/12/2017)
Tributary to Ohio River along Waterworks Road and riparian wetland vegetation.
Photo direction: West



STR-20 Tributary to Ohio River (07/12/2017)
Tributary to Ohio River parallel to Waterworks Road and riparian wetland vegetation.
Photo direction: East

Stream & Location: STR-23 (Tributary to Ohio River)

RM: NA

Date: 07/12/2017

Scorers Full Name & Affiliation: L. Eggering; L. Postaski

River Code:

STORET #:

Lat./ Long.: 37.91114, -87.55024

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

Check ONE (Or 2 & average)

| BEST TYPES | | POOL RIFFLE | | OTHER TYPES | | POOL RIFFLE | | ORIGIN | | QUALITY | | Substrate 8 Maximum 20 |
|--|------------------|-------------|---|--|----------------|-------------|---|--------------------------|-----------------|--------------------------|----------------|------------------------------|
| <input type="checkbox"/> | BLDR /SLABS [10] | 0 | 0 | <input type="checkbox"/> | HARDPAN [4] | 0 | 0 | <input type="checkbox"/> | LIMESTONE [1] | <input type="checkbox"/> | HEAVY [-2] | |
| <input type="checkbox"/> | BOULDER [9] | 0 | 0 | <input type="checkbox"/> | DETRITUS [3] | 0 | 0 | <input type="checkbox"/> | TILLS [1] | <input type="checkbox"/> | MODERATE [-1] | |
| <input type="checkbox"/> | COBBLE [8] | 0 | 0 | <input type="checkbox"/> | MUCK [2] | 0 | 0 | <input type="checkbox"/> | WETLANDS [0] | <input type="checkbox"/> | NORMAL [0] | |
| <input type="checkbox"/> | GRAVEL [7] | 0 | 0 | <input type="checkbox"/> | SILT [2] | 90 | 0 | <input type="checkbox"/> | HARDPAN [0] | <input type="checkbox"/> | FREE [1] | |
| <input checked="" type="checkbox"/> | SAND [6] | 10 | 0 | <input type="checkbox"/> | ARTIFICIAL [0] | 0 | 0 | <input type="checkbox"/> | SANDSTONE [0] | <input type="checkbox"/> | EXTENSIVE [-2] | |
| <input type="checkbox"/> | BEDROCK [5] | 0 | 0 | (Score natural substrates; ignore sludge from point-sources) | | | | <input type="checkbox"/> | RIP/RAP [0] | <input type="checkbox"/> | MODERATE [-1] | |
| NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0] | | | | | | | | <input type="checkbox"/> | LACUSTURINE [0] | <input type="checkbox"/> | NORMAL [0] | |
| Comments | | | | | | | | <input type="checkbox"/> | SHALE [-1] | <input type="checkbox"/> | NONE [1] | |
| | | | | | | | | <input type="checkbox"/> | COAL FINES [-2] | | | |

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

AMOUNT

Check ONE (Or 2 & average)

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

Comments

Cover
Maximum 20
123] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

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

Comments

Channel
Maximum 20
154] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

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

Comments

Indicate predominant land use(s) past 100m riparian.
Riparian
Maximum 10
95] **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.

Comments

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)Pool / Current
Maximum 12
9

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 | Riffle / Run Maximum 8 |
|---|--|--|--|---------------------------|
| <input type="checkbox"/> BEST AREAS > 10cm [2] | <input checked="" type="checkbox"/> MAXIMUM > 50cm [2] | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> NONE [2] | |
| <input type="checkbox"/> BEST AREAS 5-10cm [1] | <input type="checkbox"/> MAXIMUM < 50cm [1] | <input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> LOW [1] | |
| <input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0] | | <input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0] | <input checked="" type="checkbox"/> MODERATE [0] | |
| | | | <input type="checkbox"/> EXTENSIVE [-1] | |

Comments

| | | | | |
|--|--|----------|------------|-----------------------------|
| 6] GRADIENT (1.0 ft/mi) | <input checked="" type="checkbox"/> VERY LOW - LOW [2-4] | %POOL: 5 | %GLIDE: 5 | Gradient Maximum 10 2 |
| DRAINAGE AREA (3.0 mi ²) | <input type="checkbox"/> MODERATE [6-10] | %RUN: 85 | %RIFFLE: 0 | |
| | <input type="checkbox"/> HIGH - VERY HIGH [10-6] | | | |

Check ALL that apply

Check ALL that apply

STAGE

- ☐ BOAT
☐ WADE
☐ L. LINE
☐ OTHER _____
 DISTANCE _____

CLARITY

- | | | |
|----------------------------------|------------------------------------|--------------------------|
| <input type="checkbox"/> 0.2 Km | 1st --sample pass-- 2nd | |
| <input type="checkbox"/> 0.15 Km | <input type="checkbox"/> < 20 cm | <input type="checkbox"/> |
| <input type="checkbox"/> 0.12 Km | <input type="checkbox"/> 20-<40 cm | <input type="checkbox"/> |
| <input type="checkbox"/> OTHER | <input type="checkbox"/> 40-70 cm | <input type="checkbox"/> |

ECCHI DEPT

- CANOPY**
- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☒ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED
- 1st _____ cm
- pass _____ cm
- 2nd _____ cm
- CJ RECRE**

C1 RECREATION

POOL: ☐ >100ft² ☐ >3ft

B|AESTHETICS

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

DJ MAINTENANCE

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

Circle some & COMMENT

E1 ISSUES

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

F1 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:

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc. This broad slough had fish, turtles, and broods of wood ducks present at the time of the survey.

Photos are attached.

Stream Drawing:





STR-23 Tributary to Ohio River (07/12/2017)

Tributary to Ohio River. Notice the culvert at the bottom center of the photograph; the tributary flows through this culvert under Old River Road. Photo direction: West



STR-23 Tributary to Ohio River (07/12/2017)

Tributary to Ohio River and riparian vegetation. Photo direction: Northwest



STR-23 Tributary to Ohio River (07/12/2017)
 Tributary to Ohio River and riparian vegetation.
 Photo direction: South



STR-23 Tributary to Ohio River (07/12/2017)
 Tributary to Ohio River under US-41.
 Photo direction: Northeast

Stream & Location: STR-26 (Ohio River)

RM: 776.1

Date: 07/12/2017

Scorers Full Name & Affiliation: L. Eggering; L. Postaski

River Code: N/A

STORET #:

Lat./ Long.: 37.908152, -87.550982

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

Check ONE (Or 2 & average)

| BEST TYPES | | OTHER TYPES | |
|--|--------------------------------------|--|--------------------------------------|
| <input type="checkbox"/> BLDR /SLABS [10] | <input type="checkbox"/> POOL RIFFLE | <input type="checkbox"/> HARDPAN [4] | <input type="checkbox"/> POOL RIFFLE |
| <input type="checkbox"/> BOULDER [9] | <input type="checkbox"/> 5 | <input type="checkbox"/> DETRITUS [3] | <input type="checkbox"/> 0 |
| <input type="checkbox"/> COBBLE [8] | <input type="checkbox"/> 0 | <input type="checkbox"/> MUCK [2] | <input type="checkbox"/> 0 |
| <input type="checkbox"/> GRAVEL [7] | <input type="checkbox"/> 0 | <input checked="" type="checkbox"/> SILT [2] | <input type="checkbox"/> 75 |
| <input checked="" type="checkbox"/> SAND [6] | <input type="checkbox"/> 10 | <input type="checkbox"/> ARTIFICIAL [0] | <input type="checkbox"/> 5 |
| <input type="checkbox"/> BEDROCK [5] | <input type="checkbox"/> 0 | (Score natural substrates; ignore sludge from point-sources) | |

| ORIGIN | |
|--|--|
| <input type="checkbox"/> LIMESTONE [1] | <input type="checkbox"/> SILT |
| <input type="checkbox"/> TILLS [1] | <input type="checkbox"/> WETLANDS [0] |
| <input type="checkbox"/> HARDPAN [0] | <input type="checkbox"/> SANDSTONE [0] |
| <input type="checkbox"/> RIP/RAP [0] | <input type="checkbox"/> LACUSTURINE [0] |
| <input type="checkbox"/> SHALE [-1] | <input type="checkbox"/> COAL FINES [-2] |

QUALITY

| |
|---|
| <input type="checkbox"/> HEAVY [-2] |
| <input checked="" type="checkbox"/> MODERATE [-1] |
| <input type="checkbox"/> NORMAL [0] |
| <input type="checkbox"/> FREE [1] |
| <input type="checkbox"/> EXTENSIVE [-2] |
| <input type="checkbox"/> MODERATE [-1] |
| <input type="checkbox"/> NORMAL [0] |
| <input type="checkbox"/> NONE [1] |

Substrate

9

Maximum 20

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

Comments

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

AMOUNT

Check ONE (Or 2 & average)

| | | |
|---|---|---|
| <input type="checkbox"/> UNDERCUT BANKS [1] | <input type="checkbox"/> POOLS > 70cm [2] | <input type="checkbox"/> OXBOWS, BACKWATERS [1] |
| <input type="checkbox"/> OVERHANGING VEGETATION [1] | <input type="checkbox"/> ROOTWADS [1] | <input type="checkbox"/> AQUATIC MACROPHYTES [1] |
| <input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1] | <input type="checkbox"/> BOULDERS [1] | <input type="checkbox"/> LOGS OR WOODY DEBRIS [1] |
| <input type="checkbox"/> ROOTMATS [1] | | |

Check ONE (Or 2 & average)

☐ EXTENSIVE >75% [11]☒ MODERATE 25-75% [7]☐ SPARSE 5-<25% [3]☐ NEARLY ABSENT <5% [1]

Comments

Cover
Maximum
20

12

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

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

Comments

Channel
Maximum
20

15

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

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

Comments

Indicate predominant land use(s)
past 100m riparian.Riparian
Maximum
10

7

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

| |
|--|
| <input checked="" type="checkbox"/> > 1m [6] |
| <input type="checkbox"/> 0.7-<1m [4] |
| <input type="checkbox"/> 0.4-<0.7m [2] |
| <input type="checkbox"/> 0.2-<0.4m [1] |
| <input type="checkbox"/> < 0.2m [0] |

CHANNEL WIDTH

Check ONE (Or 2 & average)

| |
|---|
| <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] |
| <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] |
| <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0] |

CURRENT VELOCITY

Check ALL that apply

| | |
|--|--|
| <input type="checkbox"/> TORRENTIAL [-1] | <input type="checkbox"/> SLOW [1] |
| <input type="checkbox"/> VERY FAST [1] | <input type="checkbox"/> INTERSTITIAL [-1] |
| <input type="checkbox"/> FAST [1] | <input type="checkbox"/> INTERMITTENT [-2] |
| <input checked="" type="checkbox"/> MODERATE [1] | <input type="checkbox"/> 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

9

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

Comments

Riffle /
Run
Maximum
8

7

6] GRADIENT (2 ft/mi)
DRAINAGE AREA (>100 mi²)

| |
|--|
| <input checked="" type="checkbox"/> VERY LOW - LOW [2-4] |
| <input type="checkbox"/> MODERATE [6-10] |
| <input type="checkbox"/> HIGH - VERY HIGH [10-6] |

%POOL: 0

%GLIDE: 0

%RUN: 100

%RIFFLE: 0

Gradient
Maximum
10

3

AJ SAMPLED REACH

Check ALL that apply

METHOD

☐ BOAT

☐ WADE

☐ L. LINE

☐ OTHER

STAGE

☐ HIGH

☐ UP

☐ NORMAL

☐ LOW

☐ DRY

1st-sample pass-- 2nd

☐

☐

☐

☐

☐

DISTANCE

☐ 0.5 Km

☐ 0.2 Km

☐ 0.15 Km

☐ 0.12 Km

☐ OTHER

CLARITY

☐ < 20 cm

☐ 20-40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

1st

2nd

cm

cm

CANOPY

☐ > 85%- OPEN

☐ 55%-<85%

☐ 30%-<55%

☒ 10%-<30%

☐ <10%- CLOSED

pass

1st

2nd

cm

cm

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.
Trash was observed along the banks of the Ohio River. A levee is located north of the Ohio River.

BJ AESTHETICS

☐ NUISANCE ALGAE

☐ INVASIVE MACROPHYTES

☐ EXCESS TURBIDITY

☐ DISCOLORATION

☐ FOAM / SCUM

☐ OIL SHEEN

☒ TRASH / LITTER

☐ NUISANCE ODOR

☐ SLUDGE DEPOSITS

☐ CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

☐ PUBLIC / PRIVATE / BOTH / NA

☐ ACTIVE / HISTORIC / BOTH / NA

☐ YOUNG-SUCCESSION-OLD

☐ SPRAY / SNAG / REMOVED

☐ MODIFIED / DIPPED OUT / NA

☐ LEVEED / ONE SIDED

☐ RELOCATED / CUTOFFS

☐ MOVING-BEDLOAD-STABLE

☐ ARMoured / SLUMPS

☐ ISLANDS / SCoured

☐ IMPOUNDED / DESICCATED

☐ FLOOD CONTROL / DRAINAGE

EJ ISSUES

☐ WWTP / CSO / NPDES / INDUSTRY

☐ HARDENED / URBAN / DIRT&GRIME

☐ CONTAMINATED / LANDFILL

☐ BMPs-CONSTRUCTION-SEDIMENT

☐ LOGGING / IRRIGATION / COOLING

☐ BANK / EROSION / SURFACE

☐ FALSE BANK / MANURE / LAGOON

☐ WASH H2O / TILE / H2O TABLE

☐ ACID / MINE / QUARRY / FLOW

☐ NATURAL / WETLAND / STAGNANT

☐ PARK / GOLF / LAWN / HOME

☐ ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

☐ x width

☐ x depth

☐ max. depth

☐ x bankfull width

☐ bankfull x depth

☐ W/D ratio

☐ bankfull max. depth

☐ floodprone x2 width

☐ entrench. ratio

Legacy Tree:

CJ RECREATION

AREA

DEPTH

POOL:

☐ >100ft2

☐ >3ft

Circle some & COMMENT

Stream Drawing:





STR-26 Ohio River (07/12/2017)

The Ohio River at the proposed West Alternative crossing. Drift and trash along the right descending bank.
Photo direction: Southeast



STR-26 Ohio River (07/12/2017)

The Ohio River at the proposed West Alternative crossing from the right descending bank.
Photo direction: South



STR-26 Ohio River (07/12/2017)

The Ohio River at the proposed West Alternative crossing. Drift and trash along the right descending bank.
Photo direction: Southwest



STR-26 Ohio River (07/12/2017)

The Ohio River at the proposed West Alternative crossing from the left descending bank.
Photo direction: Northeast



STR-26 Ohio River (07/12/2017)

The Ohio River at the proposed Central Alternative crossing. Drift and trash along the right descending bank.
Photo direction: South



STR-26 Ohio River (07/12/2017)

The Ohio River at the proposed Central Alternative crossing from the left descending bank.
Photo direction: Northwest



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

56

SITE NAME/LOCATION Mound Slough

STR-27

SITE NUMBER N/A

RIVER BASIN N/A

DRAINAGE AREA (mi²) 2.3

LENGTH OF STREAM REACH (ft) 200

LAT. 37.88927

LONG. -87.55437

RIVER CODE N/A

RIVER MILE N/A

DATE 08/02/17

SCORER L.E./L.P.

COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL



NONE / NATURAL CHANNEL



RECOVERED



RECOVERING



RECENT OR NO RECOVERY

MODIFICATIONS:

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

| | |
|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

| |
|----|
| 0 |
| 0 |
| 0 |
| 0 |
| 5 |
| 20 |

TYPE

| | |
|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

| |
|----|
| 75 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |

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

(A) **9**

(B) **3**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

15

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)

2.0

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)

Wide >10m



Moderate 5-10m



Narrow <5m



None

FLOODPLAIN QUALITY

L R



(Most Predominant per Bank)

Mature Forest, Wetland



Immature Forest, Shrub or Old Field



Residential, Park, New Field



Fenced Pasture

L R



Conservation Tillage



Urban or Industrial



Open Pasture, Row Crop



Mining or Construction

COMMENTS Data point near Audubon State Park.

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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ohio River Distance from Evaluated Stream 14,000 feet
☐ 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: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 08/01/2017 Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 10
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) Yes Voucher? (Y/N) No

Comments Regarding Biology:

At this data point, Mound Slough is likely a dry channel most of the time. However, recent heavy rains at the time of the survey yielded approximately 6 inches of flowing water in the channel, ranging in wetted width from 6-8 feet. No fish were observed with the stream, however crayfish burrows were observed along the bank. Some allochthonous material was present instream. At this data point, the banks have gradual slopes with no undercuts or signs of erosion.

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

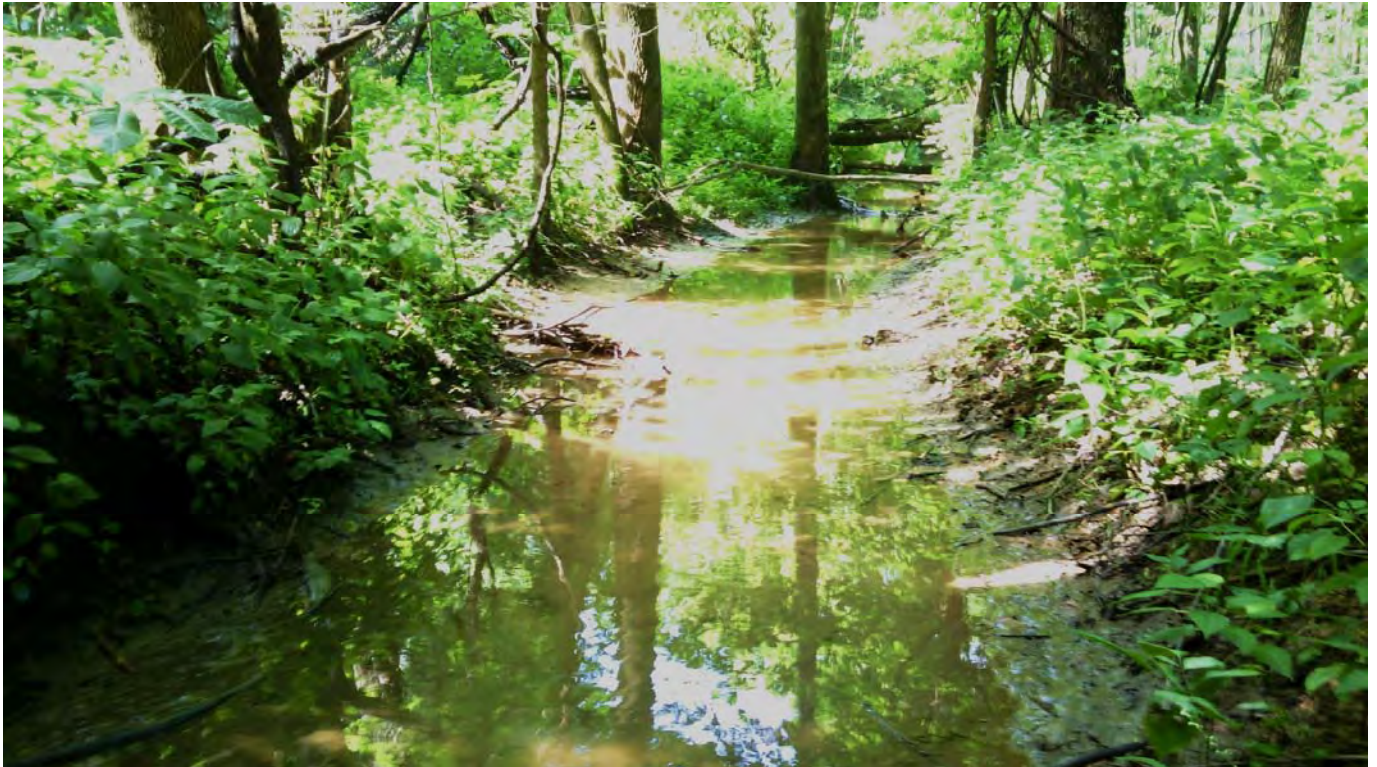
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW ↑





STR-27 Mound Slough (08/02/2017)
 Mound Slough passing through dual opening box culvert under
 Wolf Hills Road. Photo Direction: West



STR-27 Mound Slough (08/02/2017)
 Mound Slough south of Wolf Hills Road following a recent storm event.
 Photo Direction: South



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION Sugar Creek

STR-60

SITE NUMBER N/A

RIVER BASIN N/A

DRAINAGE AREA (mi²) 0.73

LENGTH OF STREAM REACH (ft) 200

LAT. 37.86448

LONG. -87.57592

RIVER CODE N/A

RIVER MILE N/A

DATE 08/16/2017

SCORER L.E./L.P.

COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL

☐ NONE / NATURAL CHANNEL

☒ RECOVERED

☐ RECOVERING

☐ RECENT OR NO RECOVERY

MODIFICATIONS:

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

☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐
☒ ☒

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

0
0
0
0
5
15

TYPE

☐ ☒
☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐
☐ ☐

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

80
0
0
0
0
0
0

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

(A) **9**

(B) **3**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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]

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

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]

1.0

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

HHEI Metric Points

Substrate
Max = 40

12

A + B

Pool Depth
Max = 30

0

Bankfull
Width
Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

L R
☐ ☐

(Per Bank)

Wide >10m

☒ ☒

Moderate 5-10m

☐ ☐

Narrow <5m

☐ ☐

None

FLOODPLAIN QUALITY

L R
☐ ☐

(Most Predominant per Bank)

Mature Forest, Wetland

☐ ☐

Immature Forest, Shrub or Old Field

☐ ☐

Residential, Park, New Field

☐ ☐

Fenced Pasture

L R
☐ ☐

Conservation Tillage

☒ ☒

Urban or Industrial

☐ ☐

Open Pasture, Row Crop

☐ ☐

Mining or Construction

COMMENTS The forested riparian area is highly disturbed.

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

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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ohio River Distance from Evaluated Stream 1,600 feet
☐ 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: Henderson, KY-IN NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 70
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No

Comments Regarding Biology:

Sugar Creek is primarily located west of US-41. This data point is located in a urban/commercial area of Henderson, Kentucky.

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





STR-60 Sugar Creek (08/16/2017)
 Sugar Creek and riparian vegetation.
 Photo direction: Southwest



STR-60 Sugar Creek (08/16/2017)
 Sugar Creek and riparian vegetation.
 Photo direction: Southwest



STR-60 Sugar Creek (08/16/2017)
 Sugar Creek, riparian vegetation, and culvert under North Elm Street.
 Photo direction: West



STR-60 Sugar Creek (08/16/2017)
 Sugar Creek and culvert that extends underground to the northeast toward Pizza Hut.
 Photo direction: Northeast

Stream & Location: STR-78 (North Fork Canoe Creek)

RM:

Date: 08/30/2017

Scorers Full Name & Affiliation: L. Eggering; L. Postaski

River Code: N/A

STORET #:

Lat./ Long.: 37.84439, -87.56658

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

Check ONE (Or 2 & average)

BEST TYPES POOL RIFFLE

| | | |
|---|----|---|
| <input type="checkbox"/> BLDR /SLABS [10] | 0 | 0 |
| <input type="checkbox"/> BOULDER [9] | 0 | 0 |
| <input type="checkbox"/> COBBLE [8] | 15 | 0 |
| <input type="checkbox"/> GRAVEL [7] | 10 | 0 |
| <input type="checkbox"/> SAND [6] | 10 | 0 |
| <input type="checkbox"/> BEDROCK [5] | 0 | 0 |

OTHER TYPES POOL RIFFLE

| | | |
|---|----|---|
| <input type="checkbox"/> HARDPAN [4] | 0 | 0 |
| <input type="checkbox"/> DETRITUS [3] | 0 | 0 |
| <input type="checkbox"/> MUCK [2] | 0 | 0 |
| <input type="checkbox"/> SILT [2] | 65 | 0 |
| <input type="checkbox"/> ARTIFICIAL [0] | 0 | 0 |

(Score natural substrates; ignore

ORIGIN

| |
|--|
| <input type="checkbox"/> LIMESTONE [1] |
| <input type="checkbox"/> TILLS [1] |
| <input checked="" type="checkbox"/> WETLANDS [0] |
| <input type="checkbox"/> HARDPAN [0] |
| <input type="checkbox"/> SANDSTONE [0] |
| <input type="checkbox"/> RIP/RAP [0] |
| <input type="checkbox"/> LACUSTURINE [0] |
| <input type="checkbox"/> SHALE [-1] |
| <input type="checkbox"/> COAL FINES [-2] |

QUALITY

| |
|--|
| <input type="checkbox"/> HEAVY [-2] |
| <input type="checkbox"/> MODERATE [-1] |
| <input checked="" type="checkbox"/> NORMAL [0] |
| <input type="checkbox"/> FREE [1] |
| <input type="checkbox"/> EXTENSIVE [-2] |
| <input type="checkbox"/> MODERATE [-1] |
| <input checked="" type="checkbox"/> NORMAL [0] |
| <input type="checkbox"/> NONE [1] |

Substrate

12

Maximum 20

NUMBER OF BEST TYPES: ☒ 4 or more [2] sludge from point-sources)

Comments

☐ 3 or less [0]

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

AMOUNT

Check ONE (Or 2 & average)

| |
|--------------------------------|
| 0 UNDERCUT BANKS [1] |
| 0 OVERHANGING VEGETATION [1] |
| 0 SHALLOWS (IN SLOW WATER) [1] |
| 0 ROOTMATS [1] |

| |
|--------------------|
| 0 POOLS > 70cm [2] |
| 0 ROOTWADS [1] |
| 0 BOULDERS [1] |

| |
|----------------------------|
| 0 OXBOWS, BACKWATERS [1] |
| 0 AQUATIC MACROPHYTES [1] |
| 2 LOGS OR WOODY DEBRIS [1] |

| |
|---|
| <input type="checkbox"/> EXTENSIVE >75% [11] |
| <input type="checkbox"/> MODERATE 25-75% [7] |
| <input checked="" type="checkbox"/> SPARSE 5-<25% [3] |
| <input type="checkbox"/> NEARLY ABSENT <5% [1] |

Comments

Cover
Maximum 20

4

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

SINUOSITY

| |
|--|
| <input type="checkbox"/> HIGH [4] |
| <input type="checkbox"/> MODERATE [3] |
| <input type="checkbox"/> LOW [2] |
| <input checked="" type="checkbox"/> NONE [1] |

DEVELOPMENT

| |
|--|
| <input type="checkbox"/> EXCELLENT [7] |
| <input checked="" type="checkbox"/> GOOD [5] |
| <input type="checkbox"/> FAIR [3] |
| <input type="checkbox"/> POOR [1] |

CHANNELIZATION

| |
|--|
| <input type="checkbox"/> NONE [6] |
| <input type="checkbox"/> RECOVERED [4] |
| <input checked="" type="checkbox"/> RECOVERING [3] |
| <input type="checkbox"/> RECENT OR NO RECOVERY [1] |

STABILITY

| |
|--|
| <input type="checkbox"/> HIGH [3] |
| <input checked="" type="checkbox"/> MODERATE [2] |
| <input type="checkbox"/> LOW [1] |

Comments

Channel
Maximum 20

11

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

River right looking downstream

EROSION

| |
|---|
| <input checked="" type="checkbox"/> NONE / LITTLE [3] |
| <input type="checkbox"/> MODERATE [2] |
| <input type="checkbox"/> HEAVY / SEVERE [1] |

RIPARIAN WIDTH

| |
|--|
| <input type="checkbox"/> WIDE > 50m [4] |
| <input type="checkbox"/> MODERATE 10-50m [3] |
| <input checked="" type="checkbox"/> NARROW 5-10m [2] |
| <input type="checkbox"/> VERY NARROW < 5m [1] |
| <input type="checkbox"/> NONE [0] |

FLOOD PLAIN QUALITY

| |
|---|
| <input type="checkbox"/> FOREST, SWAMP [3] |
| <input type="checkbox"/> SHRUB OR OLD FIELD [2] |
| <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] |
| <input type="checkbox"/> FENCED PASTURE [1] |
| <input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0] |

| |
|--|
| <input type="checkbox"/> CONSERVATION TILLAGE [1] |
| <input type="checkbox"/> URBAN OR INDUSTRIAL [0] |
| <input type="checkbox"/> MINING / CONSTRUCTION [0] |

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

Comments

Riparian
Maximum 10

5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

| |
|---|
| <input type="checkbox"/> > 1m [6] |
| <input type="checkbox"/> 0.7-<1m [4] |
| <input type="checkbox"/> 0.4-<0.7m [2] |
| <input checked="" type="checkbox"/> 0.2-<0.4m [1] |
| <input type="checkbox"/> < 0.2m [0] |

CHANNEL WIDTH

Check ONE (Or 2 & average)

| |
|---|
| <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] |
| <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] |
| <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0] |

CURRENT VELOCITY

Check ALL that apply

| | |
|--|--|
| <input type="checkbox"/> TORRENTIAL [-1] | <input checked="" type="checkbox"/> SLOW [1] |
| <input type="checkbox"/> VERY FAST [1] | <input type="checkbox"/> INTERSTITIAL [-1] |
| <input type="checkbox"/> FAST [1] | <input type="checkbox"/> INTERMITTENT [-2] |
| <input type="checkbox"/> MODERATE [1] | <input type="checkbox"/> EDDIES [1] |

Indicate for reach - pools and riffles.

Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

Comments

Pool /
Current
Maximum 12

4

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

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

RIFFLE DEPTH

| |
|---|
| <input type="checkbox"/> BEST AREAS > 10cm [2] |
| <input type="checkbox"/> BEST AREAS 5-10cm [1] |
| <input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0] |

RUN DEPTH

| |
|--|
| <input checked="" type="checkbox"/> MAXIMUM > 50cm [2] |
| <input type="checkbox"/> MAXIMUM < 50cm [1] |

RIFFLE / RUN SUBSTRATE

| |
|--|
| <input checked="" type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] |
| <input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] |
| <input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0] |

RIFFLE / RUN EMBEDDEDNESS

| |
|---|
| <input type="checkbox"/> NONE [2] |
| <input checked="" type="checkbox"/> LOW [1] |
| <input type="checkbox"/> MODERATE [0] |
| <input type="checkbox"/> EXTENSIVE [-1] |

Comments

Riffle /
Run
Maximum 8

5

6] GRADIENT (1 ft/mi)
DRAINAGE AREA (13.2 mi²)

| |
|--|
| <input checked="" type="checkbox"/> VERY LOW - LOW [2-4] |
| <input type="checkbox"/> MODERATE [6-10] |
| <input type="checkbox"/> HIGH - VERY HIGH [10-6] |

%POOL: 5

%GLIDE: 0

%RUN: 95

%RIFFLE: 0

Gradient
Maximum 10

3

Check ALL that apply

METHOD

- ☐ BOAT
☐ WADE
☐ L. LINE
☐ OTHER

STAGE

1st -sample pass- 2nd

- | | | |
|--------------------------|--------|--------------------------|
| <input type="checkbox"/> | HIGH | <input type="checkbox"/> |
| <input type="checkbox"/> | UP | <input type="checkbox"/> |
| <input type="checkbox"/> | NORMAL | <input type="checkbox"/> |
| <input type="checkbox"/> | LOW | <input type="checkbox"/> |
| <input type="checkbox"/> | DRY | <input type="checkbox"/> |

DISTANCE

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

meters

CANOPY

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

CLARITY

1st --sample pass-- 2nd

- | | | |
|--------------------------|--------------|--------------------------|
| <input type="checkbox"/> | < 20 cm | <input type="checkbox"/> |
| <input type="checkbox"/> | 20-<40 cm | <input type="checkbox"/> |
| <input type="checkbox"/> | 40-70 cm | <input type="checkbox"/> |
| <input type="checkbox"/> | > 70 cm/ CTB | <input type="checkbox"/> |
| <input type="checkbox"/> | SECCHI DEPTH | <input type="checkbox"/> |

— CLOSER TO THE —

1st _____ cm

cast:

CJ RECREATION

POOL: ☐ >100ft² ☐ >3ft

B|AESTHETICS

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

DJ MAINTENANCE

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

Circle some & COMMENT

E1 ISSUES

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

F1 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:





STR-78 North Fork Canoe Creek (08/30/2017)
North Fork Canoe Creek under US-41.
Photo direction: Southwest



STR-78 North Fork Canoe Creek (08/30/2017)
North Fork Canoe Creek east of US-41.
Photo direction: Northeast

Stream & Location: STR-90 (Tributary to Eagle Creek)

RM: NA

Date: 06/26/2017

Scorers Full Name & Affiliation: L. Eggering; L. Postaski

River Code: NA

STORET #: NA

Lat./ Long.: 37.93865, -87.50521

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

Check ONE (Or 2 & average)

| BEST TYPES | | POOL RIFFLE | | OTHER TYPES | | POOL RIFFLE | |
|--------------------------|------------------|-------------|---|--------------------------|----------------|-------------|---|
| <input type="checkbox"/> | BLDR /SLABS [10] | 0 | 0 | <input type="checkbox"/> | HARDPAN [4] | 0 | 0 |
| <input type="checkbox"/> | BOULDER [9] | 20 | 0 | <input type="checkbox"/> | DETRITUS [3] | 0 | 0 |
| <input type="checkbox"/> | COBBLE [8] | 0 | 0 | <input type="checkbox"/> | MUCK [2] | 0 | 0 |
| <input type="checkbox"/> | GRAVEL [7] | 5 | 0 | <input type="checkbox"/> | SILT [2] | 65 | 0 |
| <input type="checkbox"/> | SAND [6] | 10 | 0 | <input type="checkbox"/> | ARTIFICIAL [0] | 0 | 0 |
| <input type="checkbox"/> | BEDROCK [5] | 0 | 0 | | | | |

| ORIGIN | |
|--------------------------|-----------------|
| <input type="checkbox"/> | LIMESTONE [1] |
| <input type="checkbox"/> | TILLS [1] |
| <input type="checkbox"/> | WETLANDS [0] |
| <input type="checkbox"/> | HARDPAN [0] |
| <input type="checkbox"/> | SANDSTONE [0] |
| <input type="checkbox"/> | RIP/RAP [0] |
| <input type="checkbox"/> | LACUSTURINE [0] |
| <input type="checkbox"/> | SHALE [-1] |
| <input type="checkbox"/> | COAL FINES [-2] |

| QUALITY | |
|--------------------------|----------------|
| <input type="checkbox"/> | HEAVY [-2] |
| <input type="checkbox"/> | MODERATE [-1] |
| <input type="checkbox"/> | NORMAL [0] |
| <input type="checkbox"/> | FREE [1] |
| <input type="checkbox"/> | EXTENSIVE [-2] |
| <input type="checkbox"/> | MODERATE [-1] |
| <input type="checkbox"/> | NORMAL [0] |
| <input type="checkbox"/> | NONE [1] |

NUMBER OF BEST TYPES: ☒ 4 or more [2] sludge from point-sources)
☐ 3 or less [0]

Comments

SILT
EMBEDDEDNESSSubstrate
13
Maximum
202] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal
quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest
quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large
diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

AMOUNT

Check ONE (Or 2 & average)

| UNDERCUT BANKS [1] | | POOLS > 70cm [2] | | OXBOWS, BACKWATERS [1] | |
|--------------------|------------------------------|------------------|--------------|------------------------|--------------------------|
| 0 | | 1 | | 0 | |
| 3 | OVERHANGING VEGETATION [1] | 0 | ROOTWADS [1] | 0 | AQUATIC MACROPHYTES [1] |
| 0 | SHALLOWS (IN SLOW WATER) [1] | 1 | BOULDERS [1] | 0 | LOGS OR WOODY DEBRIS [1] |
| 0 | ROOTMATS [1] | | | | |

| | |
|-------------------------------------|-----------------------|
| <input type="checkbox"/> | EXTENSIVE >75% [11] |
| <input checked="" type="checkbox"/> | MODERATE 25-75% [7] |
| <input type="checkbox"/> | SPARSE 5-<25% [3] |
| <input type="checkbox"/> | NEARLY ABSENT <5% [1] |

Comments

Cover
Maximum
20
11

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

| SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY |
|--|--|--|--|
| <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> NONE [6] | <input type="checkbox"/> HIGH [3] |
| <input type="checkbox"/> MODERATE [3] | <input checked="" type="checkbox"/> GOOD [5] | <input checked="" type="checkbox"/> RECOVERED [4] | <input checked="" type="checkbox"/> MODERATE [2] |
| <input type="checkbox"/> LOW [2] | <input type="checkbox"/> FAIR [3] | <input type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> LOW [1] |
| <input checked="" type="checkbox"/> NONE [1] | <input type="checkbox"/> POOR [1] | <input type="checkbox"/> 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 | | RIPARIAN WIDTH | | FLOOD PLAIN QUALITY | | CONSERVATION TILLAGE | |
|-------------------------------------|--------------------|-------------------------------------|----------------------|-------------------------------------|----------------------------------|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> | NONE / LITTLE [3] | <input type="checkbox"/> | WIDE > 50m [4] | <input checked="" type="checkbox"/> | FOREST, SWAMP [3] | <input type="checkbox"/> | CONSERVATION TILLAGE [1] |
| <input type="checkbox"/> | MODERATE [2] | <input checked="" type="checkbox"/> | MODERATE 10-50m [3] | <input type="checkbox"/> | SHRUB OR OLD FIELD [2] | <input type="checkbox"/> | URBAN OR INDUSTRIAL [0] |
| <input type="checkbox"/> | HEAVY / SEVERE [1] | <input type="checkbox"/> | NARROW 5-10m [2] | <input type="checkbox"/> | RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> | MINING / CONSTRUCTION [0] |
| | | <input type="checkbox"/> | VERY NARROW < 5m [1] | <input type="checkbox"/> | FENCED PASTURE [1] | | |
| | | <input type="checkbox"/> | NONE [0] | <input type="checkbox"/> | OPEN PASTURE, ROWCROP [0] | | |

Comments

Indicate predominant land use(s)
past 100m riparian.Riparian
Maximum
10
9

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

| | |
|-------------------------------------|---------------|
| <input type="checkbox"/> | > 1m [6] |
| <input type="checkbox"/> | 0.7-<1m [4] |
| <input type="checkbox"/> | 0.4-<0.7m [2] |
| <input checked="" type="checkbox"/> | 0.2-<0.4m [1] |
| <input type="checkbox"/> | < 0.2m [0] |

CHANNEL WIDTH

Check ONE (Or 2 & average)

| | |
|-------------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> | POOL WIDTH > RIFFLE WIDTH [2] |
| <input type="checkbox"/> | POOL WIDTH = RIFFLE WIDTH [1] |
| <input type="checkbox"/> | POOL WIDTH < RIFFLE WIDTH [0] |

CURRENT VELOCITY

Check ALL that apply

| | | | |
|--------------------------|-----------------|-------------------------------------|-------------------|
| <input type="checkbox"/> | TORRENTIAL [-1] | <input checked="" type="checkbox"/> | SLOW [1] |
| <input type="checkbox"/> | VERY FAST [1] | <input type="checkbox"/> | INTERSTITIAL [-1] |
| <input type="checkbox"/> | FAST [1] | <input type="checkbox"/> | INTERMITTENT [-2] |
| <input type="checkbox"/> | MODERATE [1] | <input type="checkbox"/> | 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
4Indicate 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 | | |
|-------------------------------------|-----------------------------|-------------------------------------|--|-------------------------------------|----------------|
| <input type="checkbox"/> | BEST AREAS > 10cm [2] | <input type="checkbox"/> | STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> | NONE [2] |
| <input checked="" type="checkbox"/> | BEST AREAS 5-10cm [1] | <input checked="" type="checkbox"/> | MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> | LOW [1] |
| <input type="checkbox"/> | BEST AREAS < 5cm [metric=0] | <input type="checkbox"/> | UNSTABLE (e.g., Fine Gravel, Sand) [0] | <input checked="" type="checkbox"/> | MODERATE [0] |
| | | | | <input type="checkbox"/> | EXTENSIVE [-1] |

Comments

Riffle /
Run
Maximum
8
3

| | |
|--|--|
| 6] GRADIENT (1.0 ft/mi) | <input checked="" type="checkbox"/> VERY LOW - LOW [2-4] |
| DRAINAGE AREA (1.84 mi ²) | <input type="checkbox"/> MODERATE [6-10] |
| | <input type="checkbox"/> HIGH - VERY HIGH [10-6] |

| | |
|----------|------------|
| %POOL: 5 | %GLIDE: 5 |
| %RUN: 85 | %RIFFLE: 0 |

Gradient
Maximum
10
2

AJ SAMPLED REACH

Check ALL that apply

METHOD

☐ BOAT

☐ WADE

☐ L. LINE

☐ OTHER

STAGE

1st -sample pass-- 2nd

☐ HIGH

☐ UP

☐ NORMAL

☐ LOW

☐ DRY

DISTANCE

☐ 0.5 Km

☐ 0.2 Km

☐ 0.15 Km

☐ 0.12 Km

☐ OTHER

CLARITY

1st --sample pass-- 2nd

☐ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

CANOPY

1st pass

☐ > 85%- OPEN

☐ 55%-<85%

☐ 30%-<55%

☐ 10%-<30%

☒ <10%- CLOSED

2nd pass

☐ _____ cm

☐ _____ cm

CJ 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.
This is a tributary to Eagle Creek, which passed under I-69 via four circular culverts and a pump station.

A levee located north of I-69 may impact hydrology during high water events.

Crayfish burrows were observed along the bank. At this data point, the riparian buffer is bottomland hardwood forest.

Photos are attached.

BJ AESTHETICS

☐ NUISANCE ALGAE

☐ INVASIVE MACROPHYTES

☐ EXCESS TURBIDITY

☐ DISCOLORATION

☐ FOAM / SCUM

☐ OIL SHEEN

☐ TRASH / LITTER

☐ NUISANCE ODOR

☐ SLUDGE DEPOSITS

☐ CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

☐ PUBLIC / PRIVATE / BOTH / NA

☐ ACTIVE / HISTORIC / BOTH / NA

☐ YOUNG-SUCCESSION-OLD

☐ SPRAY / SNAG / REMOVED

☐ MODIFIED / DIPPED OUT / NA

☐ LEVEED / ONE SIDED

☐ RELOCATED / CUTOFFS

☐ MOVING-BEDLOAD-STABLE

☐ ARMoured / SLUMPS

☐ ISLANDS / SCoured

☐ IMPOUNDED / DESICCATED

☐ FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

☐ WWTP / CSO / NPDES / INDUSTRY

☐ HARDENED / URBAN / DIRT&GRIME

☐ CONTAMINATED / LANDFILL

☐ BMPs-CONSTRUCTION-SEDIMENT

☐ LOGGING / IRRIGATION / COOLING

☐ BANK / EROSION / SURFACE

☐ FALSE BANK / MANURE / LAGOON

☐ WASH H₂O / TILE / H₂O TABLE

☐ ACID / MINE / QUARRY / FLOW

☐ NATURAL / WETLAND / STAGNANT

☐ PARK / GOLF / LAWN / HOME

☐ ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

☐ \bar{x} width

☐ \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:





STR-90 Tributary to Eagle Creek (06/26/2017)

Photo depicts the tributary to Eagle Creek and riparian vegetation. There is a pump station north of I-69.

Photo direction: North



STR-90 Tributary to Eagle Creek (06/26/2017)

Photo depicts the tributary to Eagle Creek has its' confluence with Eagle Creek in the upper right corner of the photograph.

Photo direction: South

Stream & Location: STR-156 (North Fork Canoe Creek)

RM:

Date: 08/30/2017

Scorers Full Name & Affiliation: L. Eggering; L. Postaski

River Code: N/A

STORET #:

Lat./ Long.: 37.84747, -87.560374

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

Check ONE (Or 2 & average)

BEST TYPES

☐ BLDR /SLABS [10] ☐ POOL ☐ RIFFLE

☐ BOULDER [9] ☐ ☐ ☐

☐ COBBLE [8] ☐ 15 ☐ 0

☐ GRAVEL [7] ☐ 10 ☐ 0

☐ SAND [6] ☐ 10 ☐ 0

☐ BEDROCK [5] ☐ 0 ☐ 0

OTHER TYPES

☐ HARDPAN [4] ☐ POOL ☐ RIFFLE

☐ DETRITUS [3] ☐ ☐ ☐

☐ MUCK [2] ☐ 0 ☐ 0

☐ SILT [2] ☐ 65 ☐ 0

☐ ARTIFICIAL [0] ☐ 0 ☐ 0

(Score natural substrates; ignore

ORIGIN

☐ LIMESTONE [1]

☐ TILLS [1]

☐ WETLANDS [0]

☐ HARDPAN [0]

☐ SANDSTONE [0]

☐ RIP/RAP [0]

☐ LACUSTURINE [0]

☐ SHALE [-1]

☐ COAL FINES [-2]

SILT

EMBEDDEDNESS

QUALITY

☐ HEAVY [-2]

☐ MODERATE [-1]

☐ NORMAL [0]

☐ FREE [1]

☐ EXTENSIVE [-2]

☐ MODERATE [-1]

☐ NORMAL [0]

☐ NONE [1]

Substrate

12

Maximum 20

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

Comments

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

AMOUNT

Check ONE (Or 2 & average)

☐ UNDERCUT BANKS [1]

☐ OVERHANGING VEGETATION [1]

☐ SHALLOWS (IN SLOW WATER) [1]

☐ ROOTMATS [1]

☐ POOLS > 70cm [2]

☐ ROOTWADS [1]

☐ BOULDERS [1]

☐ OXBOWS, BACKWATERS [1]

☐ AQUATIC MACROPHYTES [1]

☐ LOGS OR WOODY DEBRIS [1]

☐ EXTENSIVE >75% [11]

☐ MODERATE 25-75% [7]

☒ SPARSE 5-<25% [3]

☐ NEARLY ABSENT <5% [1]

Comments

Cover
Maximum
20

4

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

11

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

River right looking downstream

EROSION

☒ NONE / LITTLE [3]

☐ MODERATE [2]

☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH

☐ WIDE > 50m [4]

☐ MODERATE 10-50m [3]

☒ NARROW 5-10m [2]

☐ VERY NARROW < 5m [1]

☐ NONE [0]

FLOOD PLAIN QUALITY

☐ 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

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]

☐ 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

4

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

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]**RIFFLE DEPTH**

☐ 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** (1 ft/mi)

DRAINAGE AREA
(13.2 mi²)

☒ VERY LOW - LOW [2-4]

☐ MODERATE [6-10]

☐ HIGH - VERY HIGH [10-6]

%POOL: 5

%GLIDE: 0

%RUN: 95

%RIFFLE: 0

Gradient
Maximum
10

3

AJ SAMPLED REACH

Check ALL that apply

METHOD

☐ BOAT

☐ WADE

☐ L. LINE

☐ OTHER

DISTANCE

☐ 0.5 Km

☐ 0.2 Km

☐ 0.15 Km

☐ 0.12 Km

☐ OTHER

STAGE

1st -sample pass-- 2nd

☐ HIGH

☐ UP

☐ NORMAL

☐ LOW

☐ DRY

CLARITY

1st --sample pass-- 2nd

☐ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

CANOPY

1st pass

☒ > 85%- OPEN

☐ 55%-<85%

☐ 30%-<55%

☐ 10%-<30%

☐ <10%- CLOSED

2nd pass

☐ < 20 cm

☐ 20-<40 cm

☐ 40-70 cm

☐ > 70 cm/ CTB

☐ SECCHI DEPTH

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.
North Fork Canoe Creek runs under US-41. Trash was observed along the bank.

BJ AESTHETICS

☐ NUISANCE ALGAE

☐ INVASIVE MACROPHYTES

☐ EXCESS TURBIDITY

☐ DISCOLORATION

☐ FOAM / SCUM

☐ OIL SHEEN

☒ TRASH / LITTER

☐ NUISANCE ODOR

☐ SLUDGE DEPOSITS

☐ CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA

ACTIVE / HISTORIC / BOTH / NA

YOUNG-SUCCESSION-OLD

SPRAY / SNAG / REMOVED

MODIFIED / DIPPED OUT / NA

LEVEED / ONE SIDED

RELOCATED / CUTOFFS

MOVING-BEDLOAD-STABLE

ARMoured / SLUMPS

ISLANDS / SCoured

IMPOUNDED / DESICCATED

FLOOD CONTROL / DRAINAGE

EJ ISSUES

WWTP / CSO / NPDES / INDUSTRY

HARDENED / URBAN / DIRT&GRIME

CONTAMINATED / LANDFILL

BMPs-CONSTRUCTION-SEDIMENT

LOGGING / IRRIGATION / COOLING

BANK / EROSION / SURFACE

FALSE BANK / MANURE / LAGOON

WASH H2O / TILE / H2O TABLE

ACID / MINE / QUARRY / FLOW

NATURAL / WETLAND / STAGNANT

PARK / GOLF / LAWN / HOME

ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

\bar{x} width

\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:

Circle some & COMMENT

Stream Drawing:





STR-156 North Fork Canoe Creek (08/30/2017)
North Fork Canoe Creek near Kimsey Lane.
Photo Direction: Northeast



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

27

SITE NAME/LOCATION Tributary to North Fork Canoe Creek

STR-158 SITE NUMBER N/A RIVER BASIN N/A DRAINAGE AREA (mi²) <1.0 mile

LENGTH OF STREAM REACH (ft) 200 LAT. 37.847366 LONG. -87.563486 RIVER CODE N/A RIVER MILE N/A

DATE 10/02/17 SCORER L.E./L.P. COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL

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

MODIFICATIONS:

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 |
|--|---------|---|---------|
| <input type="checkbox"/> BLDR SLABS [16 pts] | 0 | <input type="checkbox"/> SILT [3 pt] | 15 |
| <input type="checkbox"/> BOULDER (>256 mm) [16 pts] | 0 | <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts] | 0 |
| <input type="checkbox"/> BEDROCK [16 pt] | 0 | <input type="checkbox"/> FINE DETRITUS [3 pts] | 0 |
| <input type="checkbox"/> COBBLE (65-256 mm) [12 pts] | 0 | <input type="checkbox"/> CLAY or HARDPAN [0 pt] | 0 |
| <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts] | 10 | <input type="checkbox"/> MUCK [0 pts] | 0 |
| <input checked="" type="checkbox"/> SAND (<2 mm) [6 pts] | 75 | <input type="checkbox"/> ARTIFICIAL [3 pts] | 0 |

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

(A) 9

(B) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate
Max = 40

12

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):

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

Pool Depth
Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

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

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

Bankfull
Width
Max=30

15

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

1.5

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) |
|-------------------------------------|-------------------------------------|----------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Wide >10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Moderate 5-10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Narrow <5m |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None |

COMMENTS

FLOODPLAIN QUALITY

| L | R | (Most Predominant per Bank) |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Mature Forest, Wetland |
| <input type="checkbox"/> | <input type="checkbox"/> | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Residential, Park, New Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Fenced Pasture |

| L | R | |
|-------------------------------------|-------------------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

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

| | |
|---|---|
| <input type="checkbox"/> Stream Flowing | <input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent) |
| <input type="checkbox"/> Subsurface flow with isolated pools (Interstitial) | <input type="checkbox"/> Dry channel, no water (Ephemeral) |

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

☒ 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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: _____ Distance from Evaluated Stream >1.0 mile
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Henderson, KY-IN NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Henderson County Township / City: Henderson

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: Unknown

Photograph Information: Photos taken

Elevated Turbidity? (Y/N): No Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A

Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A

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

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No

Comments Regarding Biology:

At this data point, the tributary to Mound Slough is likely a dry channel most of the time; however at the time of the survey, recent heavy rains has yielded water in the channel.

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





STR-158 Tributary to North Fork Canoe Creek (10/02/2017)
 Tributary to North Fork Canoe Creek.
 Photo Direction: East



STR-158 Tributary to North Fork Canoe Creek (10/02/2017)
 Tributary to North Fork Canoe Creek east of US-41.
 Photo direction: West



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

31

SITE NAME/LOCATION Unnamed Tributary

STR-175

SITE NUMBER N/A

RIVER BASIN N/A

DRAINAGE AREA (mi²) <1.0 mile

LENGTH OF STREAM REACH (ft) 200

LAT. 37.88779

LONG. -87.53969

RIVER CODE N/A

RIVER MILE N/A

DATE 08/02/17

SCORER L.E./L.P.

COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL



NONE / NATURAL CHANNEL



RECOVERED



RECOVERING



RECENT OR NO RECOVERY

MODIFICATIONS:

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

| | |
|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

| |
|----|
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 80 |

TYPE

| | |
|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

| |
|----|
| 20 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |

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

(A) 9

(B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

> 30 centimeters [20 pts]

> 22.5 - 30 cm [30 pts]

> 10 - 22.5 cm [25 pts]

| |
|-------------------------------------|
| <input type="checkbox"/> |
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |

> 5 cm - 10 cm [15 pts]

< 5 cm [5 pts]

NO WATER OR MOIST CHANNEL [0 pts]

4

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

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

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

> 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]

| |
|-------------------------------------|
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]

≤ 1.0 m (≤ 3' 3") [5 pts]

1.4

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

HHEI Metric Points

Substrate
Max = 40

11

A + B

Pool Depth
Max = 30

5

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

| | |
|--------------------------|--------------------------|
| L | R |
| <input type="checkbox"/> | <input type="checkbox"/> |

(Per Bank)

Wide >10m

| | |
|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|-------------------------------------|-------------------------------------|

Moderate 5-10m

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Narrow <5m

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

None

COMMENTS

FLOODPLAIN QUALITY

| | |
|-------------------------------------|--------------------------|
| L | R |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> |

(Most Predominant per Bank)

Mature Forest, Wetland

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Immature Forest, Shrub or Old Field

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Residential, Park, New Field

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Fenced Pasture

| | |
|--------------------------|--------------------------|
| L | R |
| <input type="checkbox"/> | <input type="checkbox"/> |

Conservation Tillage

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Urban or Industrial

| | |
|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|-------------------------------------|

Open Pasture, Row Crop

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Mining or Construction

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

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

Stream Flowing

Subsurface flow with isolated pools (Interstitial)

| |
|-------------------------------------|
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |

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):

| |
|-------------------------------------|
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |

None

0.5

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

1.0

1.5

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

2.0

2.5

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ohio River Distance from Evaluated Stream >1.0 mile
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 08/01/2017 Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 10
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) Yes Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) Yes Voucher? (Y/N) No

Comments Regarding Biology:

At this data point, the tributary to Mound Slough is likely a dry channel most of the time; however at the time of the survey, recent heavy rains has yielded water in the channel.

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





STR-175 North Fork Canoe Creek (08/02/2017)
Unnamed tributary Wolf Hills Road.
Photo Direction: East



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

31

SITE NAME/LOCATION Tributary to Mound Slough

STR-177

SITE NUMBER N/A

RIVER BASIN N/A

DRAINAGE AREA (mi²) <1.0 mile

LENGTH OF STREAM REACH (ft) 200

LAT. 37.88823

LONG. -87.53895

RIVER CODE N/A

RIVER MILE N/A

DATE 08/02/17

SCORER L.E./L.P.

COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL



NONE / NATURAL CHANNEL



RECOVERED



RECOVERING



RECENT OR NO RECOVERY

MODIFICATIONS:

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

| | |
|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

| |
|----|
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 80 |

TYPE

| | |
|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

| |
|----|
| 20 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |

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

(A) **9**

(B) **2**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

> 30 centimeters [20 pts]

> 22.5 - 30 cm [30 pts]

> 10 - 22.5 cm [25 pts]

| |
|-------------------------------------|
| <input type="checkbox"/> |
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |

> 5 cm - 10 cm [15 pts]

< 5 cm [5 pts]

NO WATER OR MOIST CHANNEL [0 pts]

4

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

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

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

> 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]

| |
|-------------------------------------|
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]

≤ 1.0 m (≤ 3' 3") [5 pts]

1.4

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

HHEI Metric Points

Substrate
Max = 40

11

A + B

Pool Depth
Max = 30

5

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

| | |
|--------------------------|--------------------------|
| L | R |
| <input type="checkbox"/> | <input type="checkbox"/> |

(Per Bank)

Wide >10m

| | |
|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|-------------------------------------|-------------------------------------|

Moderate 5-10m

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Narrow <5m

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

None

COMMENTS

FLOODPLAIN QUALITY

| | |
|-------------------------------------|-------------------------------------|
| L | R |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

(Most Predominant per Bank)

Mature Forest, Wetland

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Immature Forest, Shrub or Old Field

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Residential, Park, New Field

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Fenced Pasture

| | |
|--------------------------|--------------------------|
| L | R |
| <input type="checkbox"/> | <input type="checkbox"/> |

Conservation Tillage

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Urban or Industrial

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Open Pasture, Row Crop

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Mining or Construction

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

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

Stream Flowing

Subsurface flow with isolated pools (Interstitial)

| |
|-------------------------------------|
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |

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):

| |
|-------------------------------------|
| <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |

None

0.5

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

1.0

1.5

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

2.0

2.5

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |

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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ohio River Distance from Evaluated Stream >1.0 mile
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: 08/01/2017 Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 10
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) Yes Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) Yes Voucher? (Y/N) No

Comments Regarding Biology:

At this data point, the tributary to Mound Slough is likely a dry channel most of the time; however at the time of the survey, recent heavy rains has yielded water in the channel.

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





STR-177 Tributary to Mound Slough (08/02/2017)
Tributary to Mound Slough with riparian vegetation. Photo
direction: North



STR-177 Tributary to Mound Slough (08/02/2017)
Tributary to Mound Slough flowing under Wolf Hills Road via a culvert.
Photo direction: Southwest



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

41

SITE NAME/LOCATION Tributary to Mound Slough

STR-191

SITE NUMBER N/A

RIVER BASIN N/A

DRAINAGE AREA (mi²) <1.0

LENGTH OF STREAM REACH (ft) 200

LAT. 37.885201

LONG. -87.526973

RIVER CODE N/A

RIVER MILE N/A

DATE 09/08/17

SCORER L.E./L.P.

COMMENTS N/A

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL

☐ NONE / NATURAL CHANNEL

☒ RECOVERED

☐ RECOVERING

☐ RECENT OR NO RECOVERY

MODIFICATIONS:

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 |
|--|---------|---|---------|
| <input type="checkbox"/> BLDR SLABS [16 pts] | 0 | <input type="checkbox"/> SILT [3 pt] | 90 |
| <input type="checkbox"/> BOULDER (>256 mm) [16 pts] | 0 | <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts] | 0 |
| <input type="checkbox"/> BEDROCK [16 pt] | 0 | <input type="checkbox"/> FINE DETRITUS [3 pts] | 0 |
| <input type="checkbox"/> COBBLE (65-256 mm) [12 pts] | 0 | <input type="checkbox"/> CLAY or HARDPAN [0 pt] | 0 |
| <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts] | 0 | <input type="checkbox"/> MUCK [0 pts] | 0 |
| <input checked="" type="checkbox"/> SAND (<2 mm) [6 pts] | 10 | <input type="checkbox"/> ARTIFICIAL [3 pts] | 0 |

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

(A) 9

(B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

**HHEI
Metric
Points**

Substrate
Max = 40

11

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):

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

6

Pool Depth
Max = 30

15

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

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

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

1.2

Bankfull
Width
Max=30

15

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

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) |
|-------------------------------------|-------------------------------------|----------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Wide >10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Moderate 5-10m |
| <input type="checkbox"/> | <input type="checkbox"/> | Narrow <5m |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None |

FLOODPLAIN QUALITY

| L | R | (Most Predominant per Bank) |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Mature Forest, Wetland |
| <input type="checkbox"/> | <input type="checkbox"/> | Immature Forest, Shrub or Old Field |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Residential, Park, New Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Fenced Pasture |

| L | R | |
|--------------------------|--------------------------|------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial |
| <input type="checkbox"/> | <input type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

COMMENTS Wathen Lane is to the west and the area to the east is mowed/maintained.

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

| | |
|---|---|
| <input type="checkbox"/> Stream Flowing | <input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent) |
| <input type="checkbox"/> Subsurface flow with isolated pools (Interstitial) | <input type="checkbox"/> Dry channel, no water (Ephemeral) |

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

☒ 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 N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Ohio River Distance from Evaluated Stream <1.0 mile
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: Evansville South, IN-KY NRCS Soil Map Page: N/A NRCS Soil Map Stream Order 1
County: Vanderburgh County Township / City: Evansville

MISCELLANEOUS

Base Flow Conditions? (Y/N): No Date of last precipitation: Unknown Quantity: Unknown
Photograph Information: Photos taken
Elevated Turbidity? (Y/N): No Canopy (% open): 10
Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A
Is the sampling reach representative of the stream (Y/N) Yes If not, please explain: N/A

Additional comments/description of pollution impacts: N/A

BIOTIC EVALUATION

Performed? (Y/N): No (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) No Voucher? (Y/N) No Salamanders Observed? (Y/N) No Voucher? (Y/N) No
Frogs or Tadpoles Observed? (Y/N) No Voucher? (Y/N) No Aquatic Macroinvertebrates Observed? (Y/N) No Voucher? (Y/N) No

Comments Regarding Biology:

At this data point, the tributary to Mound Slough is a deep channel parallel to Wathen Lane.

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





STR-191 Tributary to Mound Slough (09/08/2017)
 Tributary to Mound Slough at Wathen Lane and Timberlane Drive.
 Photo direction: South



STR-191 Tributary to Mound Slough (09/08/2017)
 Tributary to Mound Slough upstream of the data point.
 Photo direction: Northwest



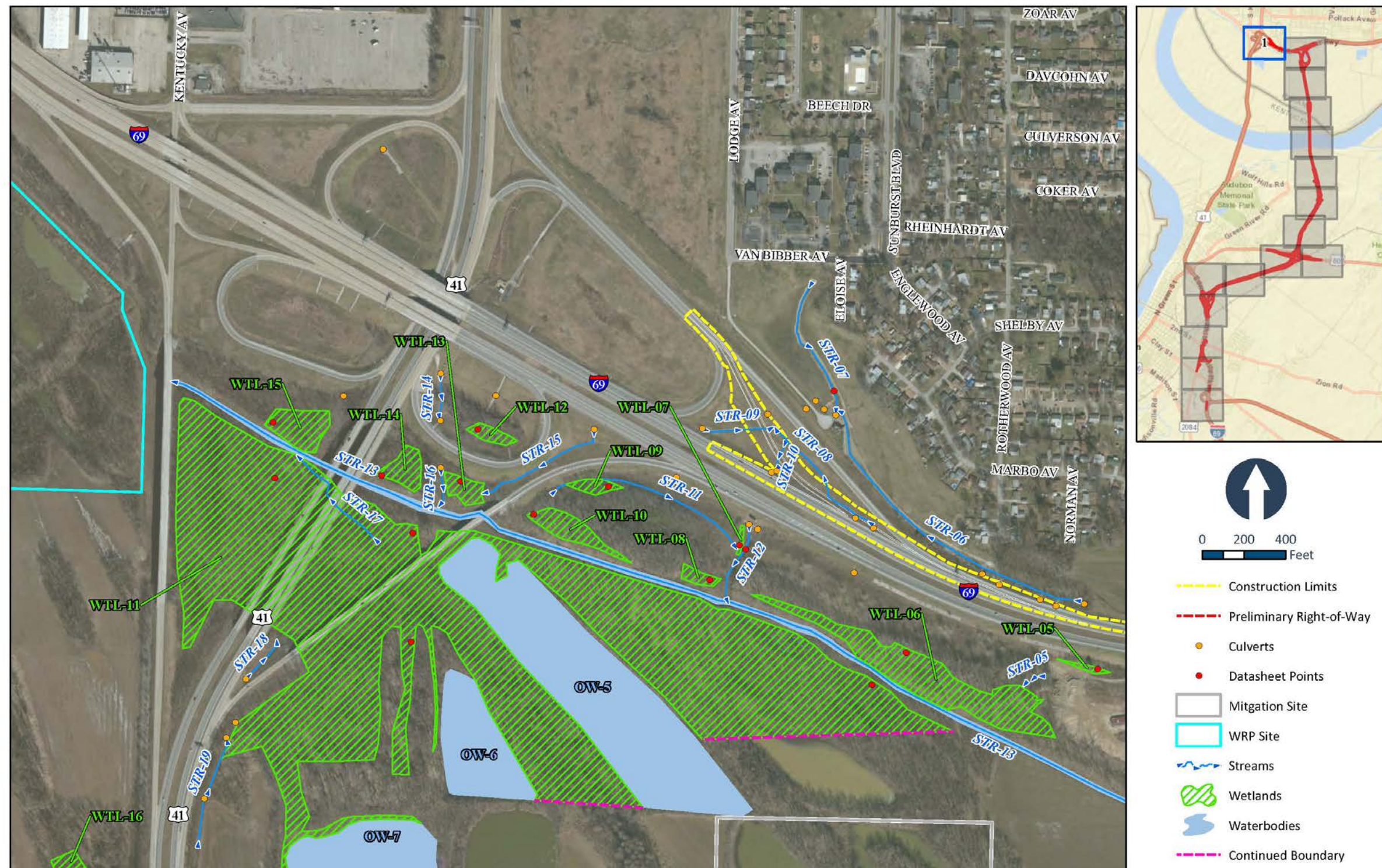
STR-191 Tributary to Mound Slough (09/08/2017)
Tributary to Mound Slough along Wathen Lane. Photo
direction: North



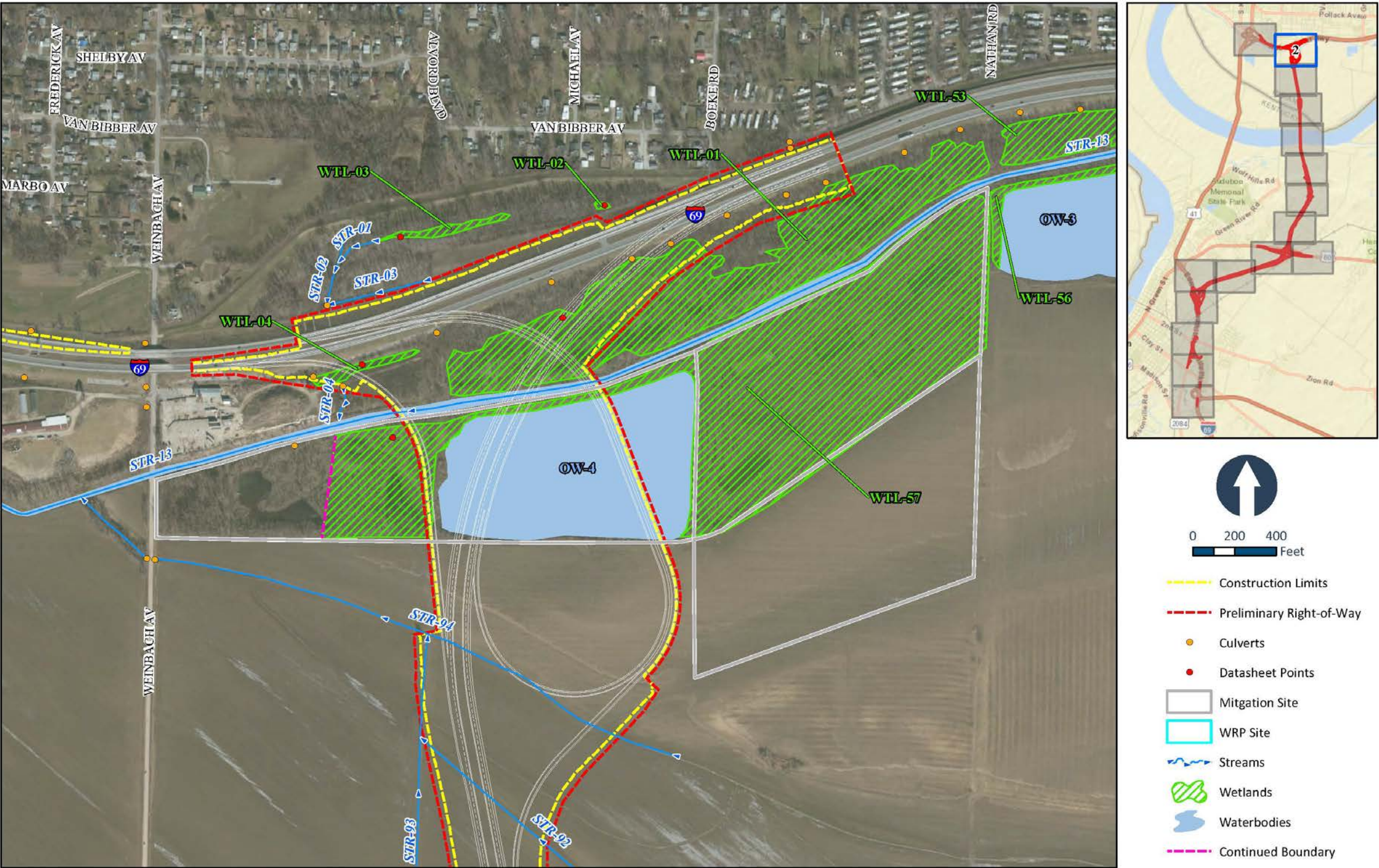
STR-191 Tributary to Mound Slough (09/08/2017)
Tributary to Mound Slough near the intersection of Wathen Lane and Wolf Hills Road.
Photo direction: South

C DETAILED WOTUS PROJECT MAPS

The I-69 ORX wetlands, open water, streams, and watercourses were evaluated in the field and mapped with a handheld GPS unit. The GPS data was incorporated into the project GIS. The following detailed maps illustrate the resources identified and mapped.



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 1 of 16)

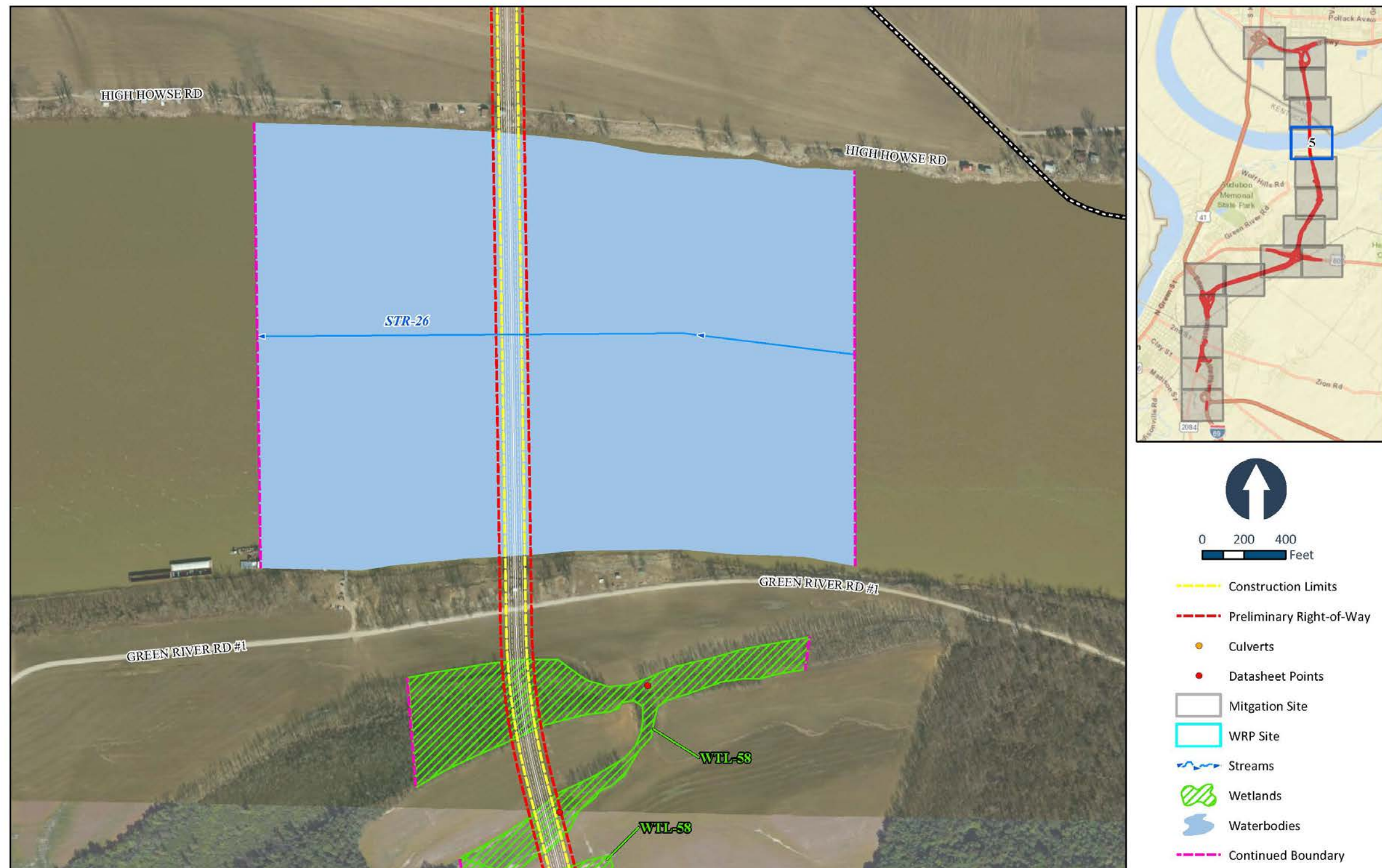


Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 2 of 16)

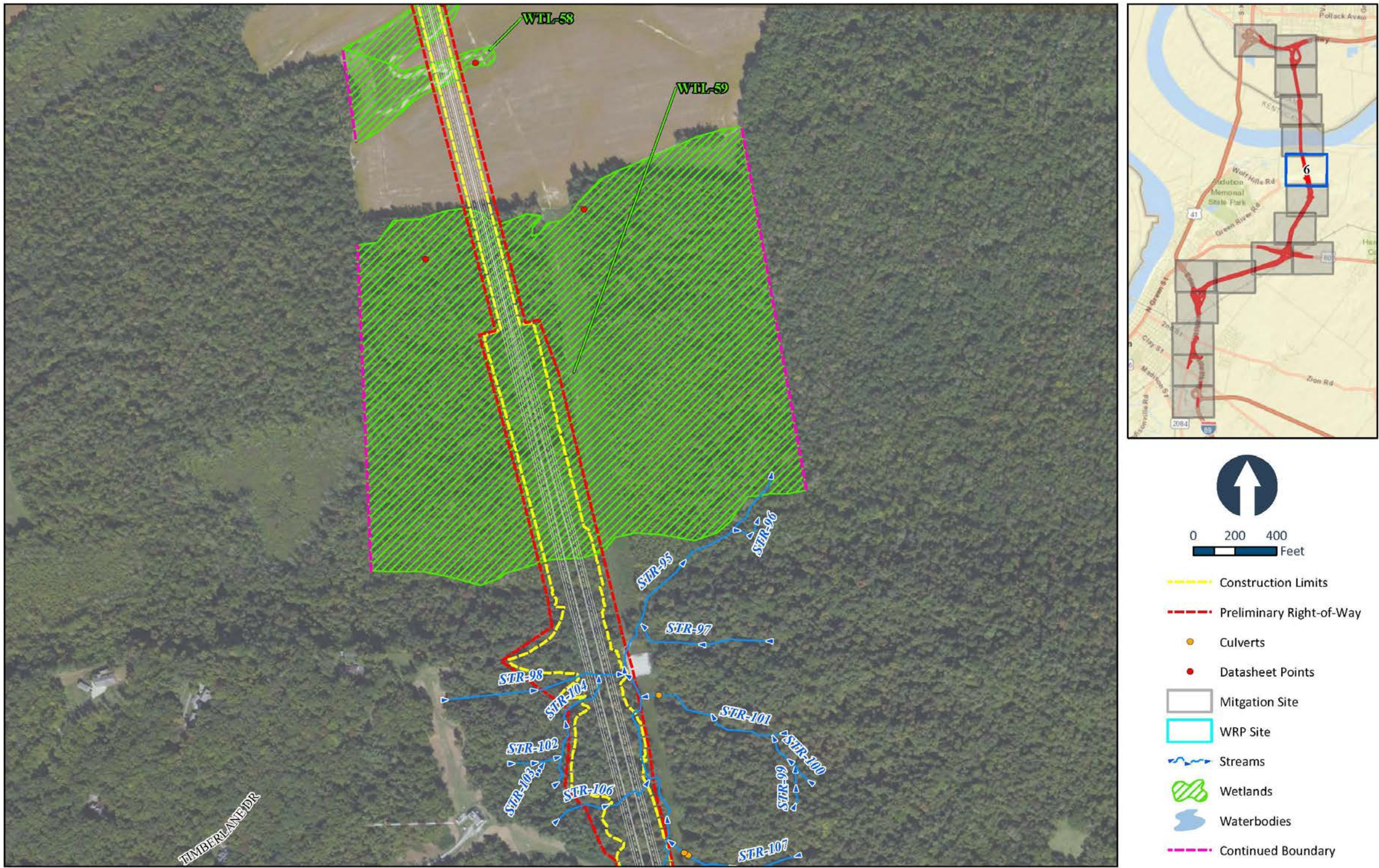


Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 3 of 16)

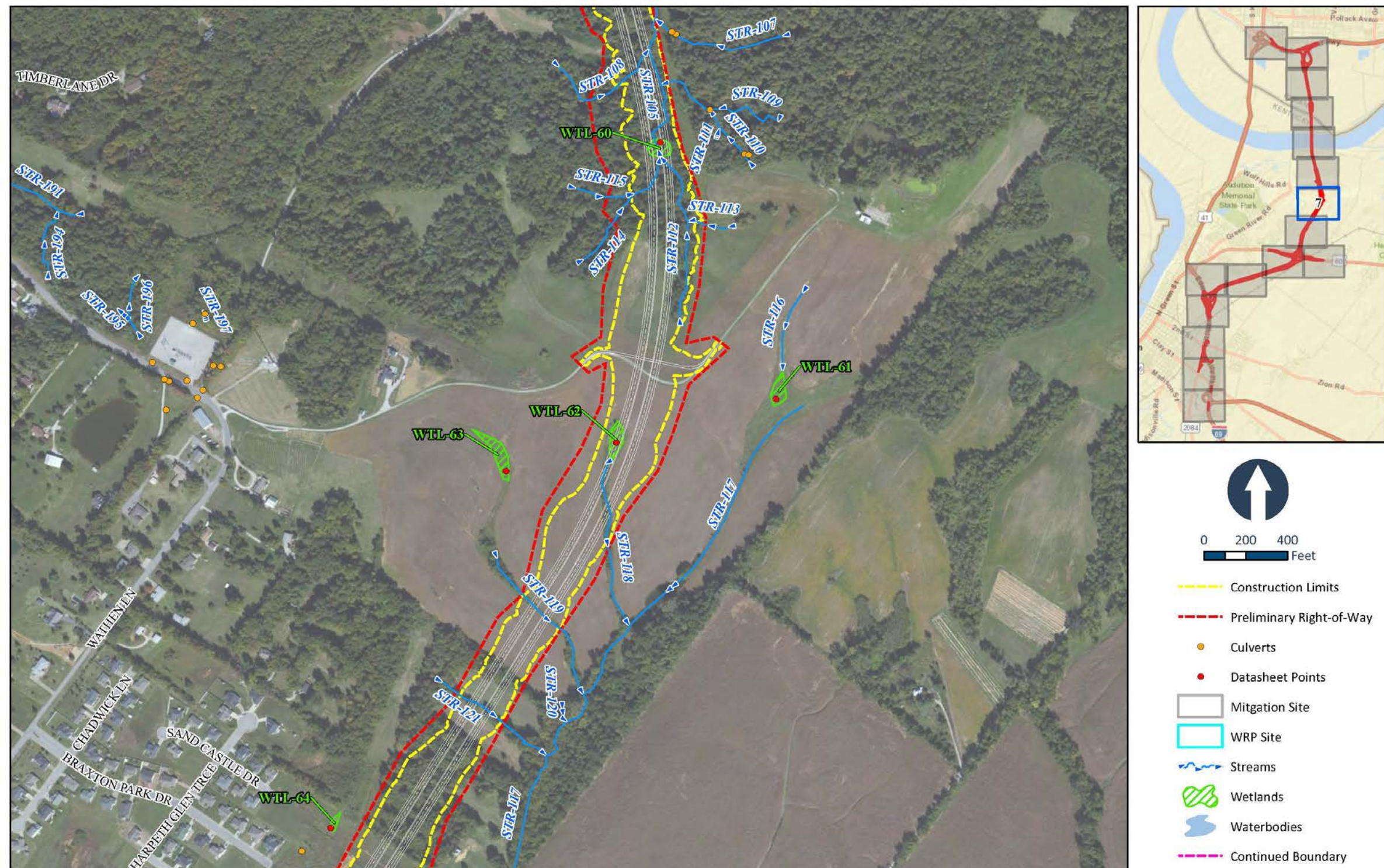




Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 5 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 6 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 7 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 8 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 9 of 16)

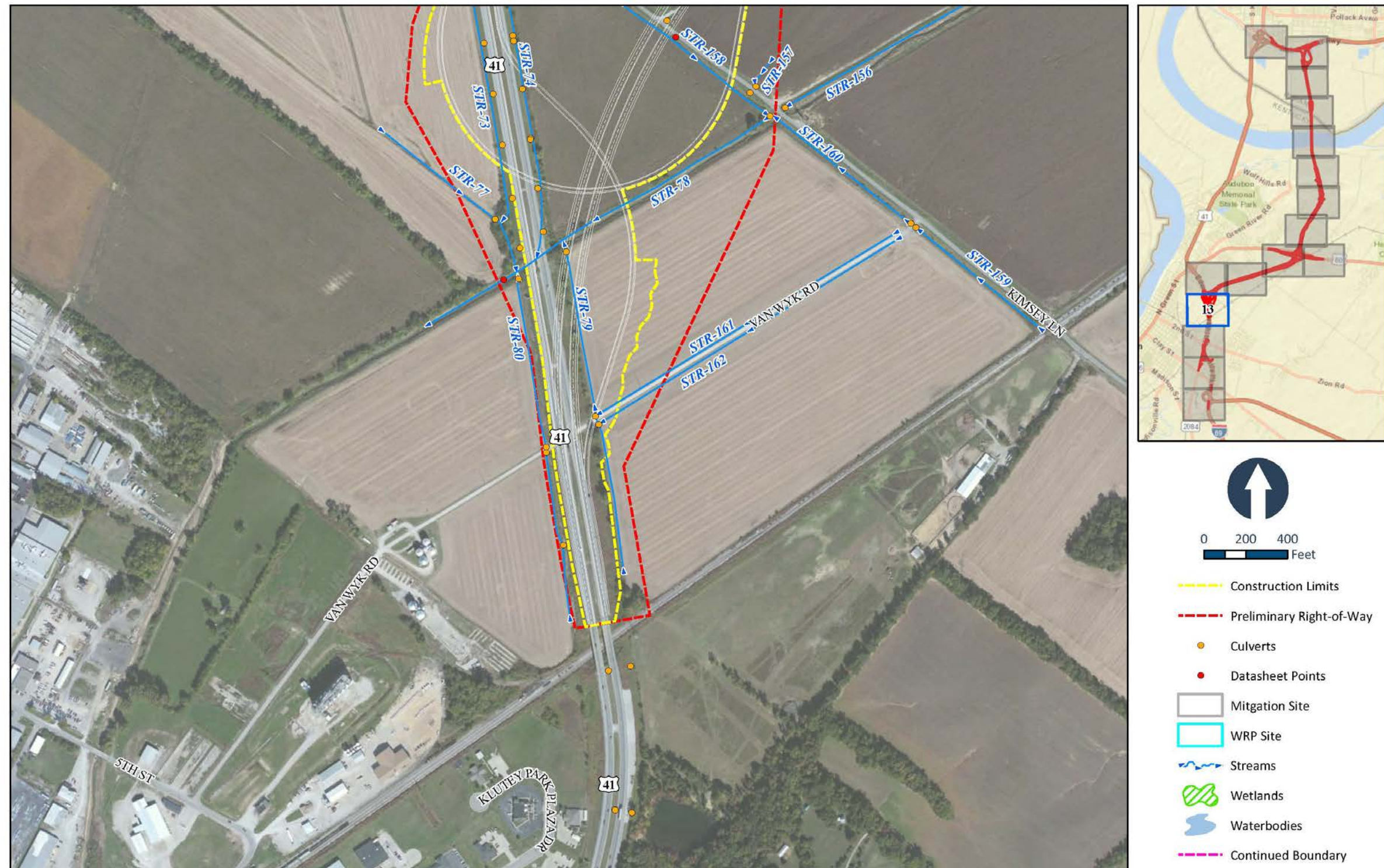




Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 11 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 12 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 13 of 16)



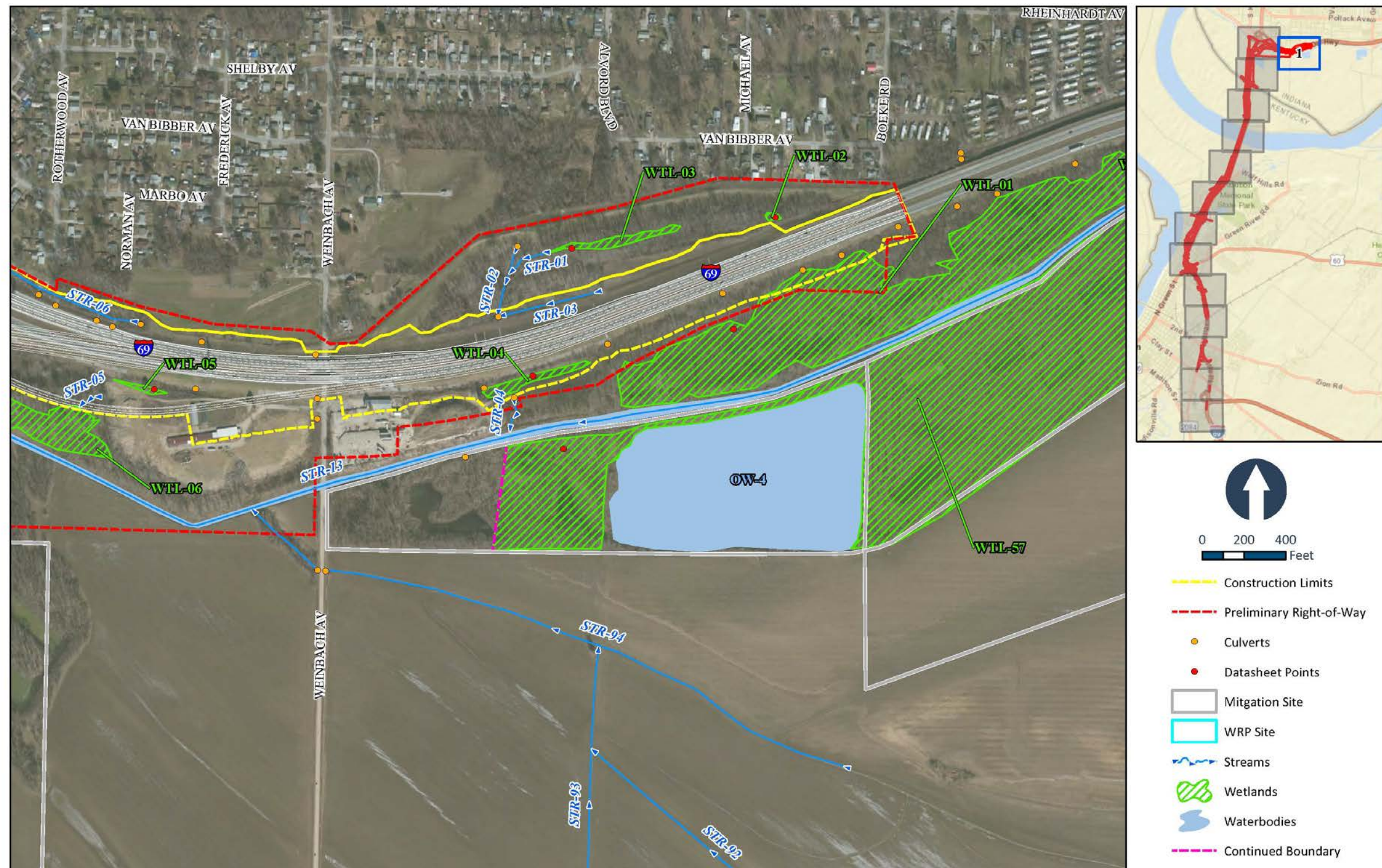
Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 14 of 16)



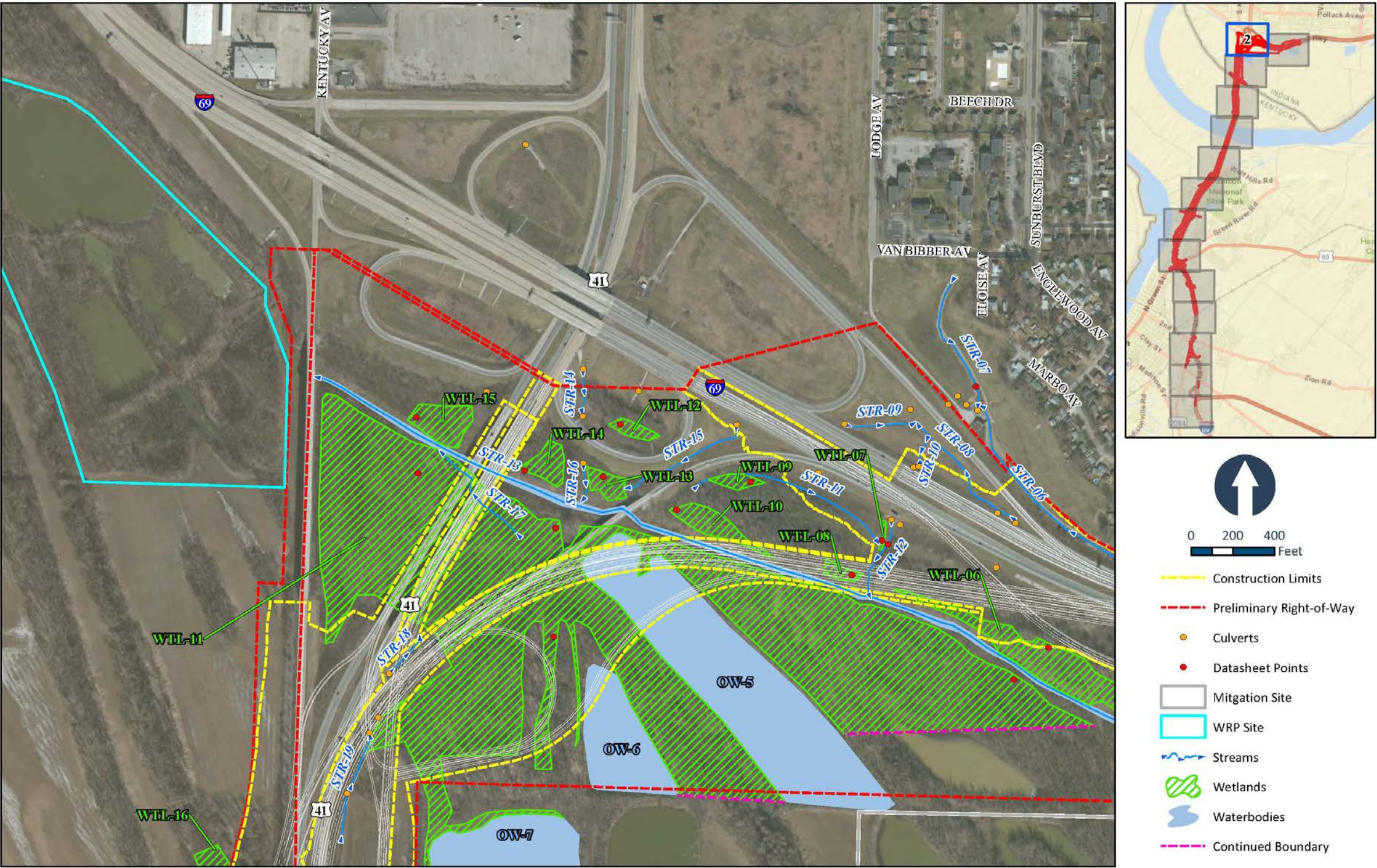
Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 15 of 16)



Appendix C. I-69 ORX DEIS Central Alternative 1 Wetlands, Streams, and Waterbodies (Map 16 of 16)



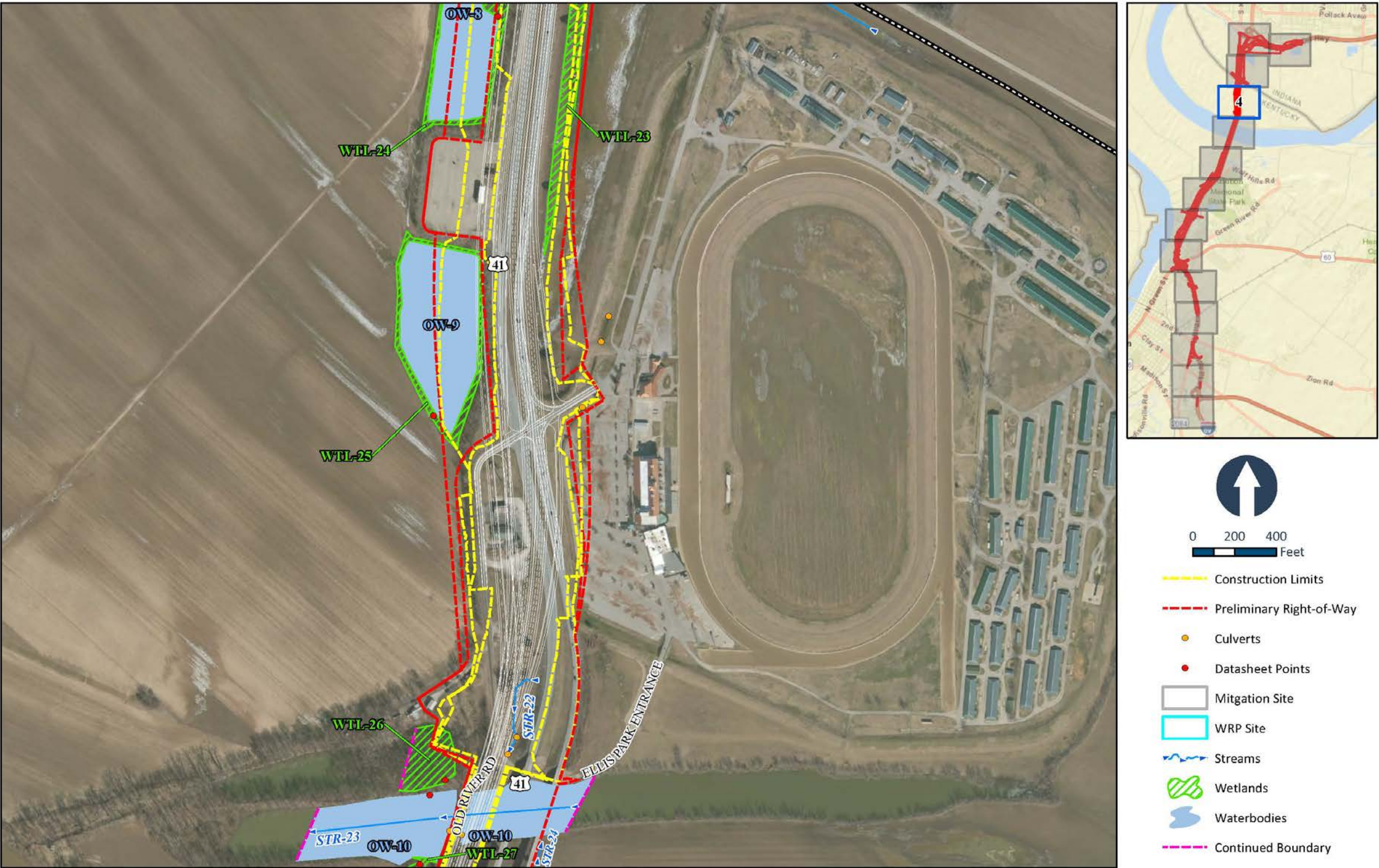
Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 1 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 2 of 14)



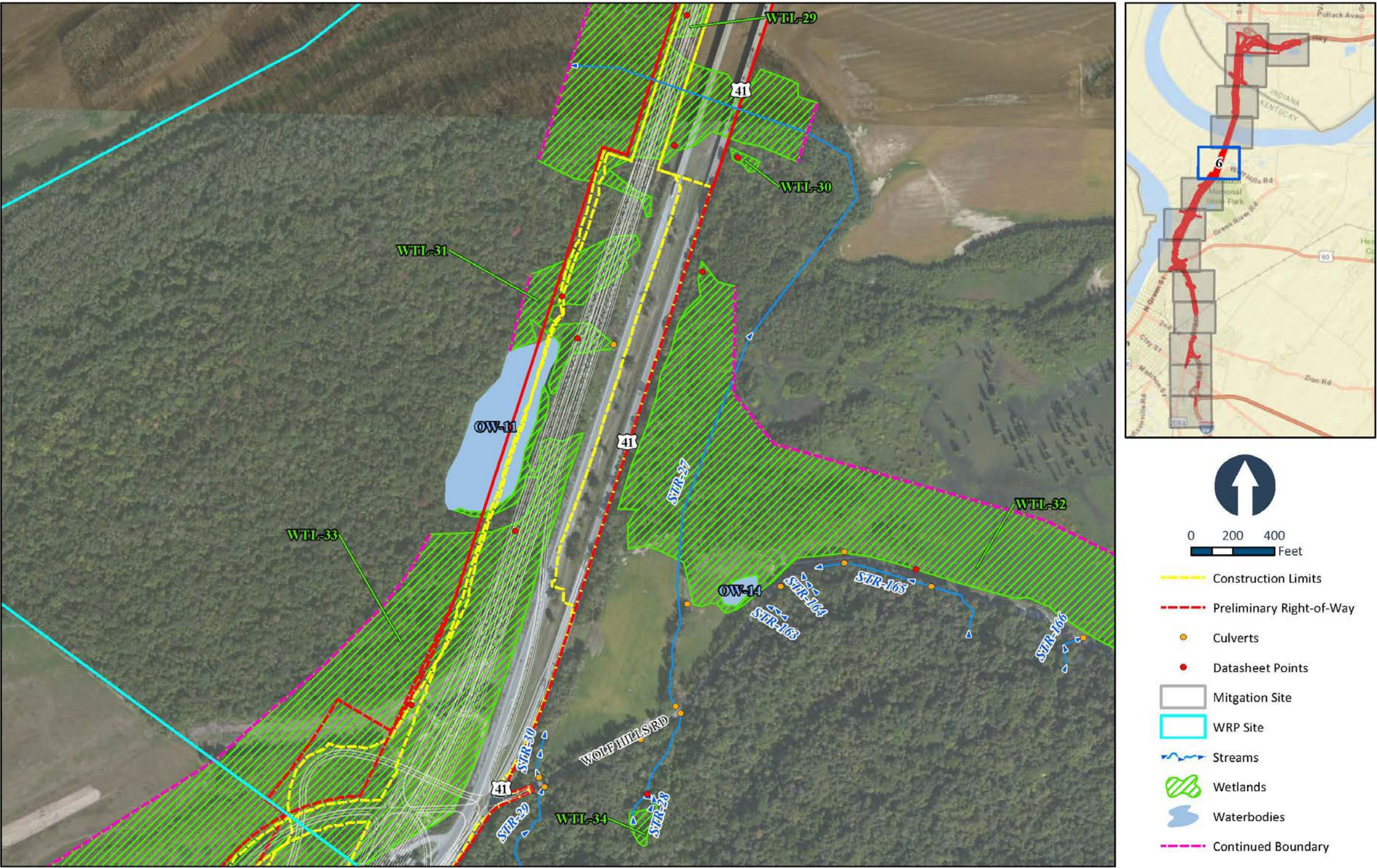
Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 3 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 4 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 5 of 14)



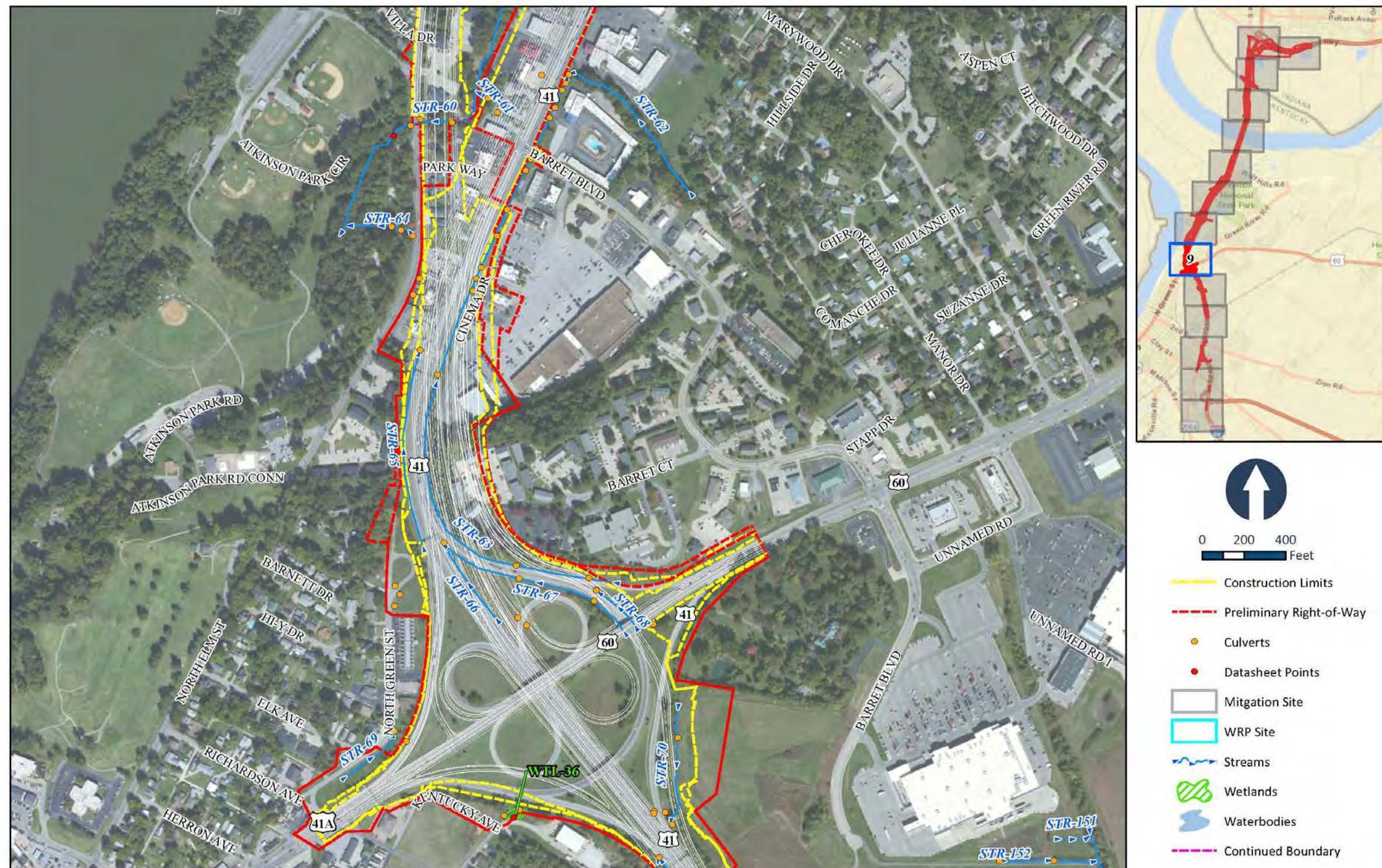
Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 6 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 7 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 8 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 9 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 10 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 11 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 12 of 14)



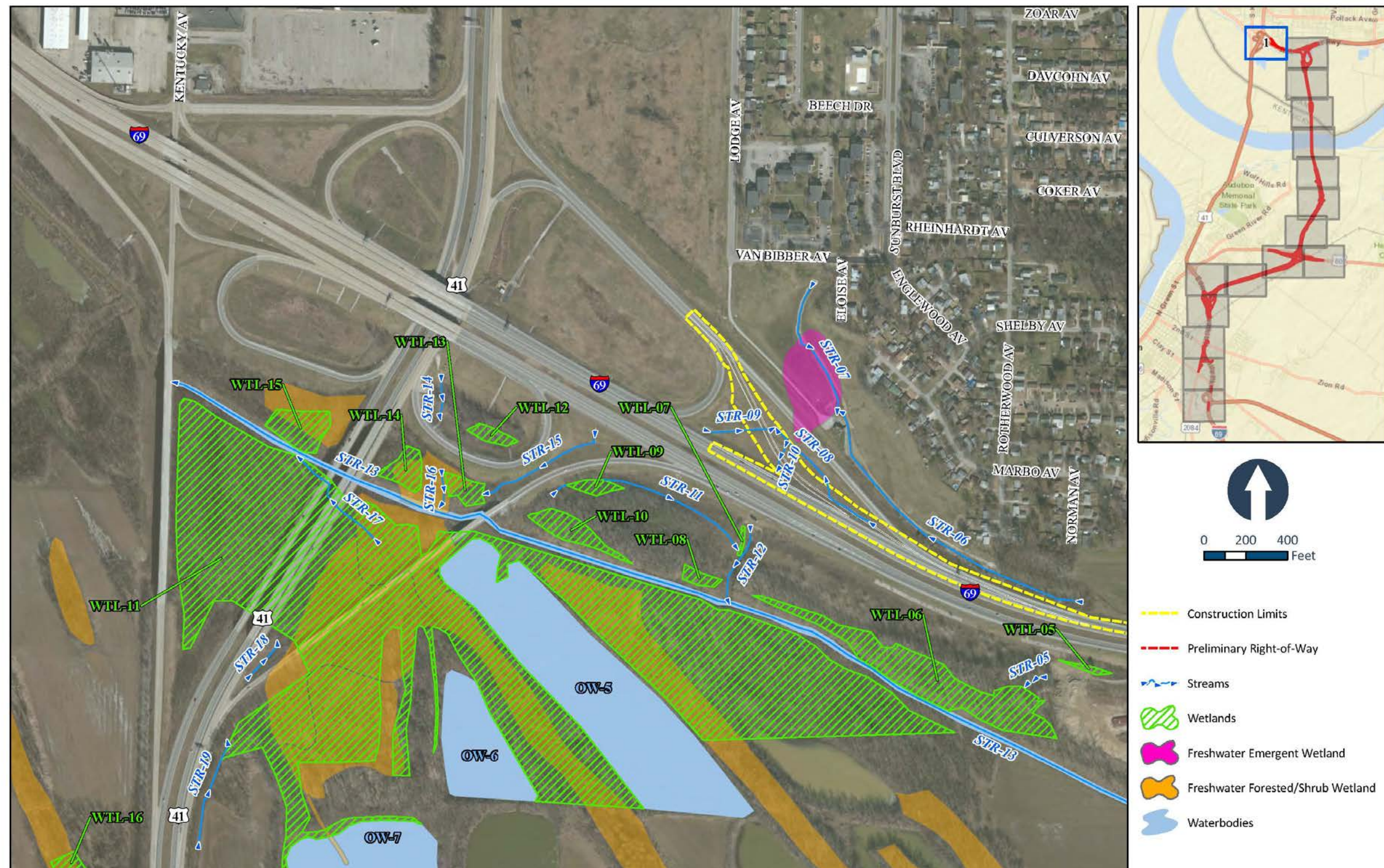
Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 13 of 14)



Appendix C. I-69 ORX DEIS West Alternatives 1 and 2 Wetlands, Streams, and Waterbodies (Map 14 of 14)

D NATIONAL WETLANDS INVENTORY MAP

The National Wetland Inventory (NWI) mapping for the I-69 ORX project area is included in this appendix.



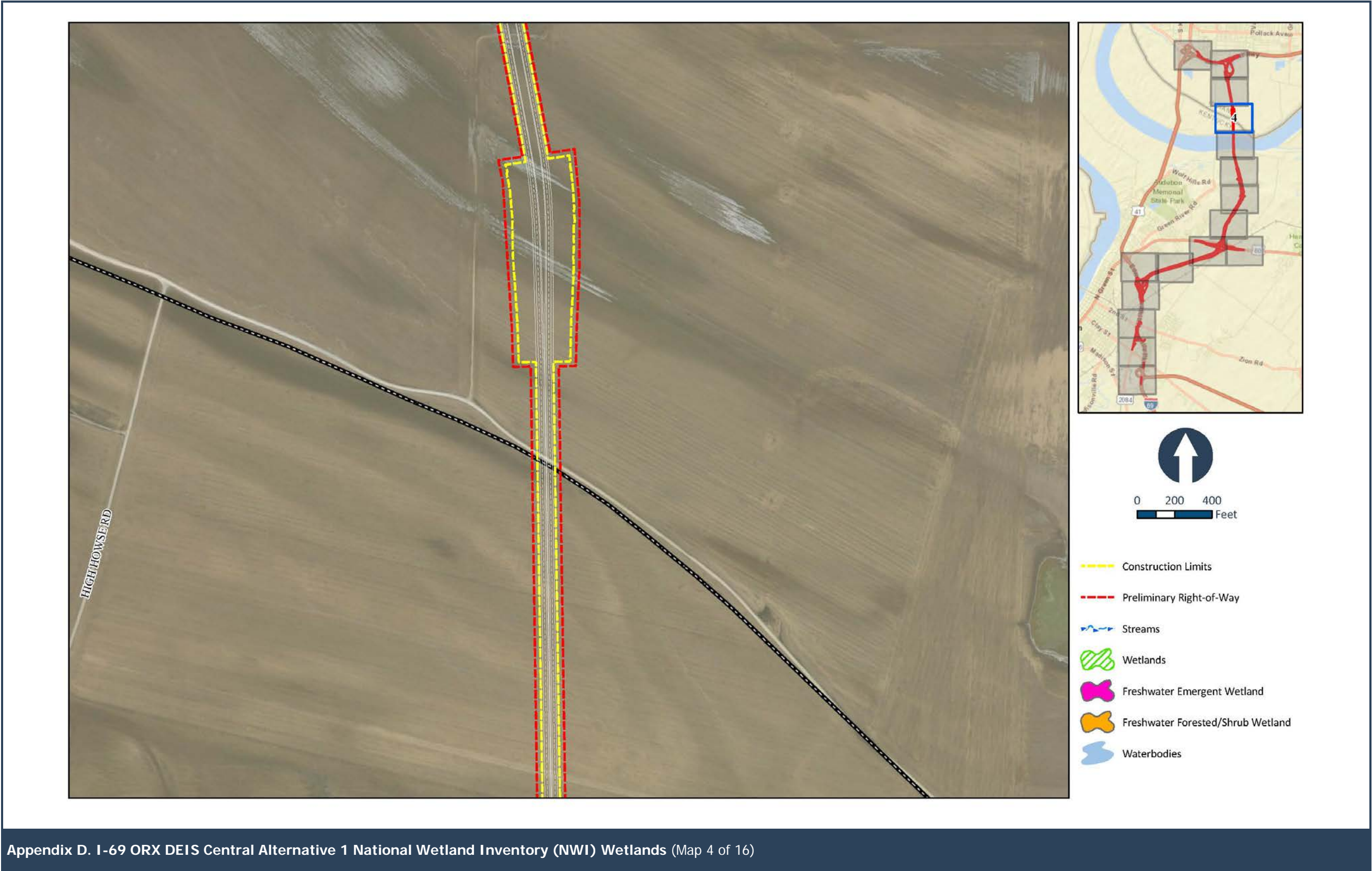
Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 1 of 16)

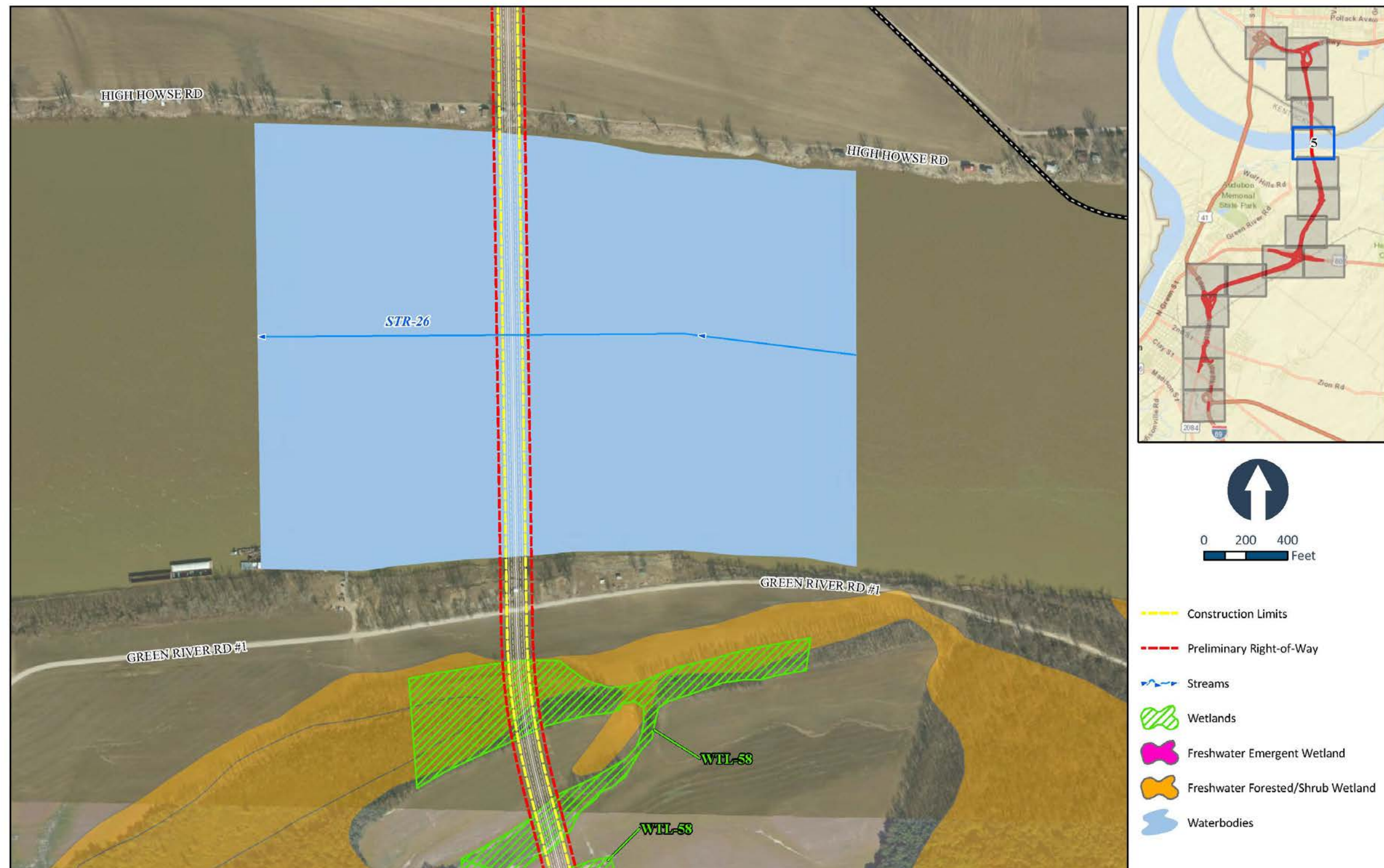


Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 2 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 3 of 16)

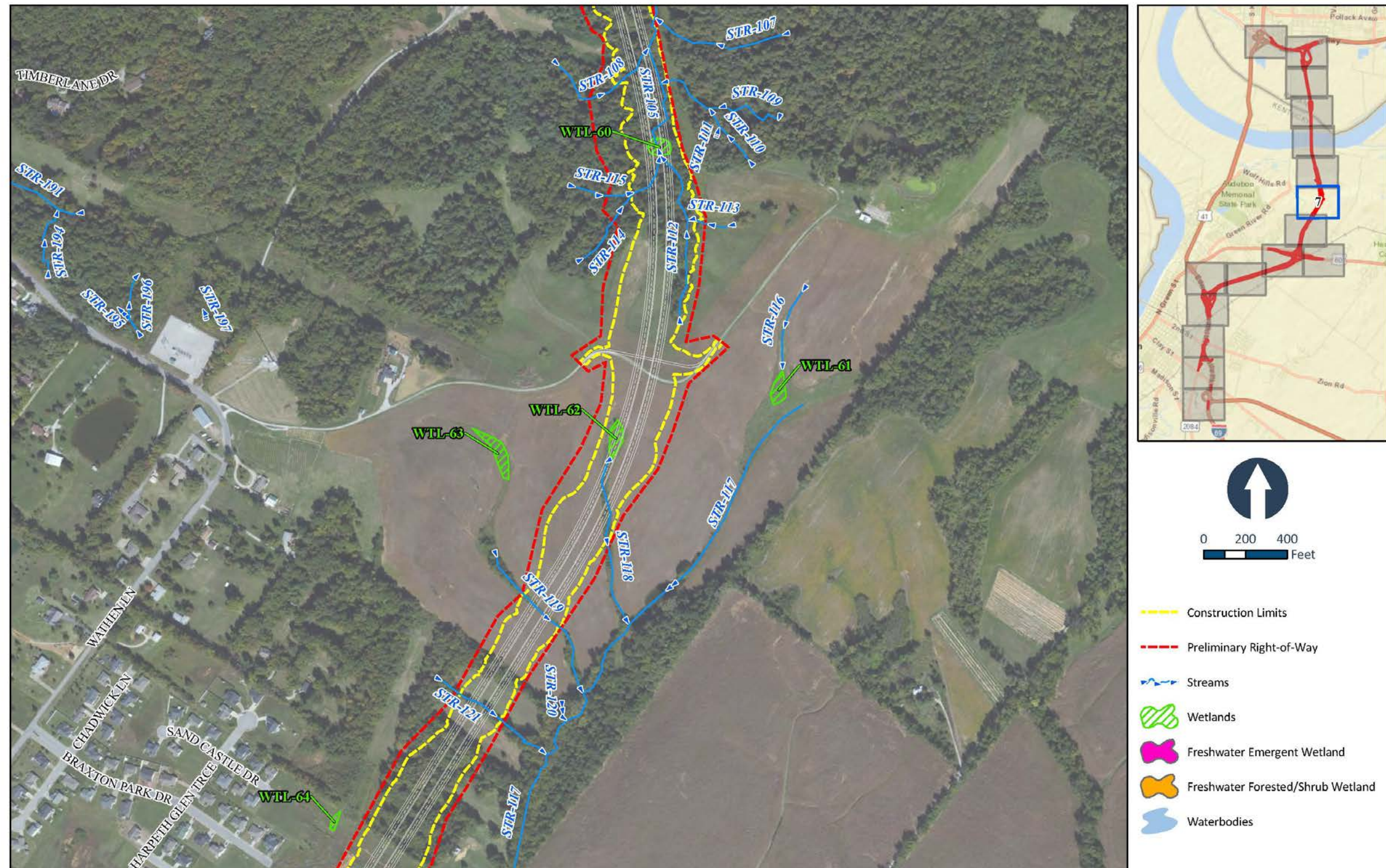




Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 5 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 6 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 7 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 8 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 9 of 16)



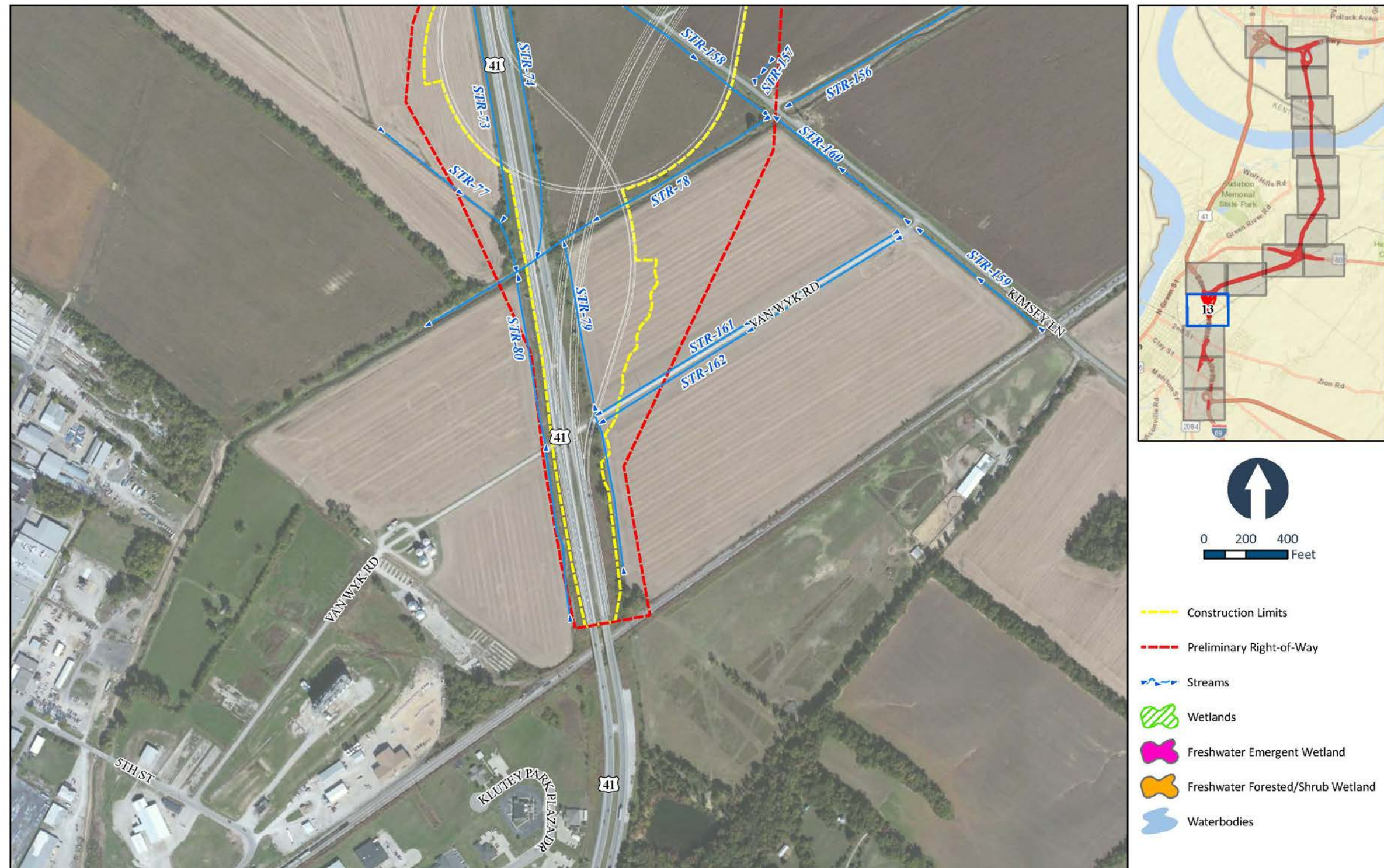
Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 10 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 11 of 16)



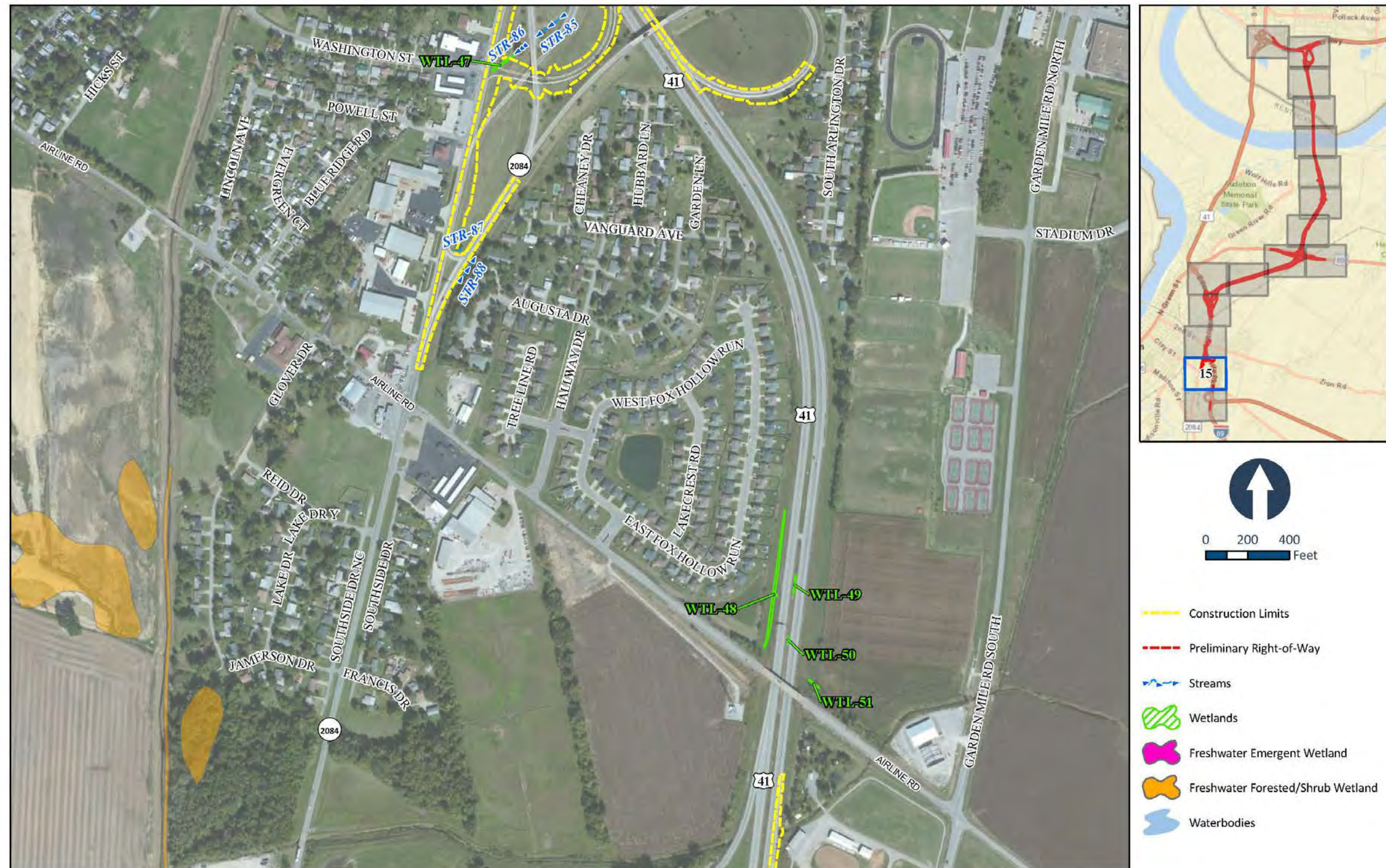
Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 12 of 16)



Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 13 of 16)



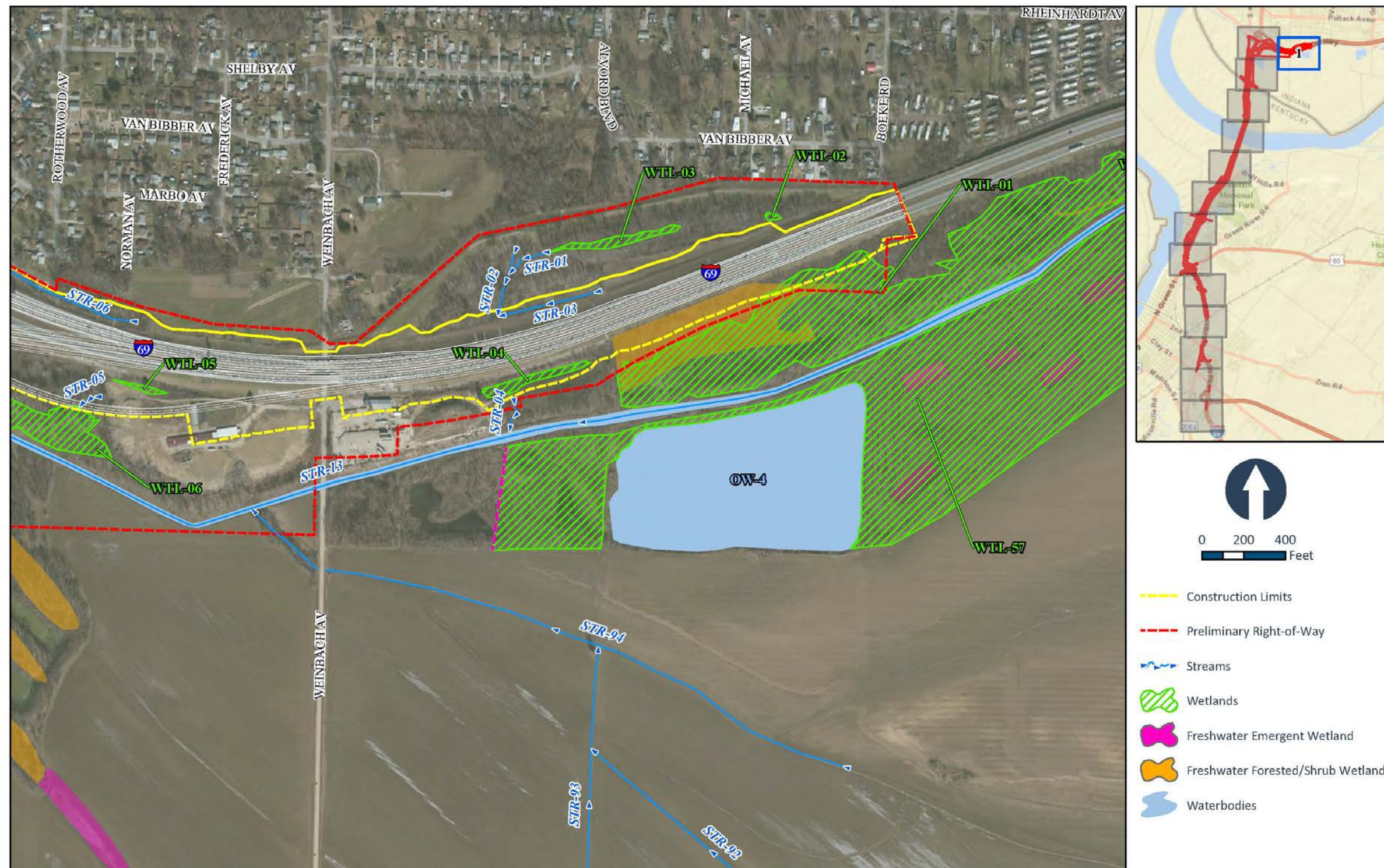
Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 14 of 16)



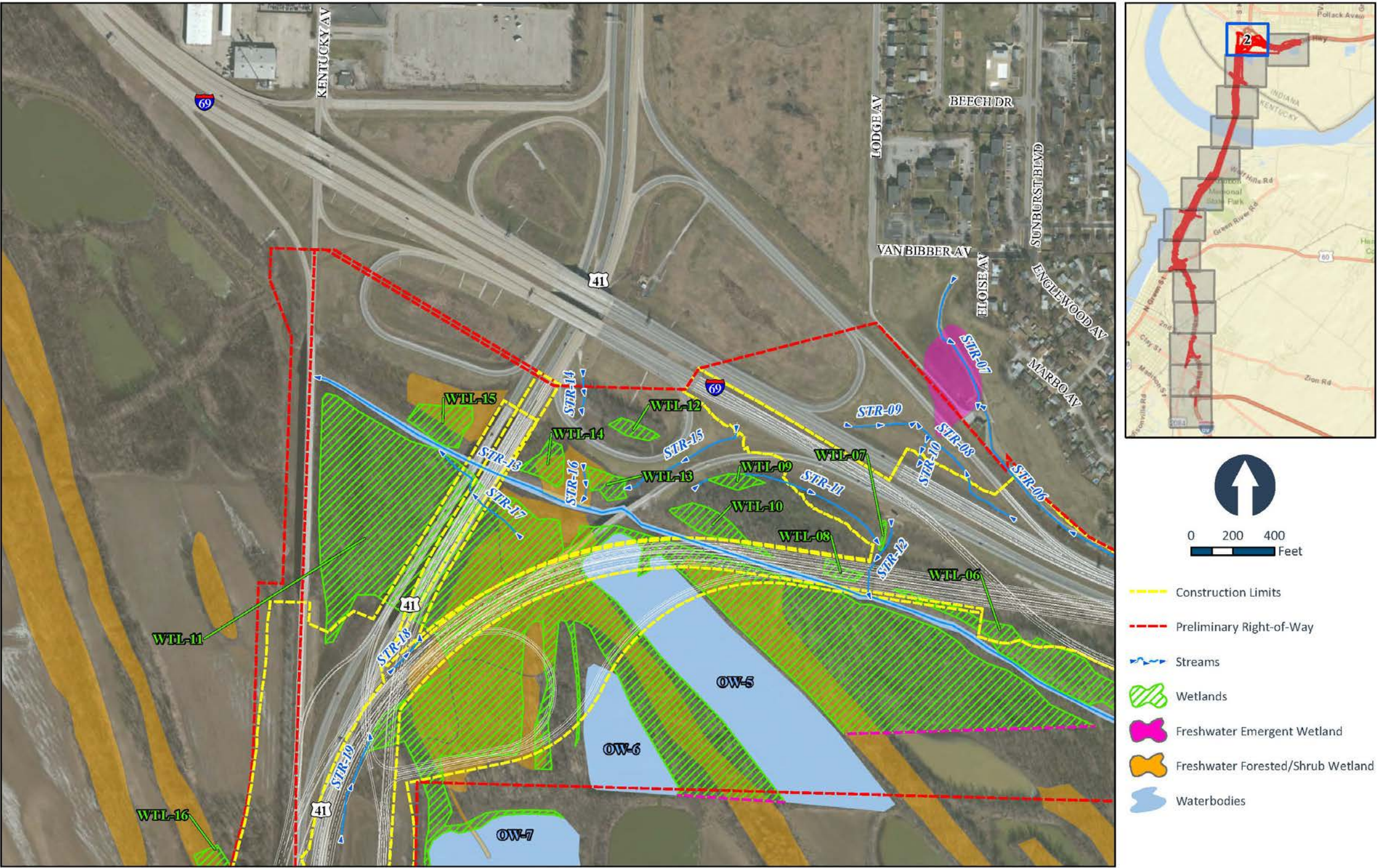
Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 15 of 16)



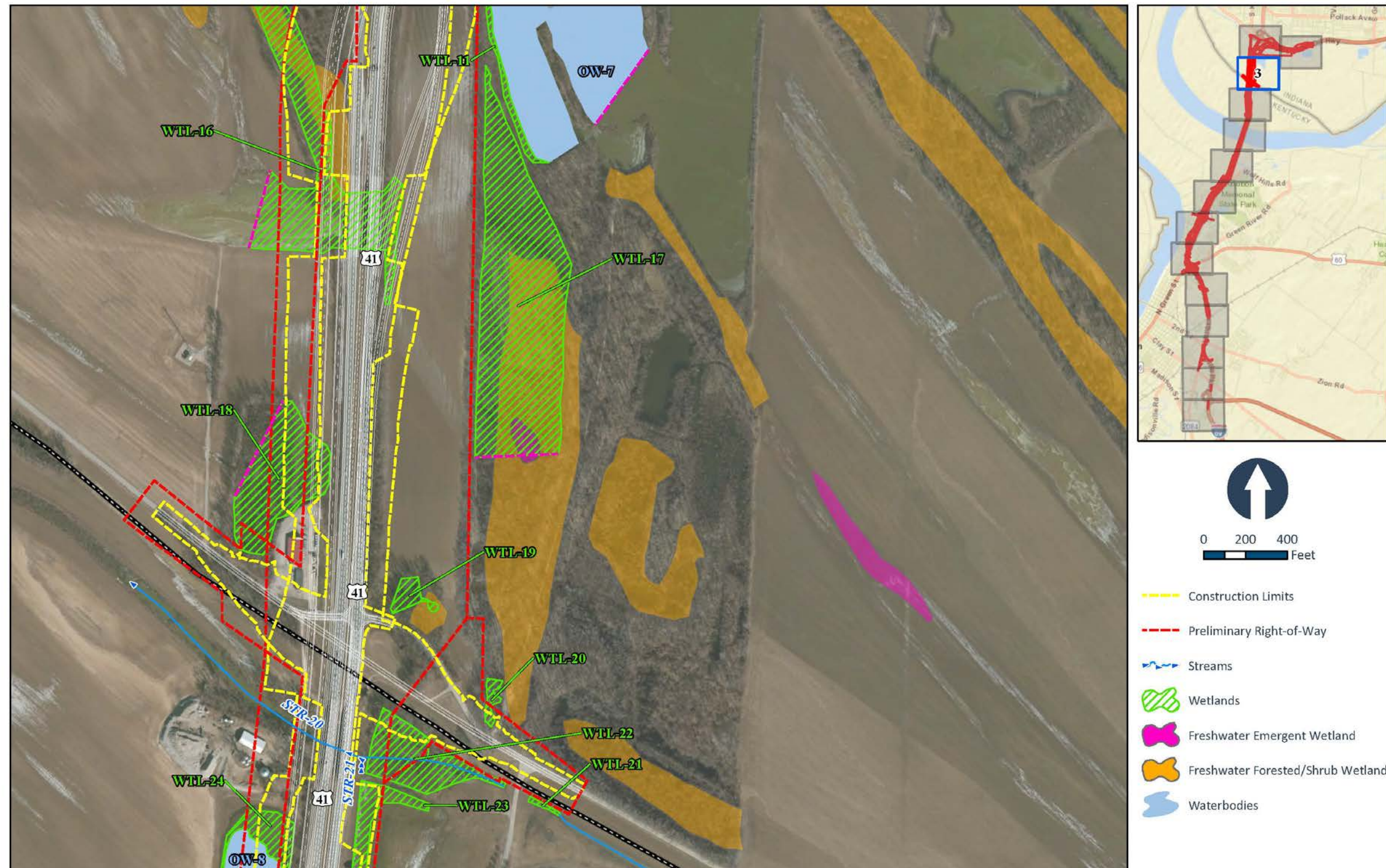
Appendix D. I-69 ORX DEIS Central Alternative 1 National Wetland Inventory (NWI) Wetlands (Map 16 of 16)



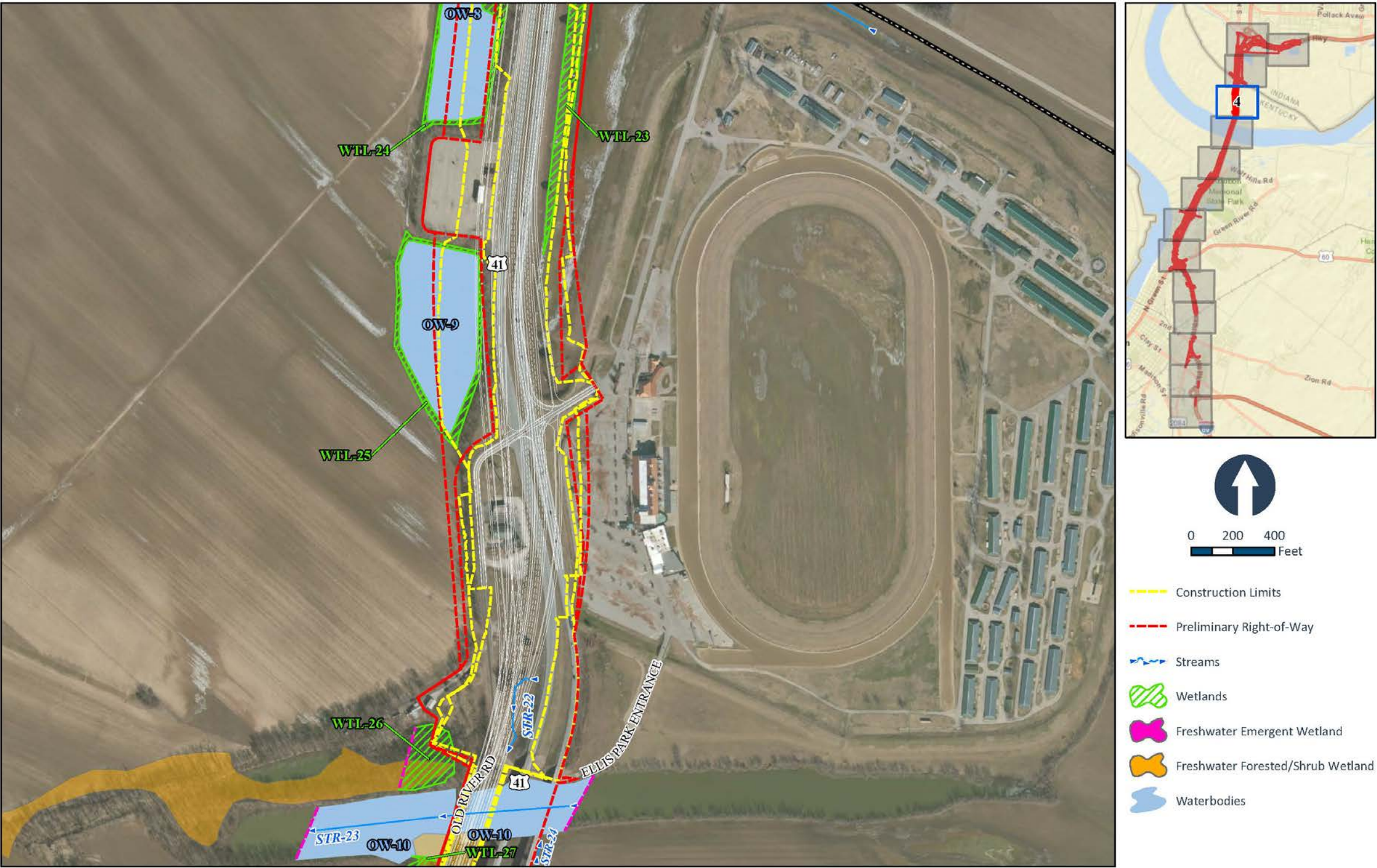
Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 1 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 2 of 14)



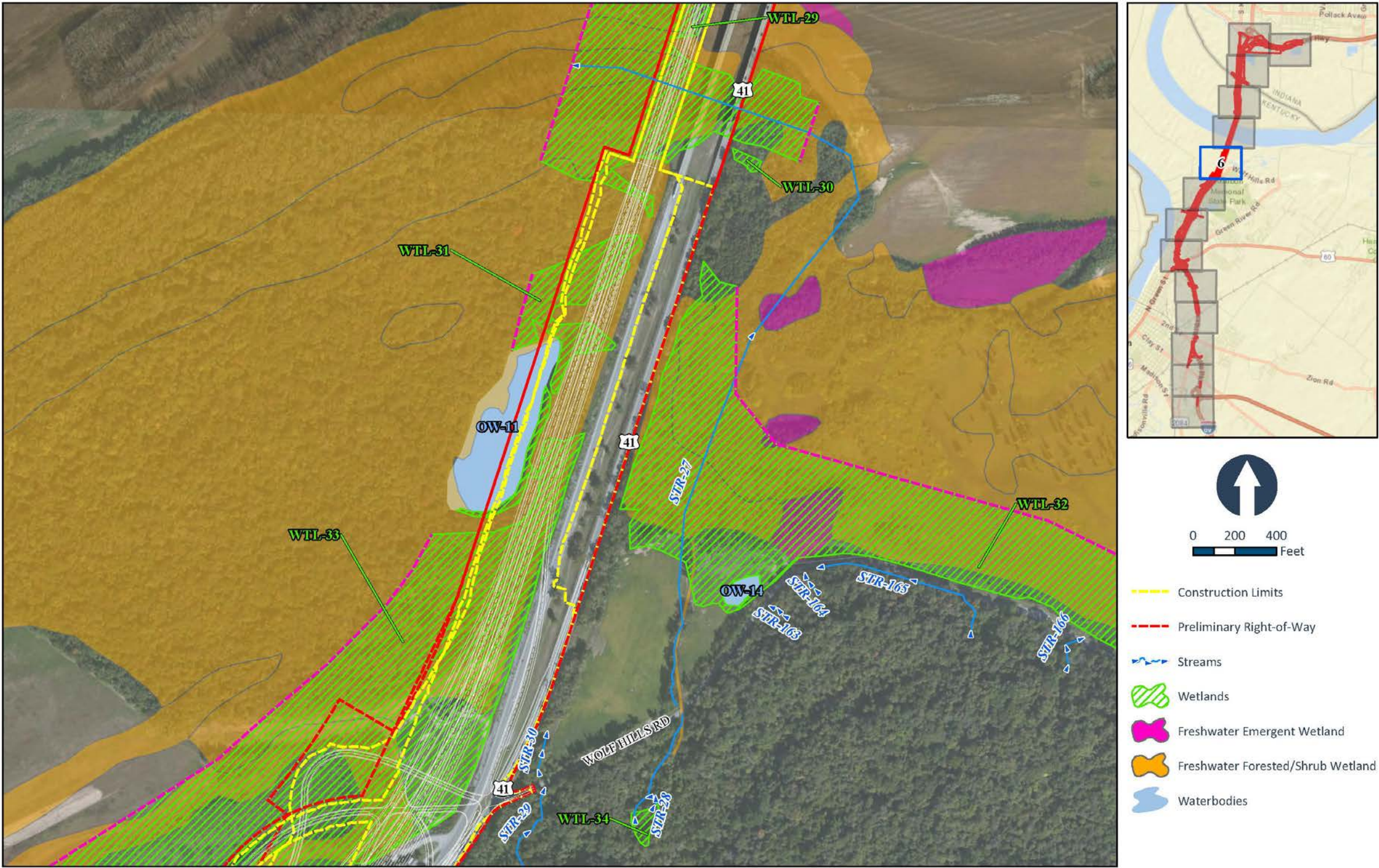
Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 3 of 14)



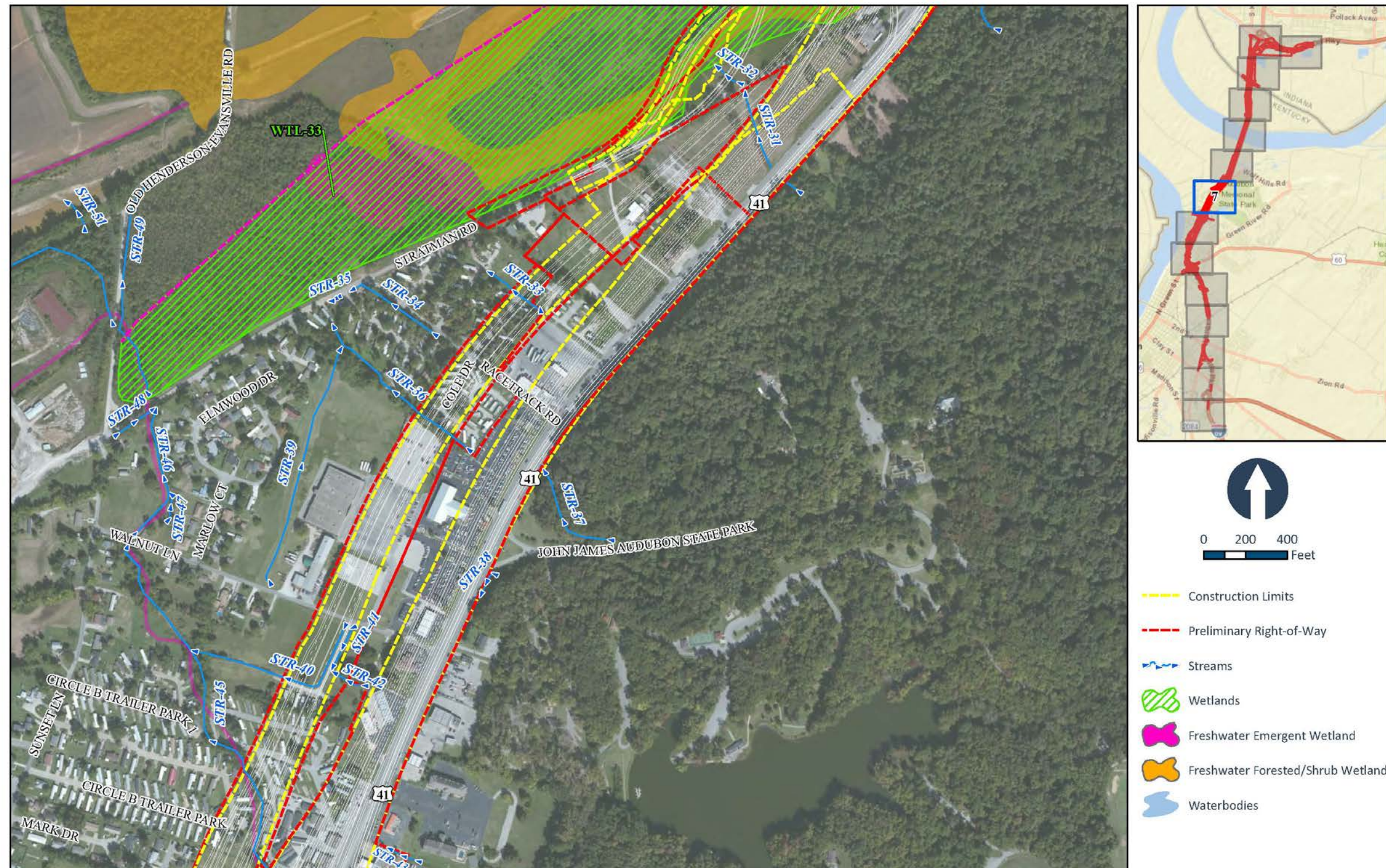
Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 4 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 5 of 14)



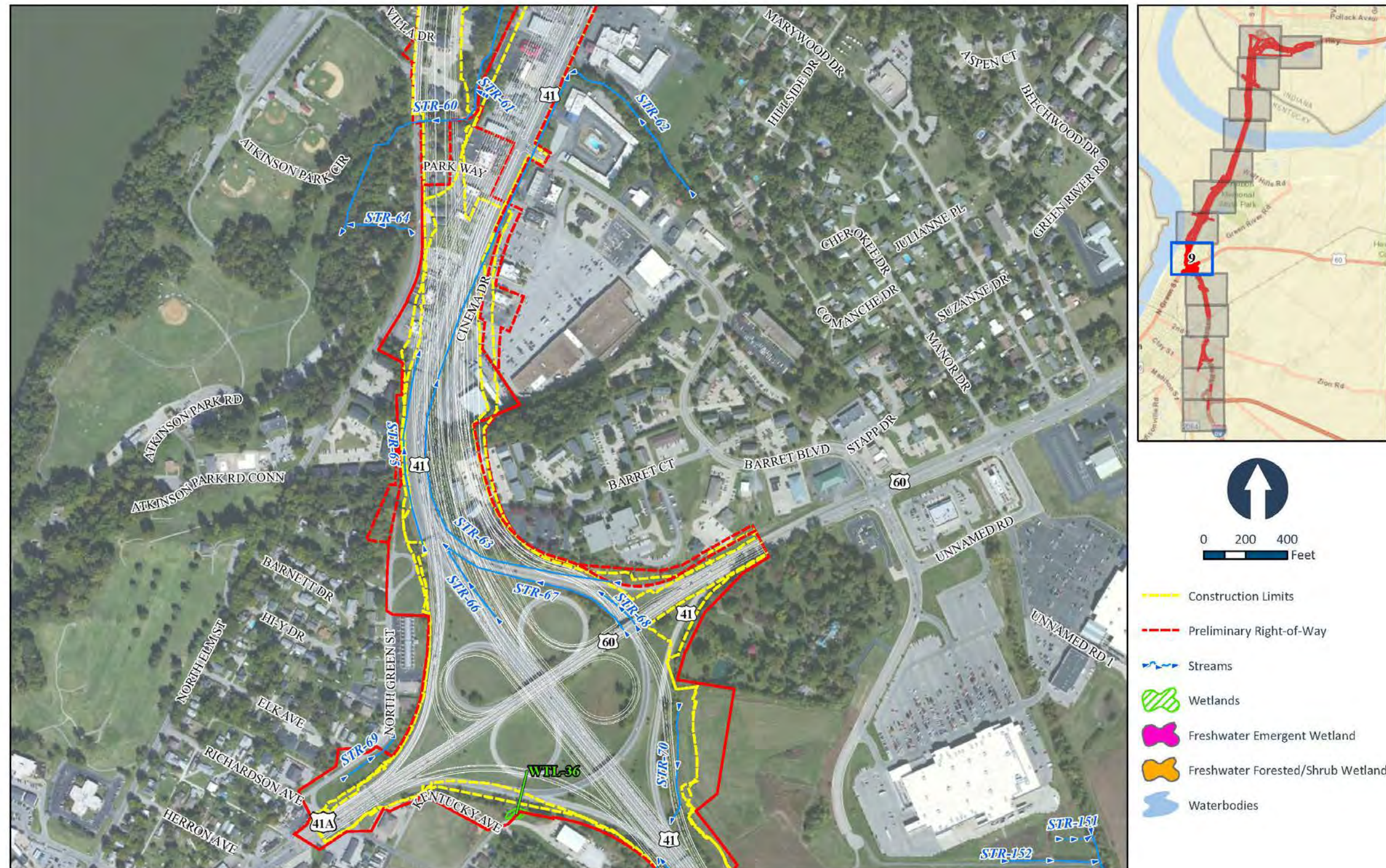
Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 6 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 7 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 8 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 9 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 10 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 11 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 12 of 14)



Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 13 of 14)



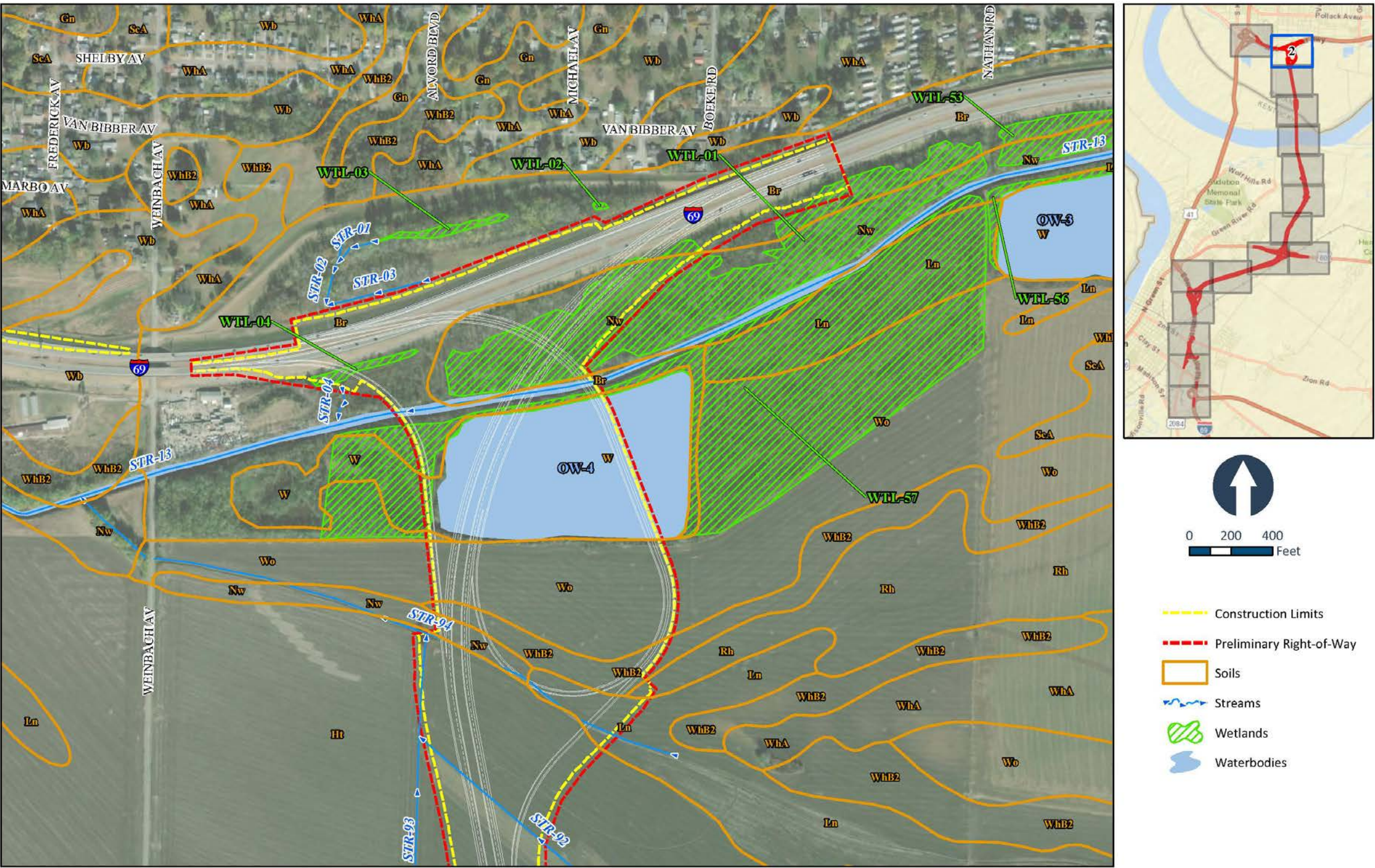
Appendix D. I-69 ORX DEIS West Alternatives 1 and 2 National Wetland Inventory (NWI) Wetlands (Map 14 of 14)

E NRCS SOILS MAPS

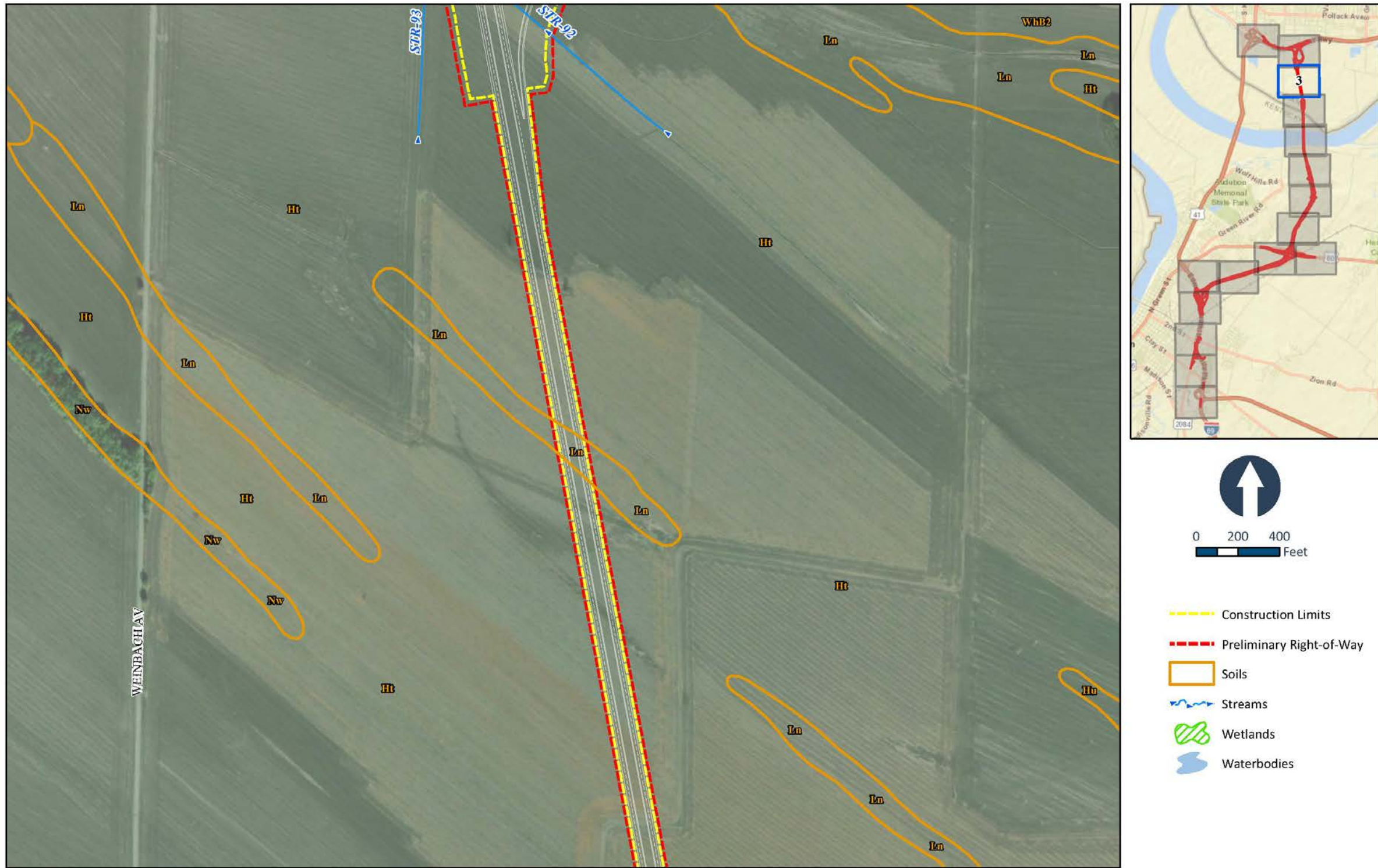
The Natural Resources Conservation Service (NRCS) maps below show the soils for the I-69 ORX project area.



Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 1 of 16)



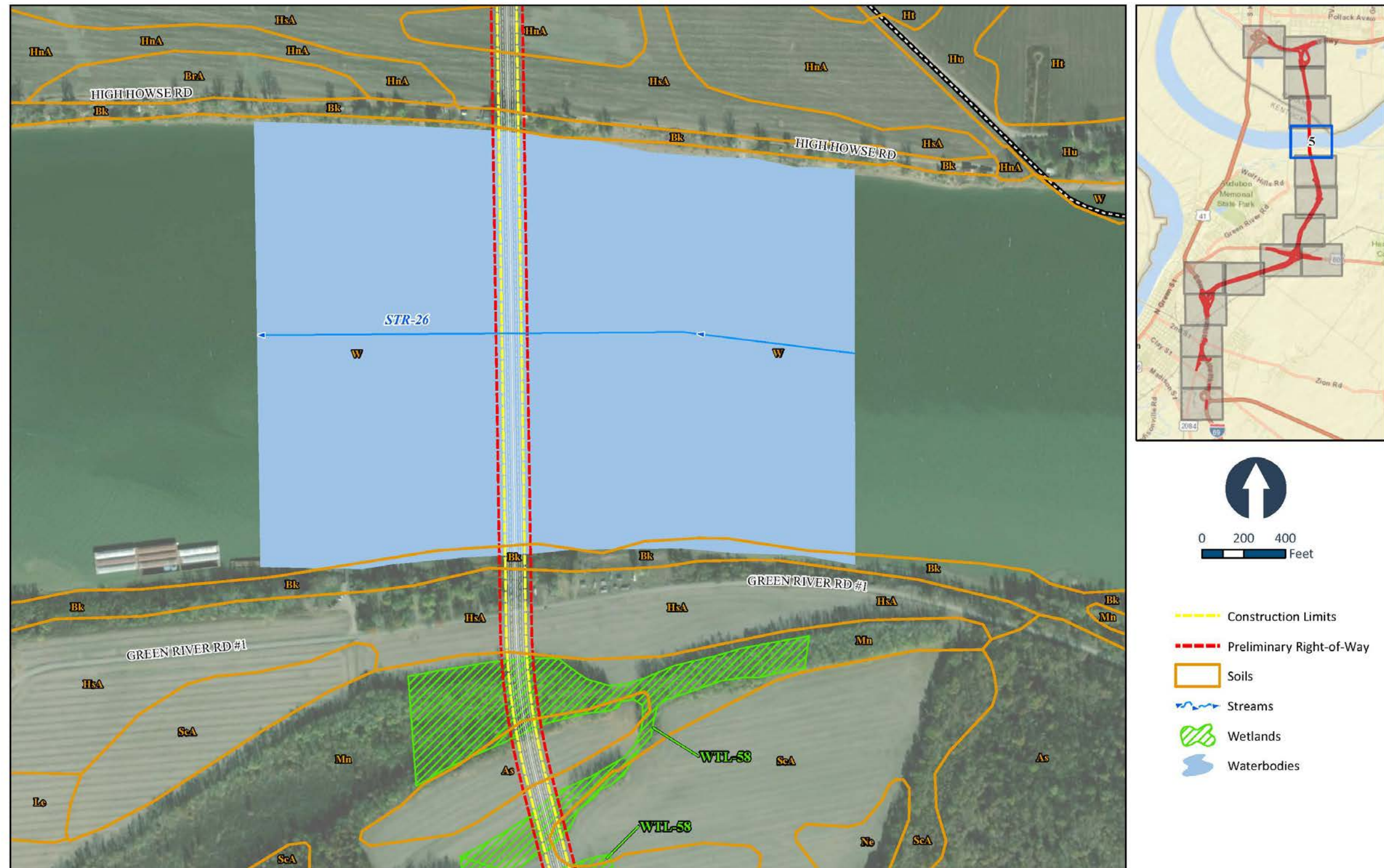
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 2 of 16)



Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 3 of 16)



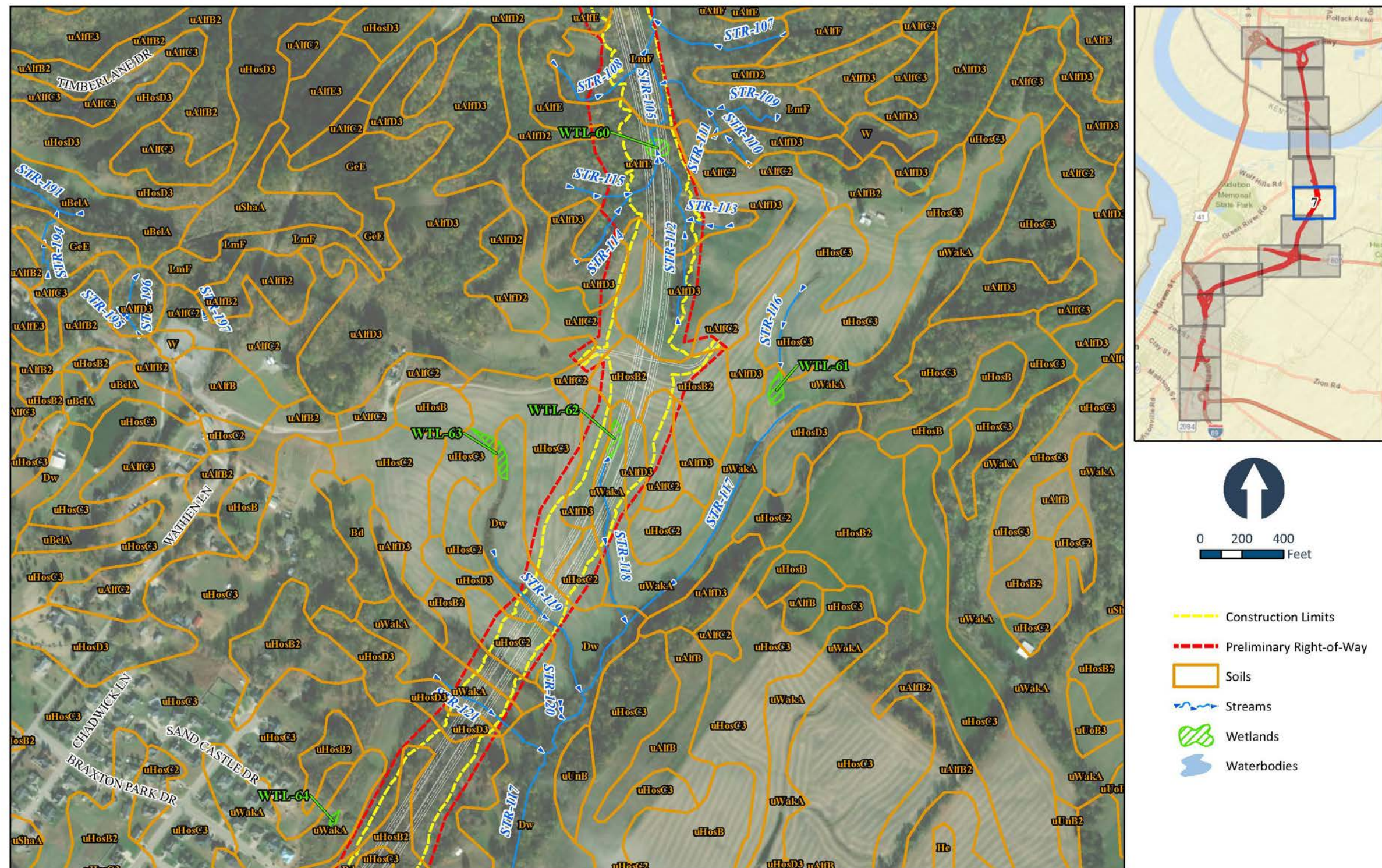
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 4 of 16)



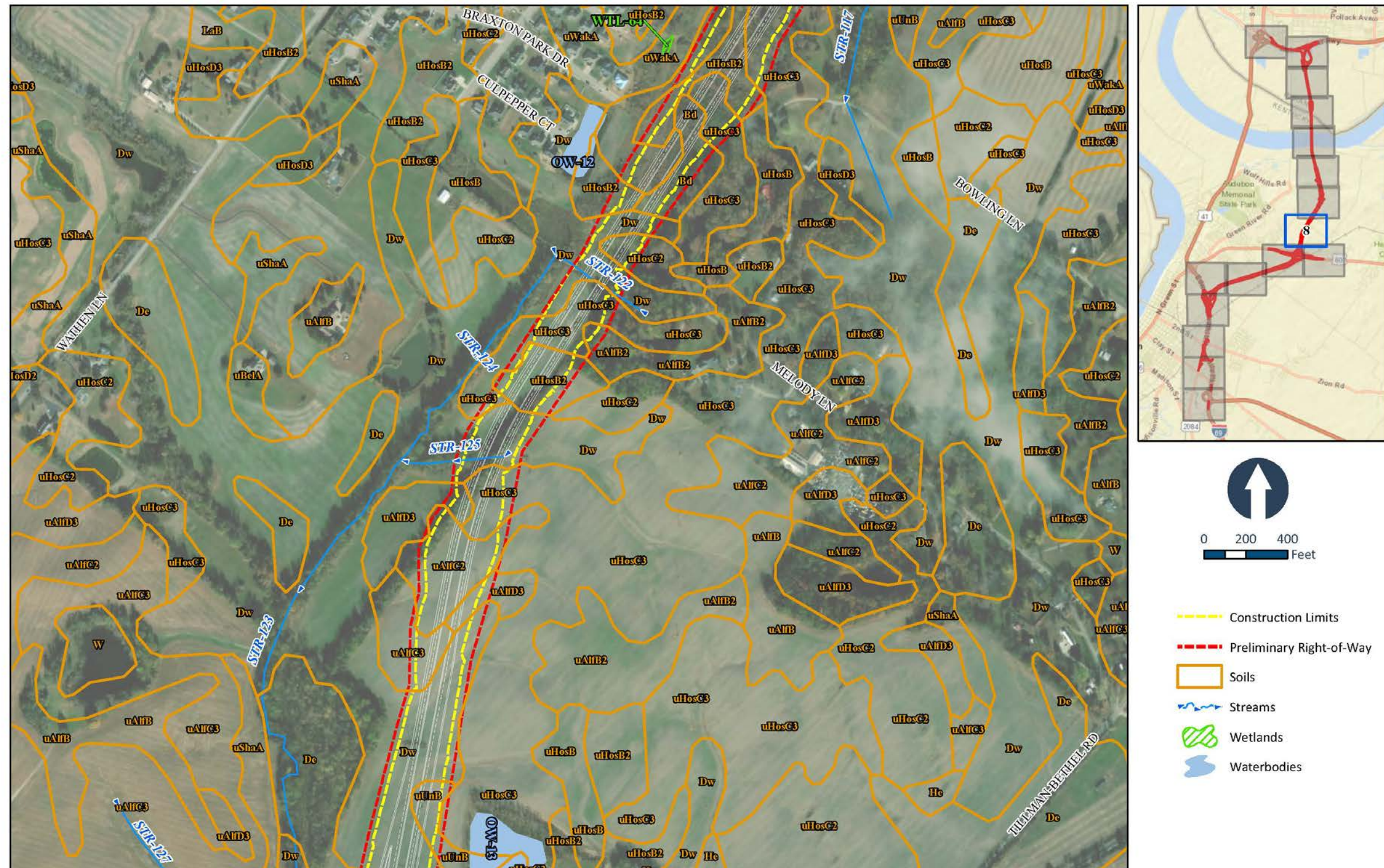
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 5 of 16)



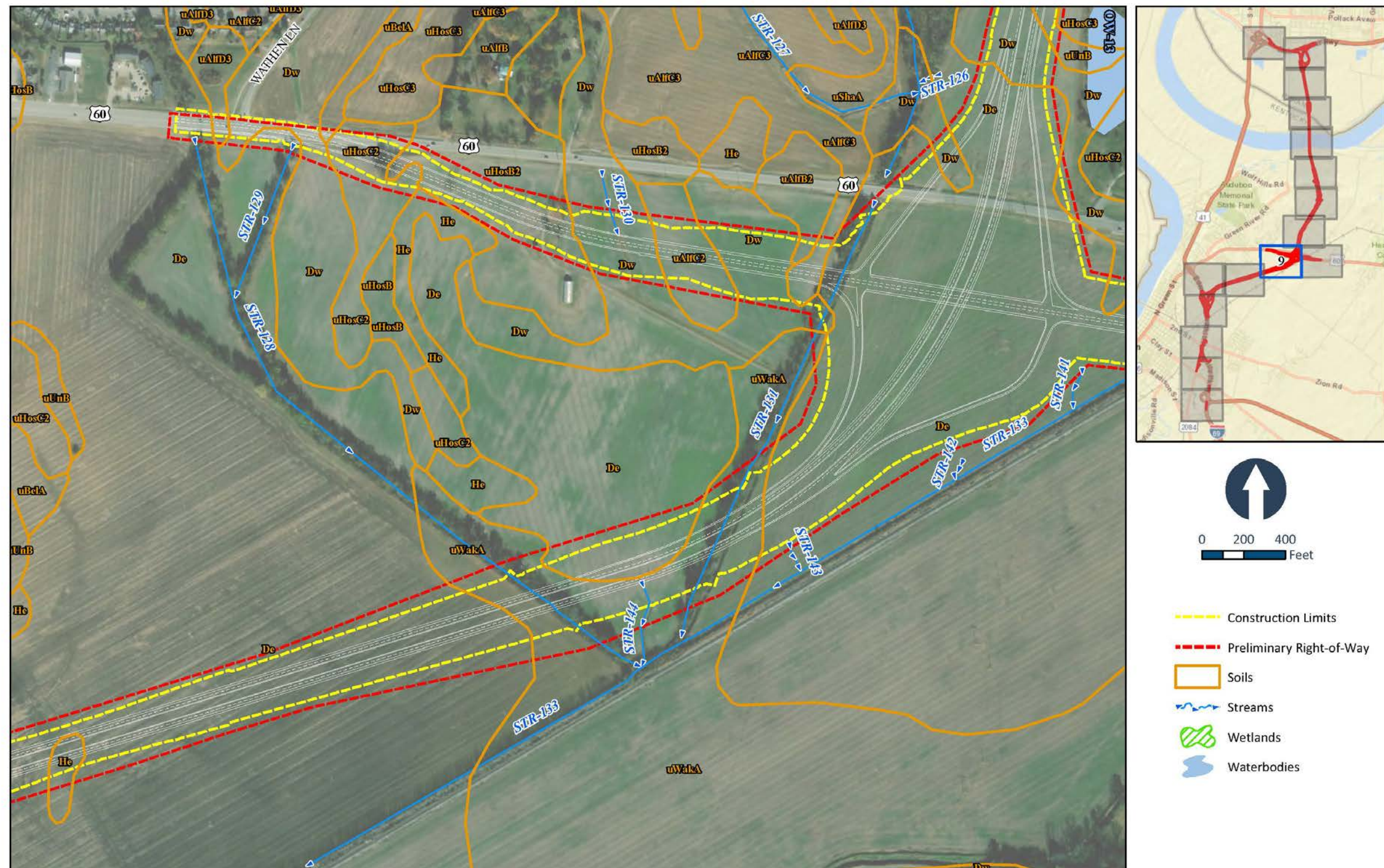
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 6 of 16)



Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 7 of 16)



Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 8 of 16)



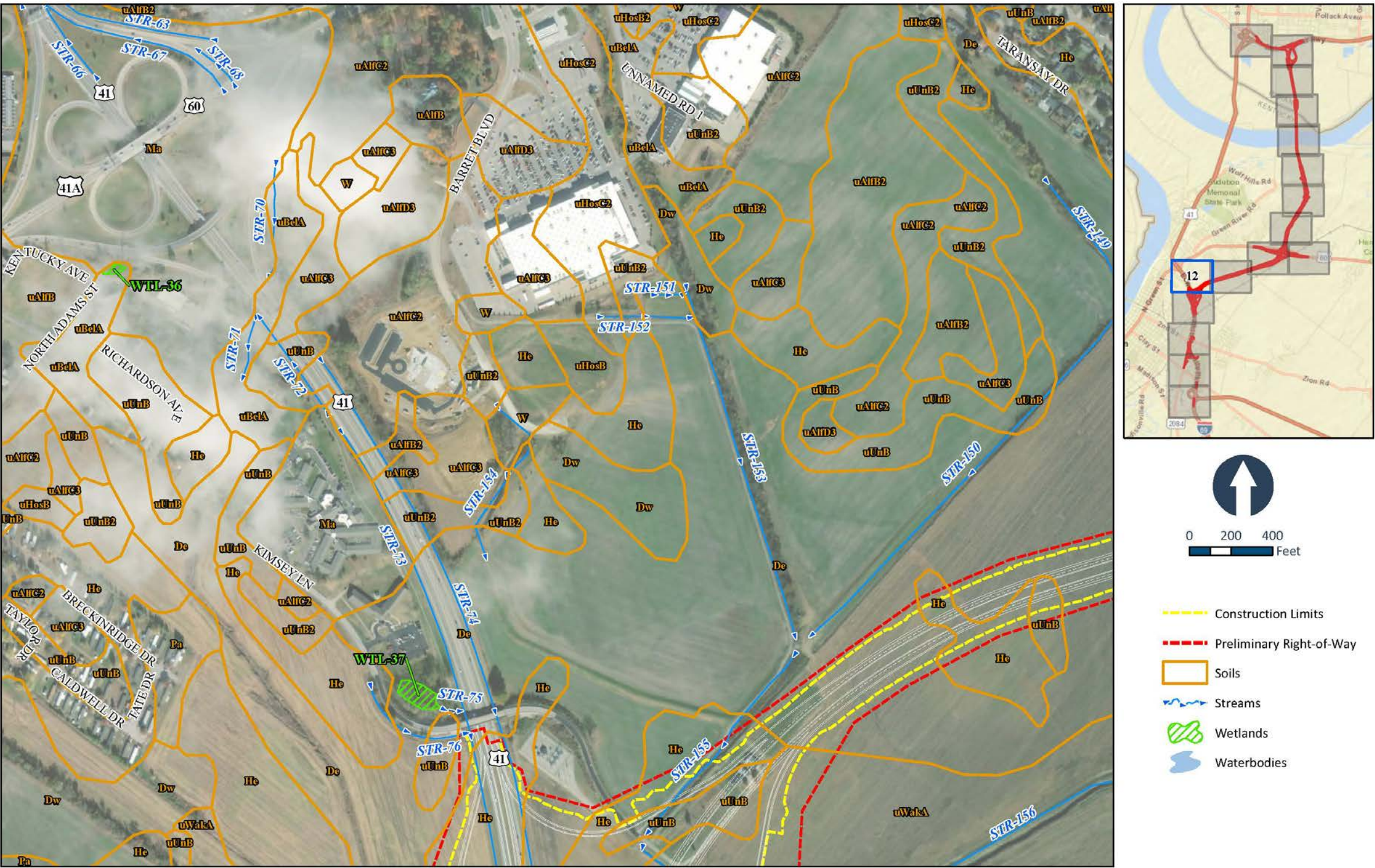
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 9 of 16)



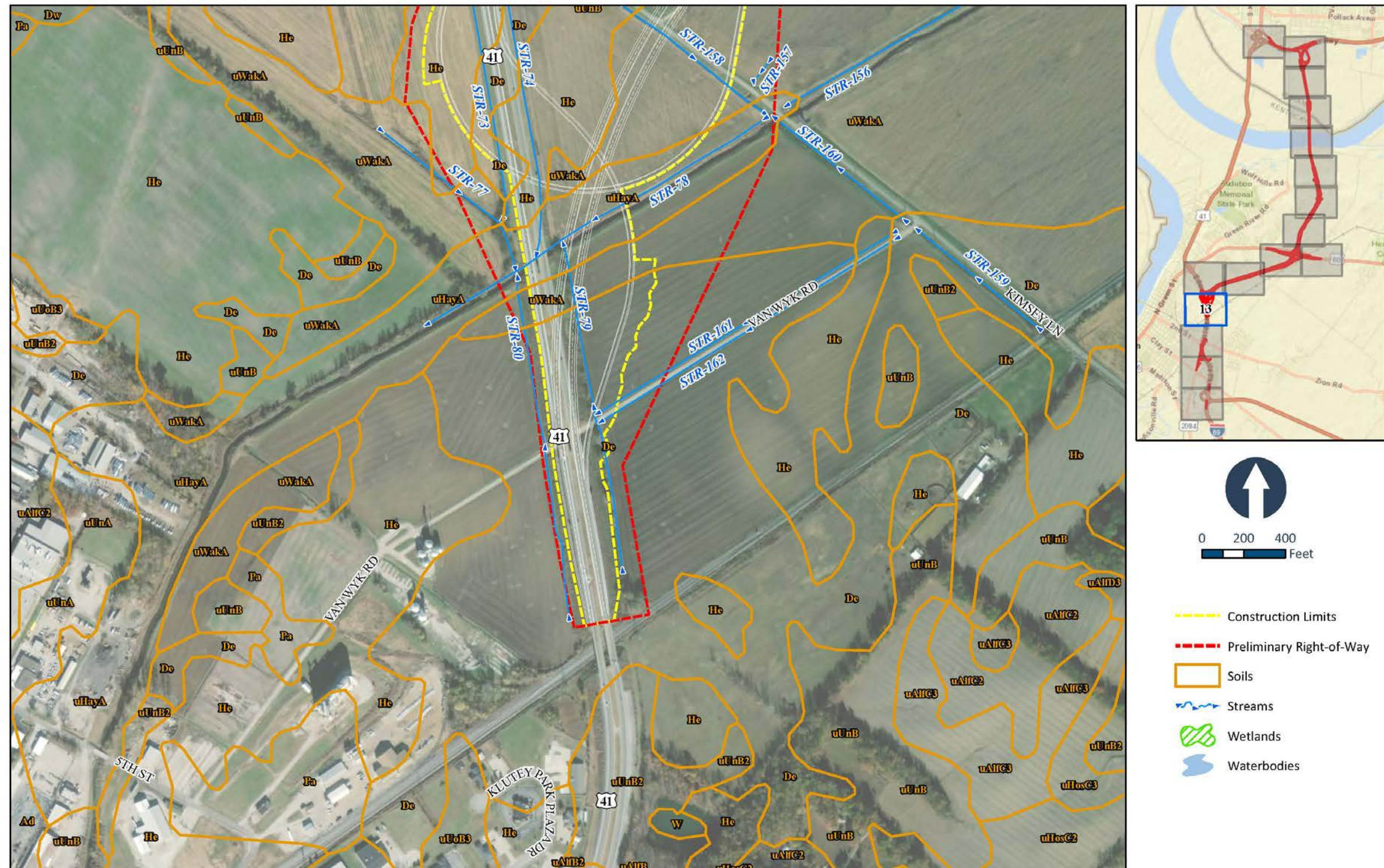
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 10 of 16)



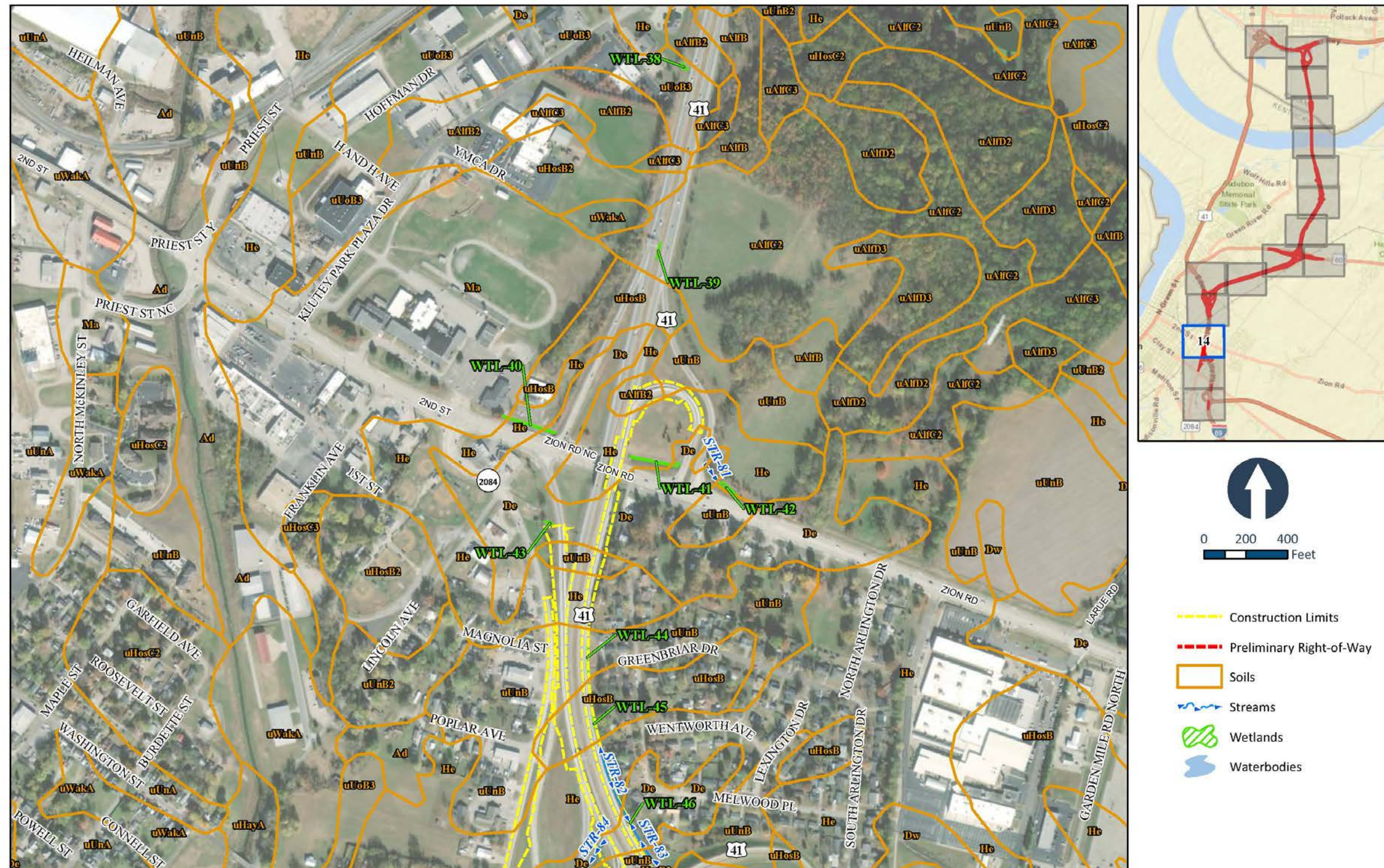
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 11 of 16)



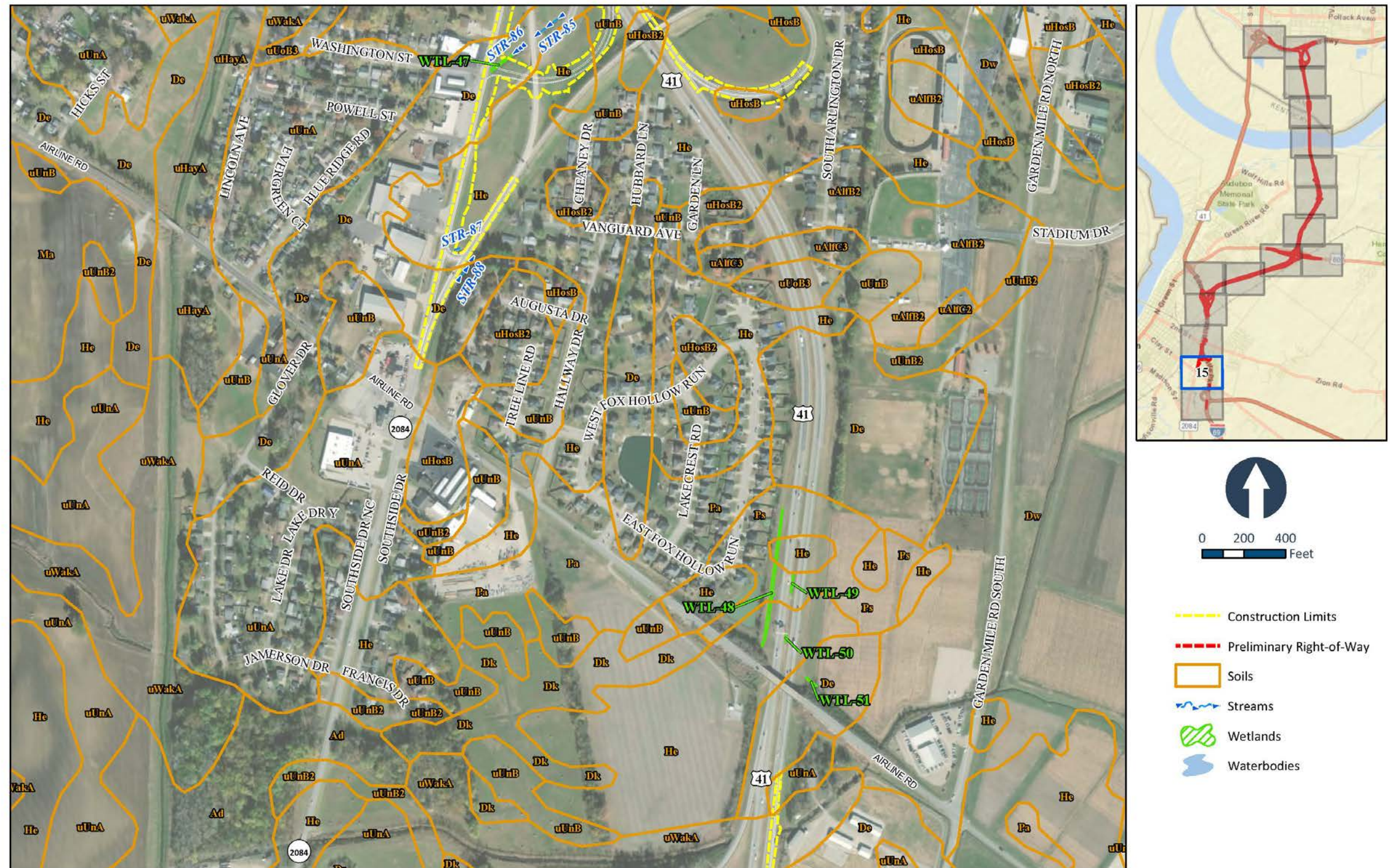
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 12 of 16)



Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 13 of 16)



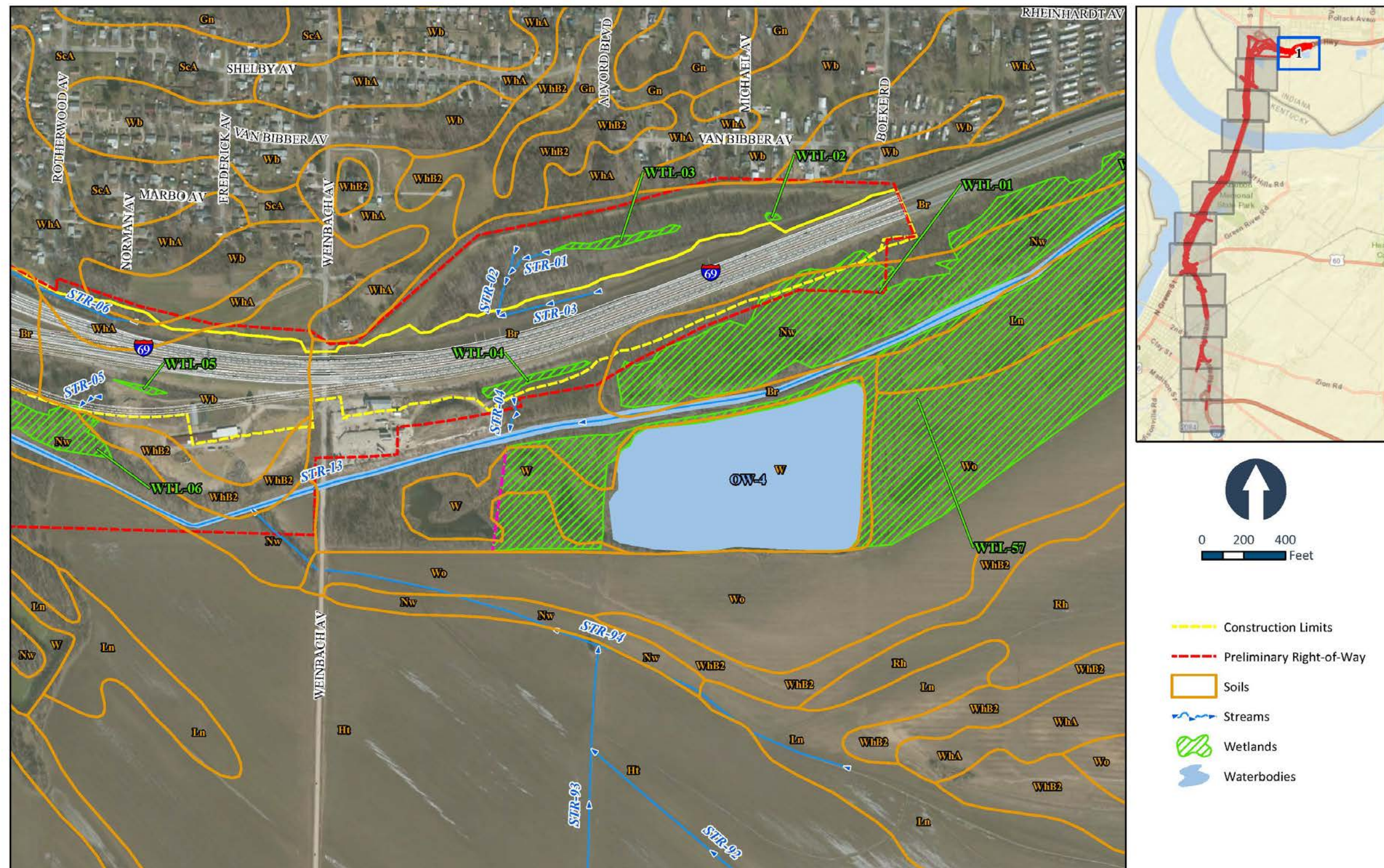
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 14 of 16)



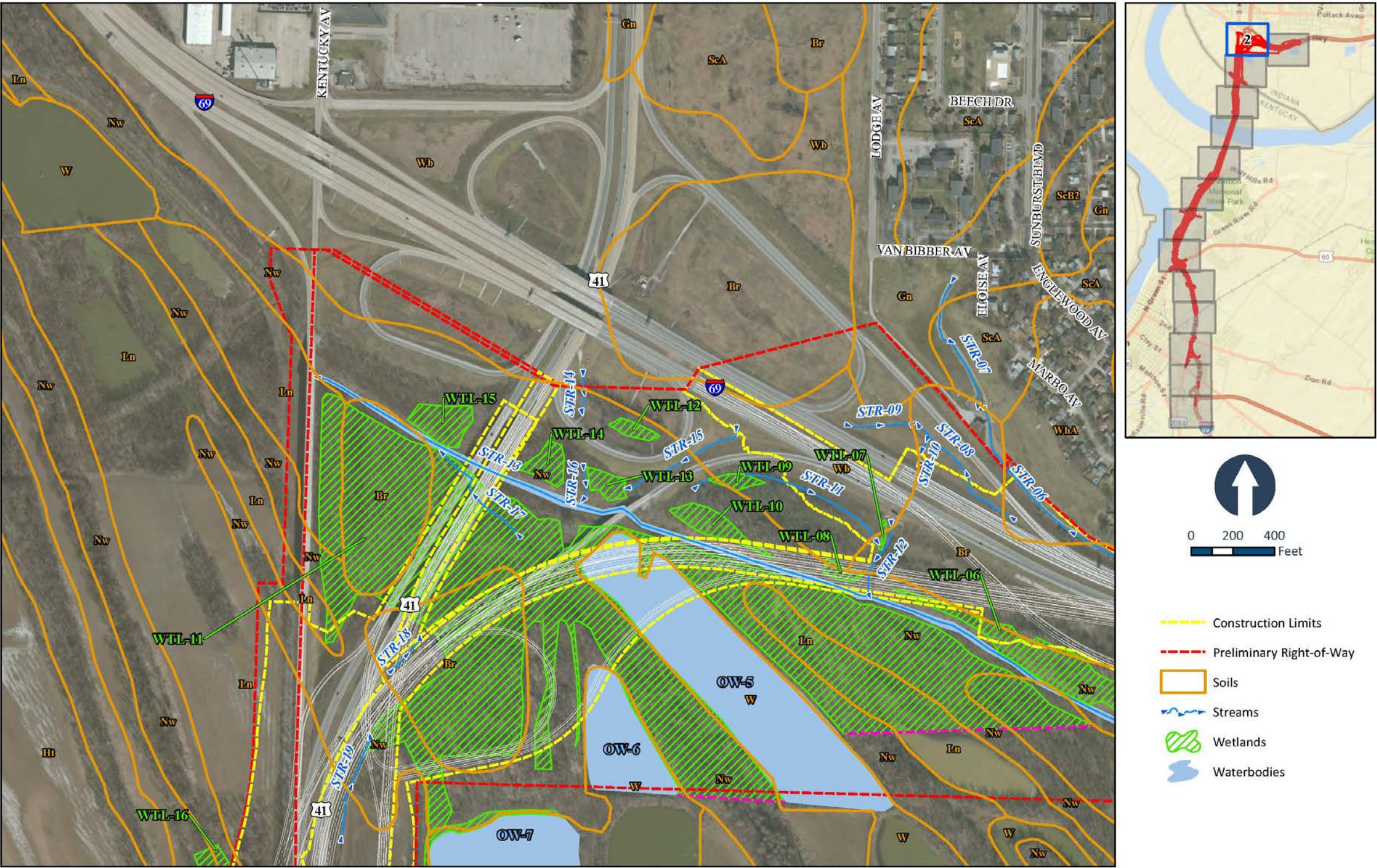
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 15 of 16)



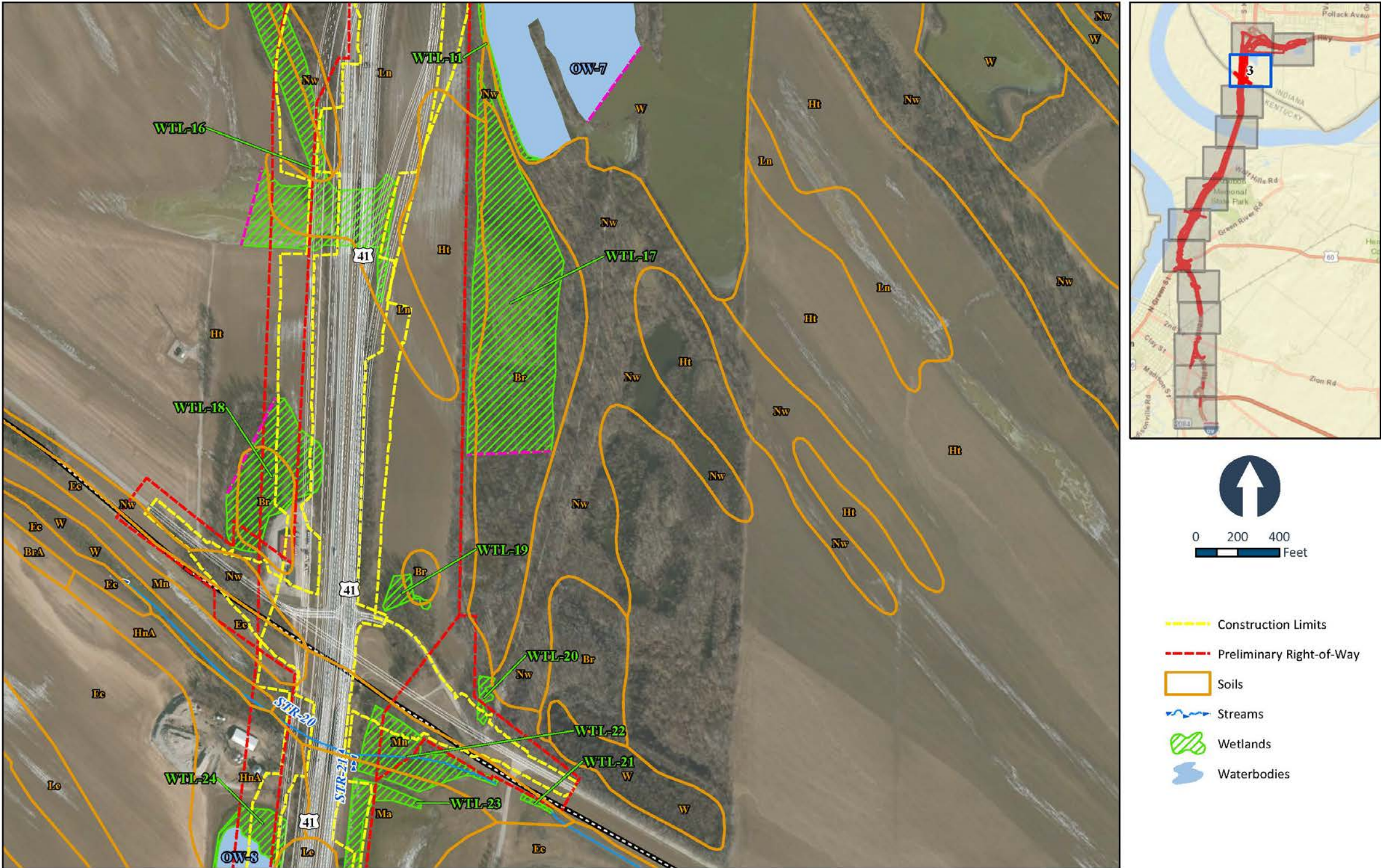
Appendix E. I-69 ORX DEIS Central Alternative 1 NRCS Soils (Map 16 of 16)



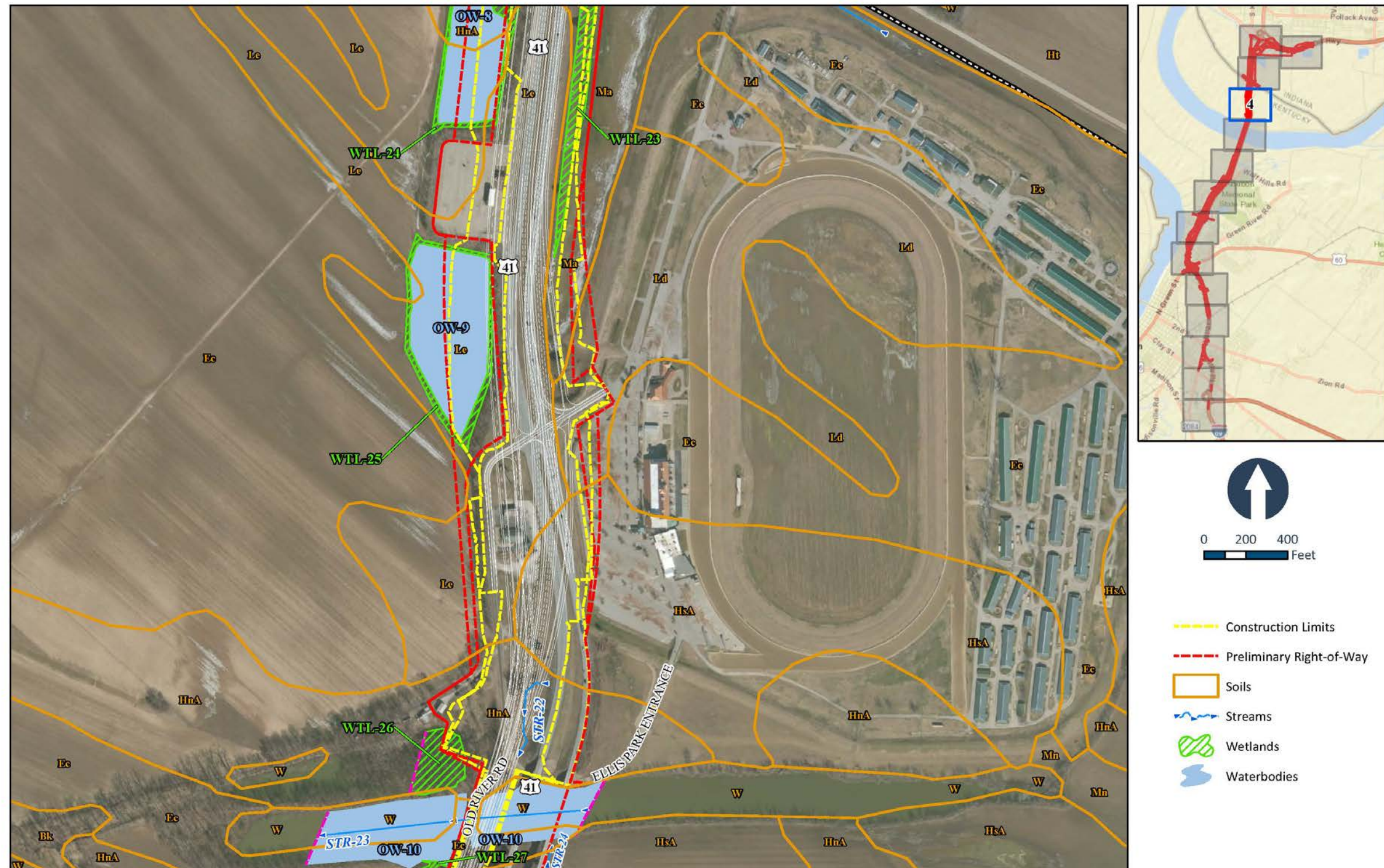
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 1 of 14)



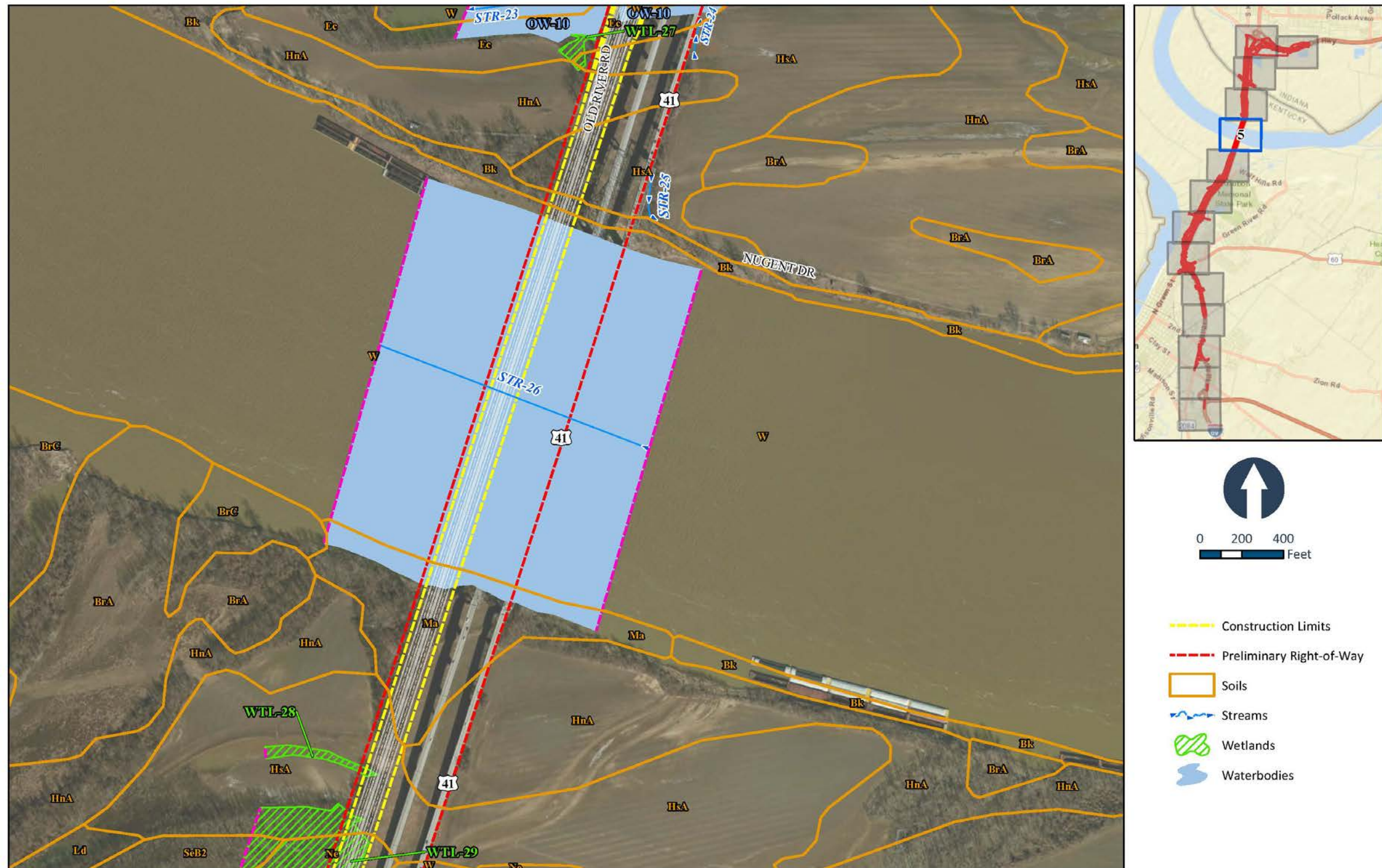
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 2 of 14)



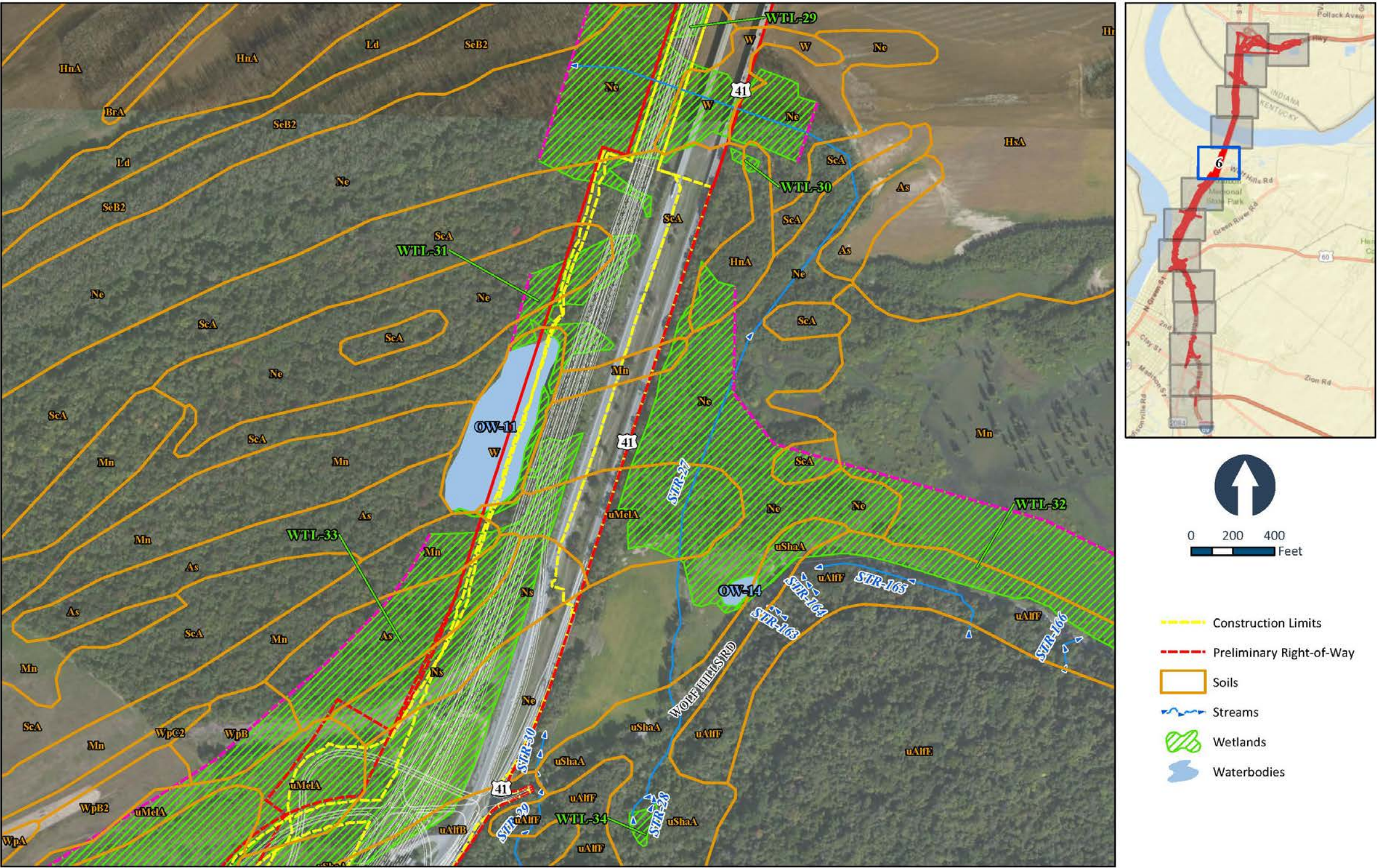
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 3 of 14)



Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 4 of 14)



Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 5 of 14)



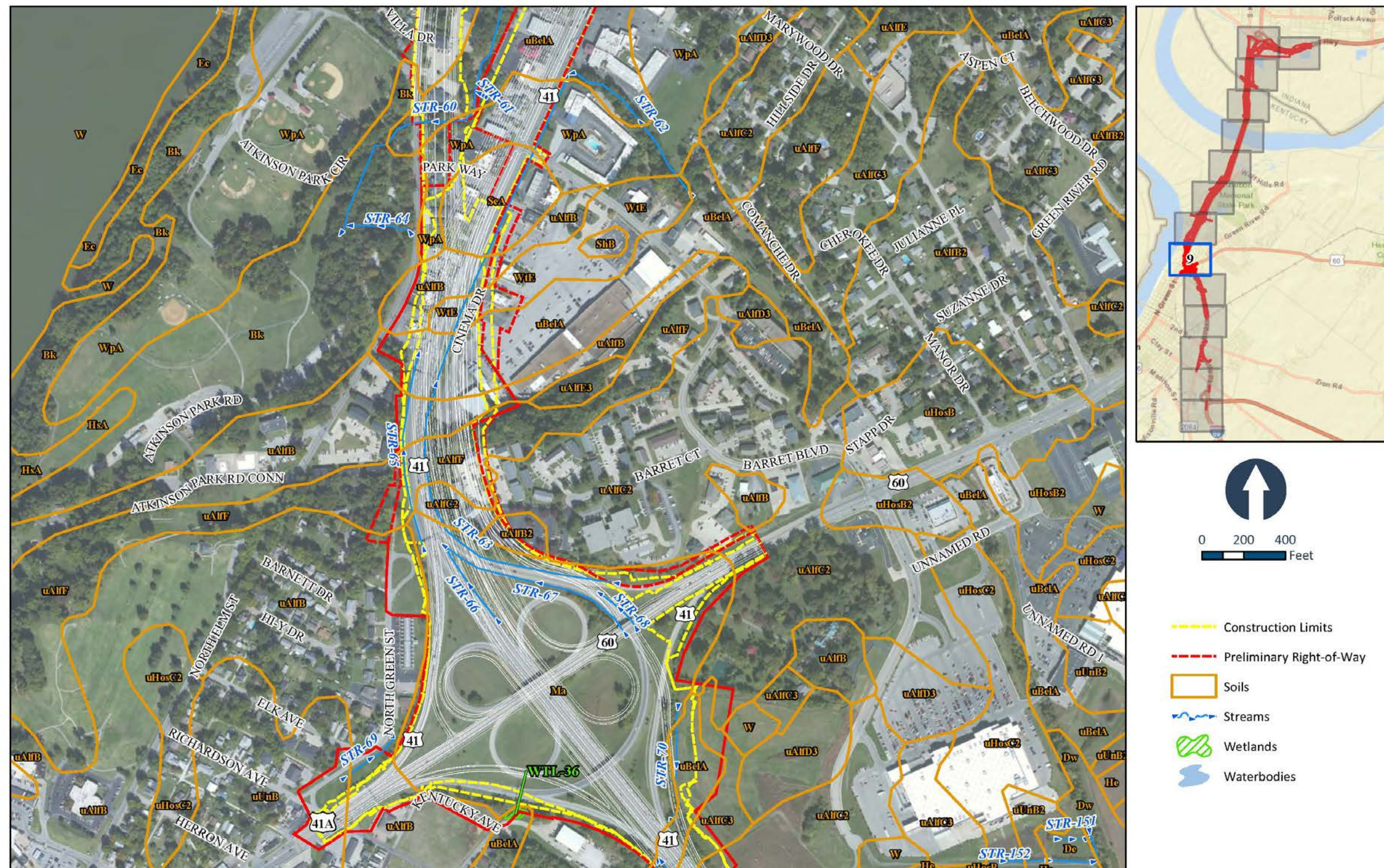
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 6 of 14)



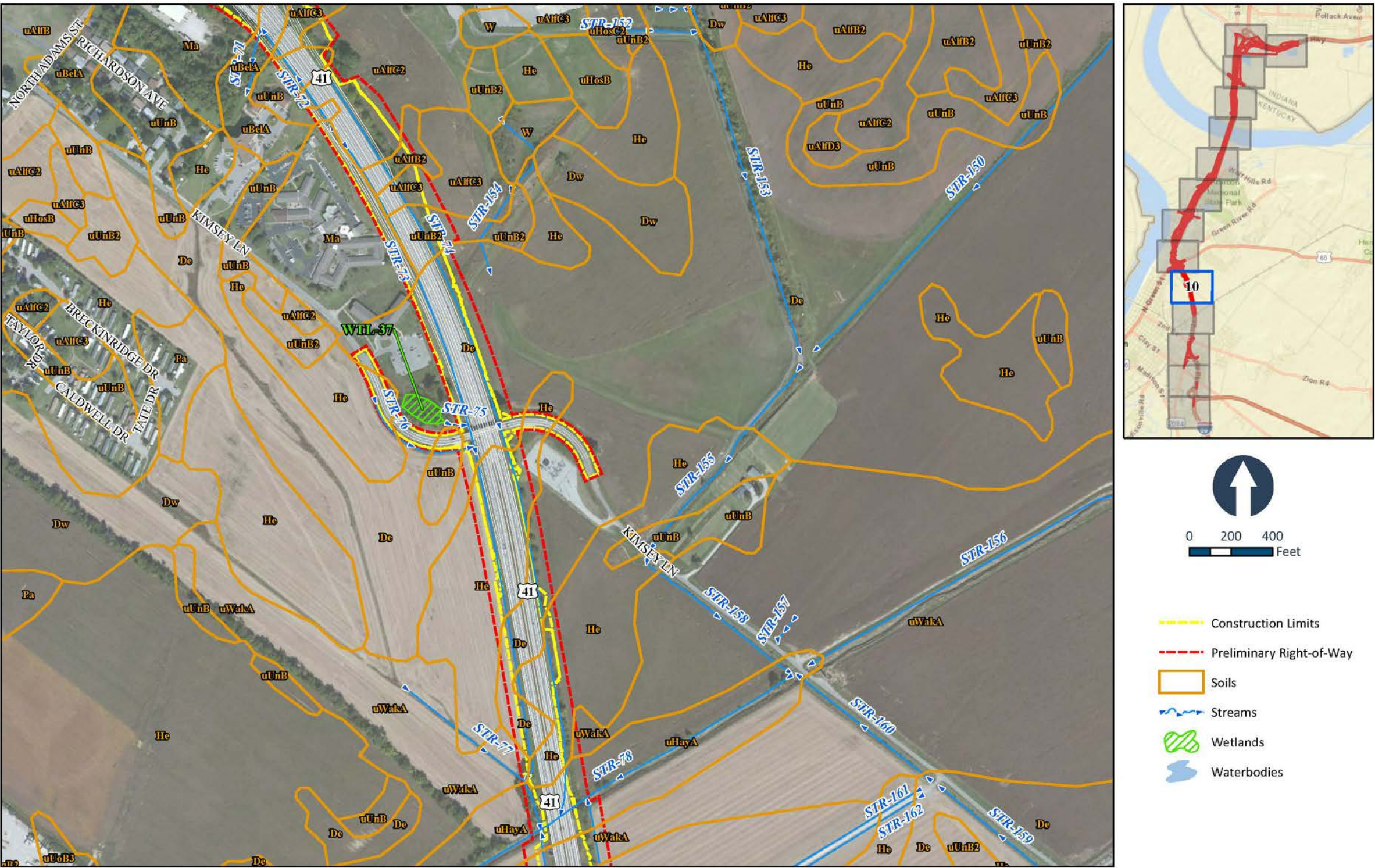
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 7 of 14)



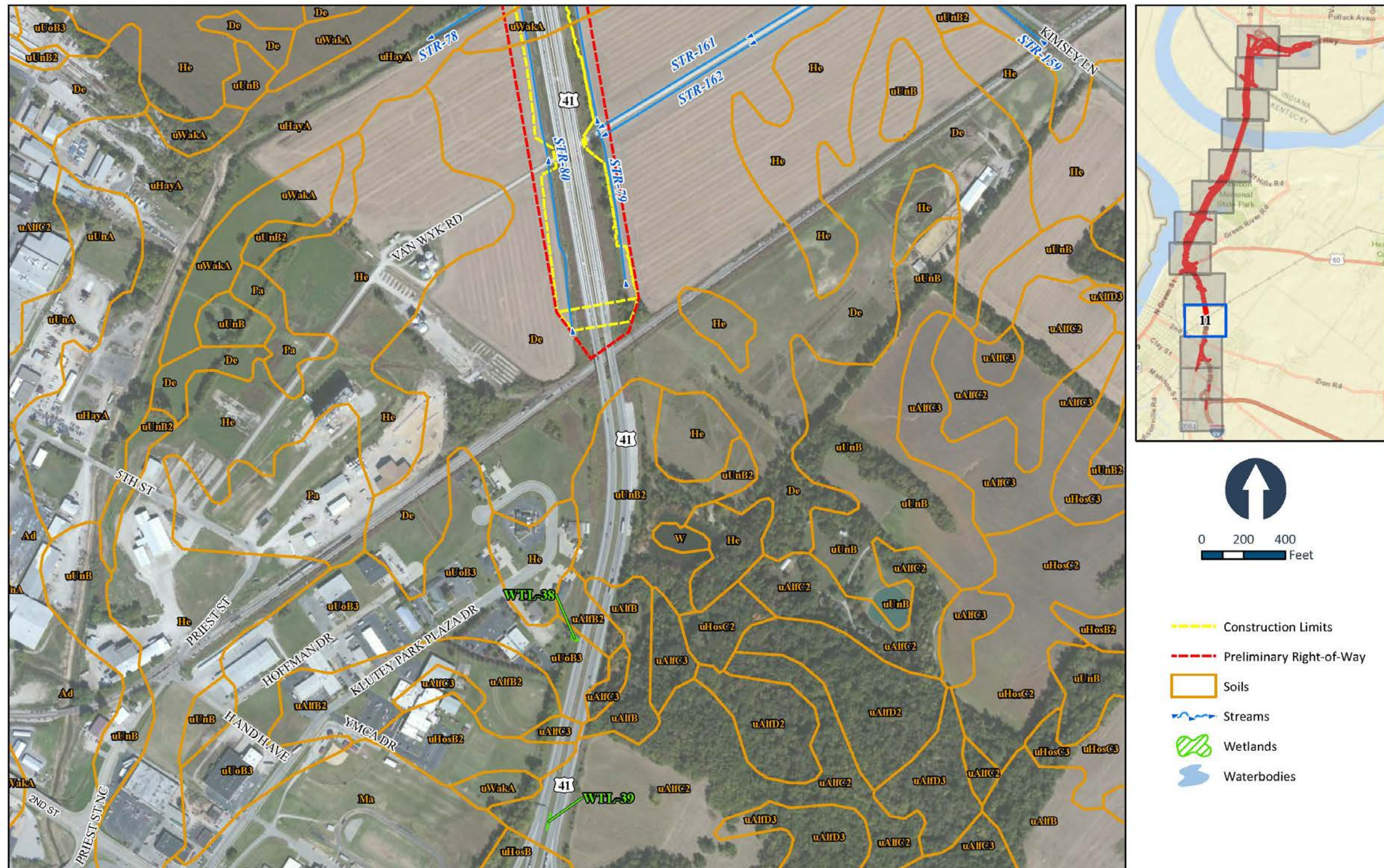
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 8 of 14)



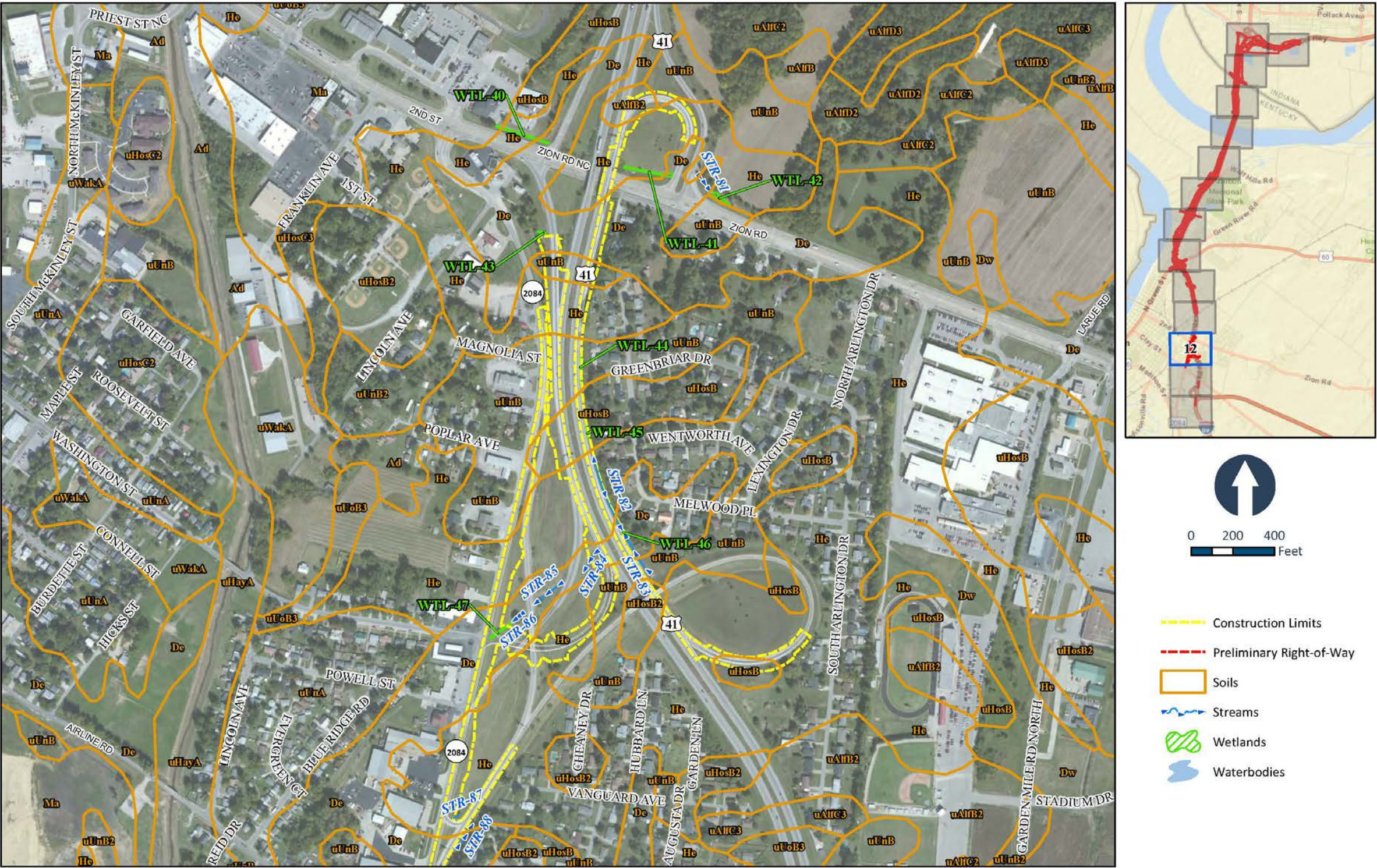
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 9 of 14)



Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 10 of 14)



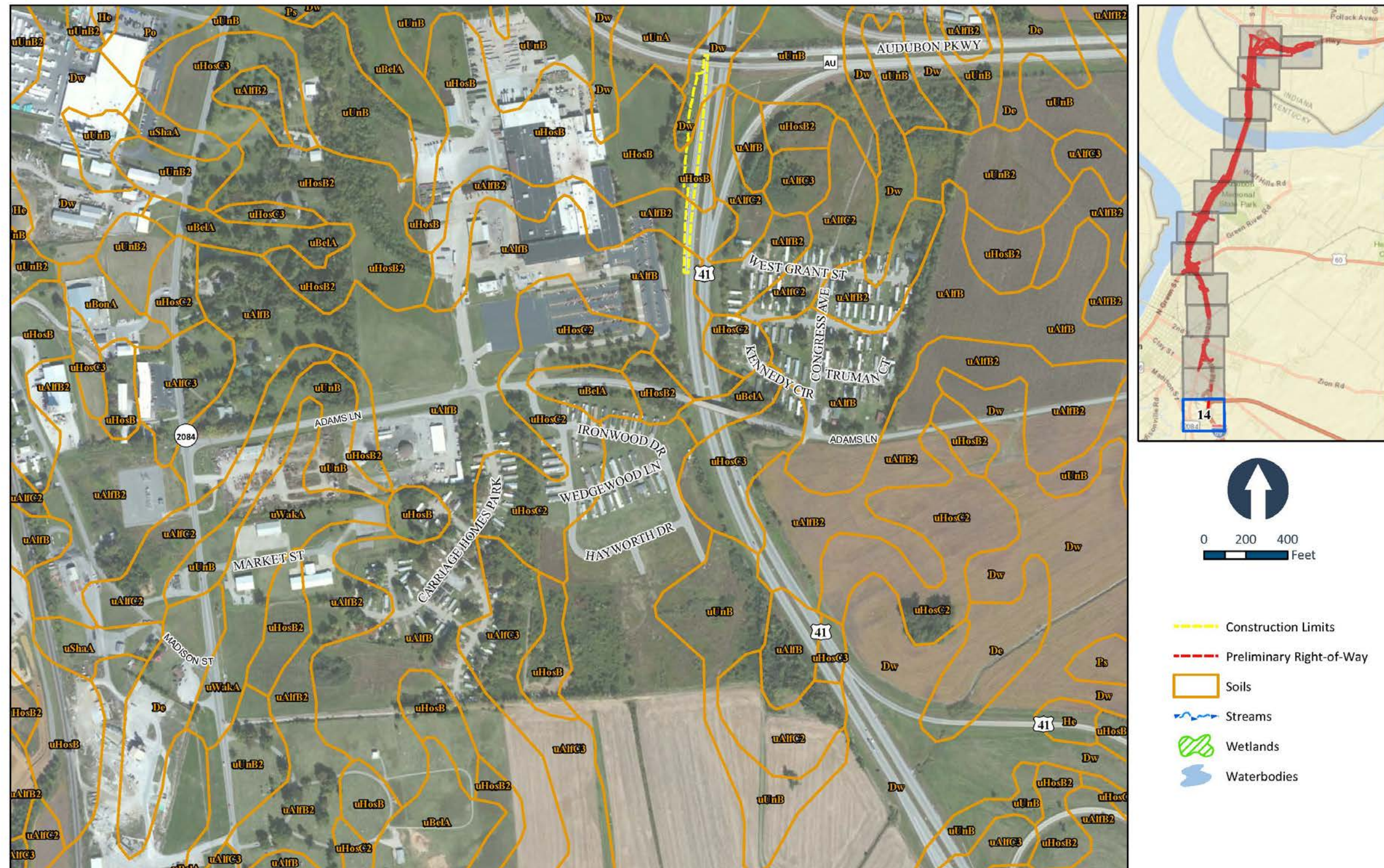
Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 11 of 14)



Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 12 of 14)



Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 13 of 14)



Appendix E. I-69 ORX DEIS West Alternatives 1 and 2 NRCS Soils (Map 14 of 14)