

# **Eagle Creek Dry-Storage Basin Project**

Threatened and Endangered  
Species Habitat Assessment Report



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Maumee Watershed Conservancy District

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October 30, 2019



**EAGLE CREEK DRY-STORAGE BASIN PROJECT THREATENED AND ENDANGERED SPECIES HABITAT ASSESSMENT REPORT**


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Executive Summary  
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## EXECUTIVE SUMMARY

On the behalf of Hancock County and the Maumee Watershed Conservancy District (MWCD, "the client"), Stantec Consulting Services, Inc. (Stantec) was tasked with reviewing existing data associated with analysis completed by the U.S. Army Corps of Engineers, Buffalo District (USACE) regarding the recommendation of a flood diversion channel between Eagle Creek and the Blanchard River in search of potential alternative solutions to reduce the risk of overbank flooding from the Blanchard River and its tributaries. This area is described in the *Western Lake Erie Basin (WLEB) Blanchard River Watershed Study, Draft Detailed Project Report/Environmental Impact Statement* (USACE Draft EIS, April 2015). As part of the Hancock County Flood Risk Reduction (HCFRR) Program, Stantec's efforts thus far include the recommendation for hydraulic improvements along the Blanchard River in the City of Findlay, construction of a dry-storage basin on Eagle Creek upstream of the City, and construction of two dry-storage basins near the Village of Mt. Blanchard on the Blanchard River and Potato Run.

Stantec conducted a wetland and waterbody delineation study and habitat assessment field surveys for potential federally listed and State-listed threatened and endangered species habitats within the Eagle Creek Dry-Storage Basin Project area (the Project area) on July 25 and 26, August 13 through 16, and September 6, 2019 (Figure 1, Appendix A). The dominant habitats and land uses within the Project area consisted of mixed early successional/second growth deciduous forest, mixed early successional/second growth riparian forest, fallow field, agricultural row crop field, old field, new field, pasture, industrial land, mining land, residential lawn, palustrine emergent (PEM) wetland, palustrine scrub-shrub (PSS) wetland, palustrine unconsolidated bottom (PUB), and palustrine forested (PFO) wetland habitats. The locations of habitats and land uses identified within the Project area are shown on Figure 2 in Appendix A.

As part of the continued assistance to Hancock County and MWCD to support the HCFRR Program, Stantec was retained by MCWD to review available information and conduct a threatened and endangered species habitat assessment within the Project area, in order to demonstrate compliance with the Endangered Species Act as part of the Clean Water Act Section 404 permitting process. Prior to conducting the site visits, Stantec reviewed the U.S. Fish and Wildlife Service (USFWS) Ohio Ecological Services Field Office website (USFWS 2018) to determine which federally listed threatened and/or endangered species are known to occur, or potentially occur, in Hancock County. Additionally, Stantec sent the Ohio Department of Natural Resources (ODNR) Office of Real Estate an environmental review request and Ohio Natural Heritage Program (ONHP) database search request on September 13, 2019, in order to obtain information on known occurrences of federally listed and state-listed species within an approximate 1-mile radius of the Project area. Furthermore, Stantec sent a technical assistance request letter to the USFWS on September 13, 2019 in order to obtain information on known occurrences of federally listed threatened and/or endangered species occurring within or in



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proximity to the Project area. A USFWS response letter was received on September 19, 2019 and a response from the ODNR Office of Real Estate was received on October 24, 2019 (Appendix B).

Based on review of the USFWS Ohio Ecological Services Field Office website (USFWS 2018), the USFWS lists the Indiana bat (*Myotis sodalis*; federally endangered), northern long-eared bat (*Myotis septentrionalis*; federally threatened), clubshell (*Pleurobema clava*; federally endangered), rayed bean (*Villosa fabalis*; federally endangered), and bald eagle (*Haliaeetus leucocephalus*; federal species of concern) as occurring in, or having the potential to occur within, Hancock County. Stantec biologists documented potentially suitable foraging and summer roosting habitat for the Indiana bat and northern long-eared bat within the Project area. In addition, several potentially suitable roost trees were observed in the riparian areas along large streams within the Project area.

In addition to the above federally listed species, the ODNR Division of Wildlife (ODNR 2016) lists the blue-spotted salamander (*Ambystoma laterale*; state endangered), western banded killifish (*Fundulus diaphanus menona*; state endangered), plains clubtail (*Gomphus externus*; state endangered), purple lilliput (*Toxolasma lividus*; state endangered), black sandshell (*Ligumia recta*; state threatened), pondhorn (*Uniomerus tetralasmus*; state threatened), and Kirtland's snake (*Clonophis kirtlandii*; state threatened) as occurring in, or having the potential to occur within, Hancock County.

Per the response letters received from the ODNR and USFWS dated October 24 and September 19, 2019, respectively, a great blue heron (*Ardea herodias*) rookery and a bald eagle nest are known to occur adjacent to the Project area. Great blue herons are protected under the Migratory Bird Treaty Act of 1918, and bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, BGEPA), which protects against the take of nesting migratory birds and prohibits, among other things, the killing and disturbance of eagles, respectively.

Furthermore, Stantec documented the presence of potentially suitable habitat for the rayed bean, purple lilliput, and pondhorn mussels within Eagle Creek and/or Aurand Run, within the Project area. However, according to the USFWS and ODNR response letters, no known occurrences of federal or state-listed mussel species occur within the Project area or a 1-mile radius of the Project area. However, due to the proposed work in perennial streams, a more detailed mussel reconnaissance survey was conducted by Stantec biologists on July 25 and October 23, 2019 to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR/USFWS 2018), Eagle Creek and Aurand Run are listed as Group 1 stream systems. Therefore, though potentially suitable habitat is present, federally listed mussel species are not known to occur and/or are not expected to occur within Eagle Creek or Aurand Run due to historical data. Additionally, though the presence of mussel species were confirmed at various locations throughout Eagle Creek and Aurand Run during the mussel reconnaissance survey, no listed species were observed. Additional efforts could be warranted to confirm presence or probable absence of listed species. Please



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refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.

In addition to the protection of the listed mussel and bird species, the ODNR and USFWS response letters state that the Project is within range of the federally listed Indiana and northern long eared bats and the state-listed western banded killifish, though no potentially suitable habitat was observed within the Project area in Eagle Creek or Aurand Run for the western banded killifish, due to the high influence of surrounding agricultural land uses. The MCWD will be responsible for adhering to applicable comments from the ODNR and USFWS related to the above listed species.

This report presents the findings of threatened and endangered species habitat assessment field surveys conducted by Stantec within the Project area. State and federally listed species in Ohio are protected under the Endangered Species Act (ESA) and regulated by the ODNR and USFWS respectively. As part of the Clean Water Act Section 404 permitting process, MWCD is required to comply with Section 7 of the ESA. As part of the permitting process further coordination with both the USFWS and ODNR could be warranted.



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Introduction  
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## 1.0 INTRODUCTION

On the behalf of Hancock County and the Maumee Watershed Conservancy District (MWCD, “the client”), Stantec Consulting Services, Inc. (Stantec) was tasked with reviewing existing data associated with analysis completed by the U.S. Army Corps of Engineers, Buffalo District (USACE) regarding the recommendation of a flood diversion channel between Eagle Creek and the Blanchard River in search of potential alternative solutions to reduce the risk of overbank flooding from the Blanchard River and its tributaries. This area is described in the *Western Lake Erie Basin (WLEB) Blanchard River Watershed Study, Draft Detailed Project Report/Environmental Impact Statement* (USACE Draft EIS, April 2015). As part of the Hancock County Flood Risk Reduction (HCFRR) Program, Stantec's efforts thus far include the recommendation for hydraulic improvements along the Blanchard River in the City of Findlay, construction of a dry-storage basin on Eagle Creek upstream of the City, and construction of two dry-storage basins near the Village of Mt. Blanchard on the Blanchard River and Potato Run.

Stantec conducted a wetland and waterbody delineation study and habitat assessment surveys for potential federally listed and state-listed threatened and endangered species habitats within the Eagle Creek Dry-Storage Basin Project area (the Project area) on July 25 and 26, August 13 through 16, and September 6, 2019 (Figure 1, Appendix A). The dominant habitats and land uses within the Project area consisted of mixed early successional/second growth deciduous forest, mixed early successional/second growth riparian forest, fallow field, agricultural row crop field, old field, new field, pasture, industrial land, mining land, residential lawn, palustrine emergent (PEM) wetland, palustrine scrub-shrub (PSS) wetland, palustrine unconsolidated bottom (PUB), and palustrine forested (PFO) wetland habitats. The locations of habitats and land uses identified within the Project area are shown on Figure 2 in Appendix A.

As part of the continued assistance to Hancock County and MWCD to support the HCFRR Program, Stantec was retained by MCWD to review available information and conduct a threatened and endangered species habitat assessment within the Project area, in order to demonstrate compliance with the Endangered Species Act as part of the Clean Water Act Section 404 permitting process. Prior to conducting the site visit, Stantec reviewed the U.S. Fish and Wildlife Service (USFWS) Ohio Ecological Services Field Office website (USFWS 2018) to determine which federally listed threatened and/or endangered species are known to occur, or potentially occur, in Hancock County. Additionally, Stantec sent the Ohio Department of Natural Resources (ODNR) Office of Real Estate an environmental review request and Ohio Natural Heritage Program (ONHP) database search request on September 13, 2019, in order to obtain information on known occurrences of federally listed and state-listed species within an approximate 1-mile radius of the Project area. Furthermore, Stantec sent a technical assistance request letter to the USFWS on September 13, 2019, in order to obtain information on known occurrences of federally listed threatened and/or endangered species occurring within or in proximity to the Project area. A USFWS response letter was received on September 19, 2019 and



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a response letter was received from the ODNR Office of Real Estate on October 24, 2019 (Appendix B).

This report presents those findings from the threatened and endangered species habitat assessment field surveys performed on July 25 and 26, August 13 through 16, and September 6, 2019.



Methods  
October 30, 2019

## 2.0 METHODS

The objective of the habitat assessment field surveys was to determine the presence or absence of potentially suitable habitat within the Project area for federally listed and state listed threatened or endangered species listed by the USFWS and/or ODNR as occurring in, or having the potential to occur within, Hancock County. Prior to conducting the surveys, Stantec reviewed the USFWS Ohio Ecological Services Field Office website (USFWS 2018) to determine which federally listed threatened and/or endangered species are known to occur, or potentially occur, in Hancock County. Additionally, Stantec sent the ODNR Office of Real Estate an environmental review request and ONHP database search request on September 13, 2019, in order to obtain information on known occurrences of federally listed and state-listed species within an approximate 1-mile radius of the Project area. Furthermore, Stantec sent a technical assistance request to the USFWS on September 13, 2019, in order to obtain information on known occurrences of federally listed threatened and/or endangered species occurring within or in proximity to the Project area.

Stantec documented the existing habitats and land uses within the Project area and recorded dominant plant species occurring within each habitat and land use type. The locations of habitats and land uses identified by Stantec within the Project area are shown on Figure 2. Additionally, Stantec biologists took representative photographs of the existing habitats and land uses found within the Project area and these photographs are provided in Appendix C.



Project Background  
October 30, 2019

## 3.0 PROJECT BACKGROUND

### 3.1 PHYSIOLOGY

The Project area lies within the Eastern Corn Belt Plains ecoregion (OEPA 2008). The Eastern Corn Belt Plains ecoregion is primarily made up of rolling till plains with local end moraines. It has lighter colored soils than that of the Central Corn Belt Plains ecoregion, loamier and better drained soils than that of the Huron/Erie Lake Plains ecoregion, and richer soils than the Erie/Ontario Drift and Lake Plain ecoregion. However, the soils are not as dissected or leached as much as the pre-Wisconsinan till area located in the southern part of this ecoregion. Originally, natural tree cover was greater than the Central Belt Plains ecoregion. Beech forests were common on Wisconsinan soils while beech forests and elm-ash swamp forests dominated the wetter pre-Wisconsinan soils. Today, extensive corn, soybean, and livestock production occurs and has affected stream chemistry and turbidity.

### 3.2 HYDROLOGY

The Project is located within the Blanchard River watershed (8-Digit Hydrologic Unit Code [HUC] 04100008). General flow of surface water in the surrounding area is northward, as Eagle Creek and Aurand Run act as the main drainageways for the surrounding land uses until their confluences with the Blanchard River in the City of Findlay, Ohio. Stantec identified 42 wetlands and 33 streams within the Project area. In general, all surface water within the Project area flows north through either Eagle Creek or Aurand Run and eventually to the Blanchard River.



Site Observations and Results of Document Review  
October 30, 2019

## 4.0 SITE OBSERVATIONS AND RESULTS OF DOCUMENT REVIEW

The Project area was evaluated by Stantec biologists on July 25 and 26, August 13 through 16, and September 6, 2019, in order to document existing habitat conditions. Each type of habitat identified within the Project area was qualitatively evaluated for its potential to be suitable habitat for the Indiana bat (*Myotis sodalis*; federally endangered), northern long-eared bat (*Myotis septentrionalis*; federally threatened), clubshell (*Pleurobema clava*; federally endangered), and rayed bean (*Villosa fabalis*; federally endangered). All of these species were listed by the USFWS (2018) as occurring in, or potentially occurring within, Hancock County. Existing habitats and land uses were documented and the dominant plant species within those habitats were recorded to further evaluate the existing conditions present within the Project area. Dominant habitats and land uses within the Project area consisted of mixed early successional/second growth deciduous forest, mixed early successional/second growth riparian forest, fallow field, agricultural row crop field, old field, new field, pasture, industrial land, mining land, residential lawn, PEM wetland, PSS wetland, PUB and PFO wetland habitats.

### 4.1 PLANT COMMUNITIES

The vegetation communities and land uses present within the Project area are described below and representative photographs of each of these habitats and land uses are provided in Appendix C. Table 1 below lists the habitat types and land uses observed and provides the approximate acreages of each habitat type and land use identified within the Project area.

#### Mixed Early Successional/Second Growth Riparian Forest

Dominant plant species found within the mixed early successional/second growth riparian forest habitats consisted of Ohio buckeye (*Aesculus glabra*), green ash (*Fraxinus pennsylvanica*), American sycamore (*Platanus occidentalis*), Amur honeysuckle (*Lonicera maackii*), basswood (*Tilia americana*), eastern cottonwood (*Populus deltoides*), Virginia wildrye (*Elymus virginicus*), wingstem (*Verbesina alternifolia*), stinging nettle (*Urtica dioica*), giant ragweed (*Ambrosia trifida*), Canadian woodnettle (*Laportea canadensis*), common hackberry (*Celtis occidentalis*), black cherry (*Prunus serotina*), honey locust (*Gleditsia triacanthos*), Canadian clearweed (*Pilea pumila*), boxelder (*Acer negundo*), giant goldenrod (*Solidago gigantea*), Jerusalem artichoke (*Helianthus tuberosus*), eastern poison ivy (*Toxicodendron radicans*), black walnut (*Juglans nigra*), and red mulberry (*Morus rubra*).

#### Fallow Field

Dominant plant species found within the fallow field habitats consisted of red clover (*Trifolium pratense*), common plantain (*Plantago major*), yellow nutsedge (*Cyperus esculentus*), black





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medic (*Medicago lupulina*), alfalfa (*Medicago sativa*), white clover (*Trifolium repens*), path rush (*Juncus tenuis*), and common dandelion (*Taraxacum officinale*).

### Agricultural Row Crop Field

Dominant plant species found within the agricultural row crop field habitats consisted of: soybean (*Glycine max*), barnyardgrass (*Echinochloa crus-galli*), yellow nutsedge, common ragweed (*Ambrosia artemisiifolia*), and giant ragweed.

### Old Field

Dominant plant species found within the old field habitats consisted of Canada goldenrod (*Solidago canadensis*), common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnata*), Jerusalem artichoke, big bluestem (*Andropogon gerardii*), and tall fescue (*Schedonorus arundinaceus*).

### Residential Lawn

Dominant plant species found within residential lawns within the Project area included Kentucky bluegrass (*Poa pratensis*), red clover, white clover, Bermudagrass (*Cynodon dactylon*), common plantain, narrowleaf plantain (*Plantago lanceolata*), tall fescue, and perennial ryegrass (*Lolium perenne*).

### Pasture

Dominant plant species found within pasture areas consisted of white clover, red clover, Carolina horsenettle (*Solanum carolinense*), tall fescue, orchardgrass (*Dactylis glomerata*), Canada thistle (*Cirsium arvense*), Timothy (*Phleum pratense*), yellow foxtail (*Setaria pumila*), broomsedge bluestem (*Andropogon virginicus*), chicory (*Cichorium intybus*), and giant ironweed (*Vernonia gigantea*).

### Mixed Early Successional/Second Growth Deciduous Forest

Dominant plant species found within mixed early successional/second growth deciduous forest habitats included pawpaw (*Asimina triloba*), northern spicebush (*Lindera benzoin*), common hackberry, shagbark hickory (*Carya ovata*), American elm (*Ulmus americana*), Virginia creeper (*Parthenocissus quinquefolia*), eastern poison ivy, green ash, common blue violet (*Viola sororia*), red maple (*Acer rubrum*), tuliptree (*Liriodendron tulipifera*), Amur honeysuckle, and Japanese honeysuckle (*Lonicera japonica*).

### New Field

New field habitats within the Project area were dominated by tall fescue, red clover, white clover, narrowleaf plantain, common plantain, Kentucky bluegrass, orchardgrass, Bermudagrass, and Japanese honeysuckle.



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### Industrial Land/Railroad/Existing Roadways

Industrial land, railroad corridors, and existing roadways were present within the Project area. However, these land uses were extremely disturbed and contained little to no vegetation.

### Palustrine Emergent (PEM) Wetland

Dominant plant species within PEM wetlands in the Project area included jumpseed (*Polygonum virginianum*), sweetflag (*Acorus americanus*), creeping jenny (*Lysimachia nummularia*), Gray's sedge (*Carex grayi*), Canadian woodnettle, jewelweed (*Impatiens capensis*), narrowleaf cattail (*Typha angustifolia*), reed canarygrass (*Phalaris arundinacea*), common spikerush (*Eleocharis palustris*), Pennsylvania smartweed (*Polygonum pennsylvanicum*), shallow sedge (*Carex lurida*), rice cutgrass (*Leersia oryzoides*), green arrow arum (*Peltandra virginica*), Canadian clearweed (*Pilea pumila*), broadleaf arrowhead (*Sagittaria latifolia*), white panicle aster (*Symphyotrichum lanceolatum*), marshpepper knotweed (*Polygonum hydropiper*), barnyardgrass, devil's beggartick (*Bidens frondosa*), and yellow nutsedge.

### Palustrine Forested Wetland (PFO) Wetland

PFO wetland habitats within the Project area were dominated by Canadian woodnettle, creeping jenny, green ash, boxelder, cutleaf coneflower (*Rudbeckia laciniata*), American elm, red maple, riverbank wildrye (*Elymus riparius*), giant goldenrod, silver maple (*Acer saccharinum*), black willow (*Salix nigra*), Canadian clearweed, eastern cottonwood (*Populus deltoides*), and American sycamore.

### Palustrine Scrub-Shrub Wetland (PSS) Wetland

PSS wetland habitats within the Project area were dominated by Gray's sedge, creeping jenny, black willow, giant goldenrod, reed canarygrass, green ash, and sweetflag.

### Palustrine Unconsolidated Bottom (PUB) Wetland

Palustrine unconsolidated bottom wetland habitat within the Project area contained little vegetation cover. The species observed within this habitat included Virginia wildrye, New England aster (*Symphyotrichum novae-angliae*), and white panicle aster.



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**Table 1. Summary of Habitat Types within the Eagle Creek Dry-Storage Project Area**

<b>Habitat/Land Use Type</b>	<b>Approximate Acreage within Project Area</b>
Mixed Early Successional/Second Growth Riparian Forest	199.76
Fallow Field	2.21
Agricultural Row Crop Field	867.73
Old Field	18.00
Residential Lawn	49.90
Pasture	6.68
Mixed Early Successional/Second Growth Deciduous Forest	41.94
New Field	12.22
Industrial Land	1.98
Railroad	0.13
Existing Roadway	7.91
Palustrine Emergent Wetland	6.36
Palustrine Forested Wetland	2.63
Palustrine Scrub-Shrub Wetland	0.69
Palustrine Unconsolidated Bottom Wetland	0.02
<b>Total</b>	<b>1,219.16</b>



Federally Listed Threatened and Endangered Species  
October 30, 2019

## 5.0 FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

### 5.1 INDIANA BAT

#### 5.1.1 Species Status

Because of the Indiana bat's strong resemblance to the little brown bat, it was not described as a separate species until 1928 (Miller and Allen 1928) from a specimen collected in Wyandotte Cave, Crawford County, Indiana. The Indiana bat can be distinguished from other larger *Myotis*, particularly the little brown bat, by its short, inconspicuous toe hairs, by its smaller foot (9 mm instead of 10 mm long), by its keeled calcar, by its more uniform colored fur, and its pinkish colored pug-nose (Whitaker and Hamilton 1998). Albino and partially white bats are rarely encountered but may occur in large hibernacula (Brack et al. 2005). Since its description as a separate species, the Indiana bat has suffered drastic population declines, primarily from human-induced alterations of winter habitat. Commercialization and mining of "saltpeter" at significant caves have created environments, especially warmer temperatures, which are unsuitable or marginal for hibernating Indiana bats. Most recently the Indiana bat along with other hibernating bats has declined drastically throughout their range from a cold-loving fungus, *Pseudogymnoascus destructans*, also known as white-nose syndrome (WNS).

The USFWS listed the Indiana bat as an endangered species on March 11, 1967. However, the bat did not receive any protection until the Endangered Species Act (ESA) was instated in 1973 (Public Law 93-205). Several years following its listing, an Indiana bat recovery plan was developed by biologists (i.e., the recovery team), which outlined habitat requirements, critical habitat, potential causes for declines, and recovery objectives. The recovery plan was reviewed and published by the USFWS in 1983. On April 16, 2007 the notice of availability for review and comment on an updated "Draft Indiana Bat Recovery Plan, First Revision and Draft Survey Protocol" was published in the Federal Register (72 FR 19015 – 19016). This updated document provides an extensive literature review of historical and recent species information, and the revised plan lists three new fundamental recovery objectives. These objectives are to: (1) obtain permanent protection of 80 percent of Priority One hibernacula, (2) maintain a minimum overall population equal to the 2005 estimate (457,000 individuals), and (3) document a positive population growth rate over five sequential survey periods. However, the plan says, "if identified research on summer habitat characteristics and requirements indicates the quality and quantity of maternity habitat is threatening recovery of the species, the Service will amend these objectives" (USFWS 2007).

#### 5.1.2 Distribution and Population Status

The range of the Indiana bat includes much of the eastern United States. It occurs from Iowa, Oklahoma and Wisconsin, northeast to Vermont, and south to northwestern Florida and northern



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Arkansas (Barbour and Davis 1969). The majority of the wintering population occurs within the limestone cave region of Indiana, Kentucky, and Missouri. Large colonies have been found in some abandoned underground mines in Illinois, Ohio, Missouri, New Jersey, and New York. According to the USFWS (1999), more than 85 percent of the range-wide population is found in nine Priority One hibernacula. Indiana, Kentucky, and Missouri, each contain three Priority One hibernacula. Due to sampling methods and inaccurate counts, Clawson (2002) determined that Dixon Cave in Kentucky and Pilot Knob Mine in Missouri should no longer be considered Priority One sites. In the 2007 revised Indiana bat recovery plan, Priority One hibernacula were changed and now includes 16 total sites with seven in Indiana, two each in Kentucky, Missouri, and New York, and one each in Illinois, Tennessee, and West Virginia. As of 2019 surveying period, 537,297 Indiana bats were estimated range-wide, and hibernacula that contained these occurred in 17 states, including Alabama, Arkansas, Georgia, Illinois, Indiana, Kentucky, Michigan, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Vermont, Virginia, and West Virginia (USFWS 2019). Currently, critical winter habitat is established and includes eleven caves and two non-coal mines, including six in Missouri, two each in Indiana and Kentucky; and one each in Illinois, Tennessee, and West Virginia (USFWS 2007). As of the 2019 population estimates, Ohio hibernacula contains only 2,890 Indiana bats which have shown a 62 percent decline since the arrival of WNS in North America during the winter of 2007 (USFWS 2019).

Summer distribution of the Indiana bat occurs throughout a wider geographic area than winter distribution. The core summer range includes southern Iowa, northern Missouri, northern Illinois, northern Indiana, southern Michigan, and western Ohio. However, population distribution during summer is poorly known because of wide gaps between the known maternity colonies and unknown amount of movement between roost sites. Summer colonies of Indiana bats occur as far north as Michigan, New York, and Vermont, and as far south as Alabama, Missouri, and Tennessee, and as far west as Iowa. Britzke et al. (2003) found that Indiana bat maternity colonies were less frequently encountered in mountainous terrain and were usually smaller in size. Britzke et al. (2003) found three maternity colony sites in the mountains of western North Carolina and eastern Tennessee but failed to relocate the colonies at the same roost sites the following year. In non-mountainous terrain in Michigan and Vermont, researchers have been tracking the same colonies for more than five consecutive years and the bats seem to show some degree of site fidelity to a given area (Kurta 2004; Scott Darling, unpublished data), and many of these colonies often exceed several hundred individuals.

### 5.1.3 Life History

The Indiana bat hibernates from October/early November to middle of April with emergence dependent upon location and weather. Typically, the Indiana bat forms dense clusters on cave and mine ceilings and walls where winter temperatures are 3.0 – 7.2° C (37.4 – 44.9° F). Sites containing populations where temperatures are outside this range have shown population declines (Tuttle and Kennedy 2002). Stable low temperatures allow Indiana bats to maintain a low rate of metabolism and conserve fat reserves through the winter until spring emergence when outside temperatures have increased and insects (food) are more abundant (Humphrey 1978,



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Richter et al. 1993). As with cave temperature, relative humidity in the cave also determines hibernation site suitability for Indiana bats. According to Hall (1962), Humphrey (1978), and LaVal et al. (1976), humidity at roost sites during hibernation is usually above 74 percent, but below saturation. Cave configurations determines internal environments and larger more complex cave systems having multiple entrances are more likely to provide suitable habitat for the Indiana bat (Tuttle and Stevenson 1978, LaVal and LaVal 1980). Depending on cave environments, the Indiana bat may hibernate near the entrance where cool air seeps in from outside or deeper in the cave where cold air is trapped in a sink.

Although some bats may awaken during the winter and exit hibernacula early, the majority of individuals start exiting hibernacula early to mid-April. Female Indiana bats leave the hibernacula earlier in spring than males. Peak departure from hibernacula is in late April through early May. This period is often referred to as spring staging. Some males may remain near the hibernacula throughout the year, move short distances to other caves or mines, or migrate to distant areas (Whitaker and Brack 2002). When female Indiana bats emerge, they may migrate only a few miles, or up to 465 km (288 miles) from their hibernacula to summer habitat. Winhold et al. (2005) reported a female traveling 465 km (289 miles) from a summer colony near Norvell, Michigan to a hibernaculum near Frenchburg, Kentucky. Conversely, Indiana bats tracked from an abandoned mine in New York only flew between nine and 14.6 (9 miles) to 40.0 km (24 miles) from the foothills of the Adirondack Mountains to roost trees scattered throughout the Lake Champlain Valley (Britzke et al. 2006). Based on a combination of aerial and ground tracking, Indiana bats tracked from a hibernaculum in Pennsylvania flew almost a straight line to their roost trees 135 km (83 miles) and 148 km (92 miles) away in Maryland (Butchkoski et al. 2006).

Few studies have focused on spring roost trees of the Indiana bat. Britzke et al. (2006) found female bats roosting primarily in live shagbark hickory (*Carya ovata*) and roost changing was much lower than during the summer. Live shagbark hickory provides more shelter to roosting bats than does sloughing bark on dead trees. Such differences may have been associated with unpredictable spring weather in the northeast because summer bats and males during the spring, switch roosts every single day to three days (Menzel et al. 2001; Gumbert et al. 2002; Kurta et al. 1996, 2002). According to Britzke et al. (2006), spring roost trees used in Lake Champlain Valley were similar in structure (e.g., sloughing bark, solar exposure) to trees used throughout the species range. Trees used during the spring included shagbark hickory, American elm, quaking aspen (*Populus tremuloides*), sugar maple, black locust (*Robinia pseudoacacia*), white ash, American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), eastern hemlock (*Tsuga canadensis*), and red maple.

Based on Britzke et al.'s (2006) work, some of the spring roosting activity occurs within the same area where maternity roosts have been found. Female Indiana bats form maternity roosts under exfoliating bark of dead, dying and live trees in both upland and riparian habitats. A single maternity colony typically consists of 25 to 100 bats but can contain as many as 384 individuals (Kiser et al. 2002). Over 30 species of trees have been documented as maternity roosts, but 87 percent of these are various ashes (*Fraxinus* spp.), elms (*Ulmus* spp.), hickories (*Carya* spp.), maples



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(*Acer* spp.), poplars (*Populus* spp.), and oaks (Kurta 2004). Most trees used by reproductive females are deciduous, but eastern hemlock and pitch pine (*Pinus rigida*) have been used in western North Carolina and eastern Tennessee, and white pine (*P. strobus*) has been used in Vermont (Britzke et al. 2003, J. Kiser, pers. obs. 2004). Near the southern edge of the species maternity range in Alabama and Georgia yellow pines, such as shortleaf pine (*P. echinata*), and loblolly pine (*P. taeda*) are used extensively.

Roost trees used by Indiana bats vary in size. The minimum tree size (dbh) reported for a male roost is 6.4 cm (2.5 inches) (Gumbert 2001) and 11 cm (4.3 inches) for an individual female roost (Britzke 2003). Primary maternity roosts are always found in larger diameter trees usually greater than 22 cm (8.6 inches) dbh (Kurta 2004). Larger diameter trees provide thermal advantages to reproductive females and their pups and give them more room to move around while locating appropriate temperatures. Females are pregnant when they arrive at maternity roost and fecundity is low, only one pup per year. Pups are normally born in late June and early July and grow quickly, becoming volant between early July and early August.

Indiana bats may travel several miles from day roosts to foraging areas. Gardner et al. (1991) found that individuals from an Illinois maternity colony traveled 4.0 km (2.5 miles) to foraging areas. In fragmented habitat, bats will use hedge rows and other features on the landscape as travel ways between foraging areas and day roosts (Murray and Kurta 2004). Rather than crossing open habitats (e.g., pasture land, open water, agricultural fields) Indiana bats increased their travel distance by 55 percent in Michigan to take advantage of the protective cover of tree-lines (Murray and Kurta 2004). Indiana bats will forage in upland and floodplain forest (Brack 1983; Humphrey 1978; LaVal and LaVal 1980; Gardner et al. 1991; Kiser and Elliott 1996). Indiana bats are opportunistic foragers, feeding on a variety of small insects. The diet of Indiana bats varies between habitats, geographic locations, season, sex, and age of bats (Kurta and Whitaker 1998; Brack and LaVal 1985; Belwood 1979). Sparks and Whitaker (2004) summarized food habit studies conducted over 30 years and determined that Indiana bat's diet consisted primarily of insects belonging to the orders Diptera (flies), Lepidoptera (moths) and Coleoptera (beetles), but when locally abundant, Trichoptera (caddisflies) and Hymenoptera (wasps and ants) may be the predominant food. Several pest species including mosquitoes (Diptera:Culicidae), Asiatic oak weevil (*Cyrtopistomus castaneus*), spotted cucumber beetle (*Diabrotica undecimpunctata*), and Hessian fly (*Mayetola destructor*) (Sparks and Whitaker 2004; Kurta and Whitaker 1998; Kiser and Elliott 1996) are also consumed by Indiana bats when locally abundant.

Foraging activity is usually interrupted by periods of rest, referred to as night roosting. Most Indiana bats apparently use trees as night roosts (Butchkoski and Hassinger 2002; Murray and Kurta 2004), although they do occasionally utilize bat boxes (Butchkoski and Hassinger 2002), and concrete bridges (Kiser et al. 2002). Night roosting is any time a bat stops flying during the night. The purpose of night roosts is to provide bats a resting place between foraging bouts, promote digestion and energy conservation, provide retreats from predators and inclement weather, provide places to ingest food transported from nearby feeding areas, function as feeding perches for sit-and-wait



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predators, and serve as a place to promote social interactions and information transfer (Ormsbee et al. 2007).

Indiana bats start arriving at hibernacula during late August and fly around the entrances in an attempt to find mates. This phenomenon is referred to as “swarming” and is typically a multispecies event (Cope and Humphrey 1977). During swarming, Indiana bats day roost under sloughing bark of trees near the cave and travel to the entrance each night (Kiser and Elliott 1996). Roost trees used during autumn range from 11.75 to 66.0 cm (4.6 to 25.9 inches) in diameter at breast height (dbh) and occur primarily on ridge-tops and upper slopes (Kiser and Elliott 1996). As with summer roosts, site fidelity to autumn roosting areas is exhibited by male Indiana bats (Gumbert et al. 2002). Male Indiana bats typically remain active longer during autumn than do females. Once arriving at hibernacula, females may only remain active for a few days where-as males remain active, seeking mates, into late October and early November.

### 5.1.4 Habitat Assessment Results

No potential Indiana bat hibernacula were found within the Project area. However, suitable foraging habitat and potentially suitable summer roosting habitat for the Indiana bat are present within the Project area. Multiple potentially suitable Indiana bat roost trees were observed within the Project area and the locations of the trees were recorded using a handheld sub-meter accuracy Trimble Geo7x Global Positioning System (GPS) survey equipment and are shown on Figure 2 in Appendix A. Representative photographs of potential Indiana bat roost trees identified within the Project area are provided in Appendix C.

## 5.2 NORTHERN LONG-EARED BAT

### 5.2.1 Species Status

The northern long-eared bat is a medium-sized bat in the genus *Myotis*, weighing between 5 to 9 grams (0.2 to 0.3 oz) (Brack et al. 2010). The forearm length has a range of 35 to 39 mm (1.4 to 1.5 in) and the total length, tail included, ranges from 79.2 to 87.8 mm (3.1 to 3.5 in) (Brack et al. 2010; Whitaker and Hamilton 1998). Northern long-eared bats are similar in appearance to other *Myotis* species that inhabit the eastern United States, including eastern small-footed bats (*M. leibii*), Indiana bats, and little brown bats, which it most closely resembles. The northern long-eared bat can be distinguished from these similar species by their distinctly long ears (14 – 18 mm [0.5 – 0.7 in]) and long, sharply pointed tragus (9 – 11 mm [0.3 – 0.4 in]) (USFWS 2013; Brack et al. 2010). When extended normally, the ears of the northern long-eared bat are symmetrical in shape, unlike the asymmetrical look of the little brown bat, and laid forward, the ears of the northern long-eared bat will extend about 4 mm (0.2 in) beyond the nostrils (Brack et al. 2010; Caceres and Barclay 2000; Whitaker and Hamilton 1998), whereas other *Myotis* species typically have ears that do not extend beyond the nostrils. Other minor differences include non-fluffy and non-glossy fur, as well as a distinct area around the eyes where the fur is thinner, creating a bald look around the eyes. However, the length of the ears on the northern-long eared bat is the most reliable characteristic





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when identifying this species. The pelage is medium to dark brown on its back and tawny to pale-brown on the ventral side. The ears and wing membranes are dark brown but not black (USFWS 2013; Whitaker and Mumford 2009). Overall, the fur is slightly lighter than that of the little brown, Indiana, and small footed bats.

On 2 October 2013, the USFWS announced a 12-month finding on a petition to list the northern long-eared bat as threatened or endangered under the Endangered Species Act of 1973 (78 FR 61046 – 61080). A 60-day public comment period was opened ending on December 2, 2013. Since then, the public comment period has been reopened and extended three times, for a total of four comment periods totaling 180 days. After careful review of the best available scientific and commercial information, the USFWS determined that listing of the northern long-eared bat was warranted throughout its range.

The status review conducted by the USFWS identified white-nose syndrome (WNS) as the primary threat to the northern long-eared bat, although other threats do exist as well including impacts to hibernacula, summer habitat, and during migration (USFWS 2014). An emerging infectious disease, WNS is caused by the fungus, *P. destructans*, and is responsible for unprecedented mortality in some hibernating insectivorous bats in the northeastern U. S., including dramatic and rapid population declines in northern long-eared bat populations of up to 99 percent from pre-WNS levels. WNS is spreading rapidly throughout the eastern U.S. and is currently spreading through the Midwest. While some data suggests that northern long-eared bats may have been on the decline prior to the onset of WNS (Ingersoll et al. 2013), there is limited data to support this theory. The fungus associated with WNS has been identified or suspected in approximately 18 counties in Ohio ([www.whitenosesyndrome.org](http://www.whitenosesyndrome.org)).

On January 16, 2015, the USFWS proposed a rule change to list the northern long-eared bat as threatened under the ESA. On April 2, 2015, the USFWS determined the northern long-eared bat should be listed as threatened under the Endangered Species Act and listed it under the Section 4d provision (80 FR 17974 – 18033). Section 4(d) of the ESA provides the USFWS the discretion to issue regulations necessary and advisable to provide for conservation of the species. The final ruling to list the northern long-eared bat took effect on May 4, 2015.

### 5.2.2 Distribution and Population Status

The northern long-eared bat is found throughout the eastern and Midwestern U.S. and southern Canada. In the U.S., it ranges from Maine south to central North Carolina along the Atlantic coast, extending west into eastern Oklahoma and north into North Dakota and eastern Wyoming and Montana. In the south, the northern long-eared bat extends into parts of Georgia, Alabama, Mississippi, and Louisiana (USFWS 2014). Historically, the eastern portion of the northern long-eared bats range has held its greatest abundance (Caceres and Barclay 2000), and numbers in the southern and western portion of the bats range are considered naturally low (USDA 2006). In Ohio, the northern long-eared bat is either known from or thought to likely occur in every county in the state. Until the appearance of WNS, the species was frequently captured in eastern portions of



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Ohio, especially throughout the counties where gas and oil development occur and where the Wayne National Forest (WNF) is located (James Kiser, unpublished data). Survey efforts for the WNF during the late 1990's and early 2000's resulted in the capture of 100's of northern long-eared bats throughout forested habitats, especially over ridgetop ponds and water-filled road-ruts. More recently, follow up surveys at some of the best capture sites from previous surveys on the WNF have captured few northern long eared bats (Katrina Schultes, WNF Biologist, pers. comm., 2019).

### 5.2.3 Life History

Northern long-eared bats use a wide variety of forested habitats for roosting, foraging and traveling, and may also utilize some adjacent and interspersed non-forested habitat such as emergent wetlands and edges of fields. This species has also been found roosting in structures like barns and sheds (particularly when suitable tree roosts are unavailable). The bats emerge at dusk to forage in upland and lowland woodlots and tree-lined corridors, feeding on insects, which they catch while in flight using echolocation. This species also feeds by gleaning insects from vegetation and water surfaces (USFWS 2014).

Roosting habitat includes forested areas with live trees and/or snags with a dbh of at least 3 in (7.6 cm) with exfoliating bark, cracks, crevices and/or other cavities. Trees are considered suitable if they meet those requirements and are located within 305 m (1,000 ft) of the nearest suitable roost tree, woodlot, or wooded fencerow (USFWS 2014). Maternity habitat is defined as suitable summer habitat that is used by juveniles and reproductive females.

Winter habitat includes underground caves and cave-like structures such as abandoned or active mines and railroad tunnels. These hibernacula typically have high humidity, minimal air current, large passages with cracks and crevices for roosting, and maintain a relatively cool temperature 32 – 48 degrees Fahrenheit (0 - 9 degrees Celsius) (USFWS 2014).

Northern long-eared bats migrate between their winter hibernacula and summer habitat, typically between mid-March and mid-May in the spring, and mid-August and mid-October in the fall. They are considered a short-distance migrant (typically 64.4 – 80.5 km [40 - 50 mi]), although their known migratory distances can vary greatly between 8 – 270 km (5 and 168 mi) (USFWS 2014).

### 5.2.4 Habitat Assessment Results

No potential northern long-eared bat hibernacula were found within the Project area. However, suitable foraging habitat and potentially suitable summer roosting habitat for the northern long-eared bat are present within the Project area. Multiple potentially suitable northern long-eared bat roost trees were observed within the Project area and the locations of the trees were recorded using handheld sub-meter accuracy Trimble Geo7x Global Positioning System (GPS) survey equipment and are shown on Figure 2 in Appendix A. Representative photographs of the potential northern long-eared bat roost trees identified within the Project area are provided in Appendix C.



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## 5.3 CLUBSHELL

### 5.3.1 Species Status

The USFWS listed the clubshell as endangered on January 22, 1993. It was later listed by the state of Ohio as endangered in 2009, largely due to pollution from agricultural run-off and industrial wastes, and extensive impoundments for navigation (USFWS 1994; Watters et al. 2009).

### 5.3.2 Distribution and Population Status

The clubshell occurs in medium to small rivers and streams, containing clean, coarse sand and cobble substrates (USFWS 1994). The clubshell is usually found within the current, where it may live several inches underneath the surface. It is most common in the downstream ends of riffles and islands (Watters et al. 2009).

The clubshell is mostly considered an Ohio River system species, including the Tennessee, Cumberland, Kanawha, and Wabash river drainages. However, it is also found within the Maumee River system of Lake Erie. Although historically the clubshell was originally described as occurring within Lake Erie, only one record of its occurrence there has been found (Watters et al. 2009).

The largest extant population of the clubshell is located in the Tippecanoe River, Indiana (Cummings and Berlocher 1990; Cummings et al. 1992; ESI 1992, 1993). Surveys by Ecological Specialists, Inc. (ESI) in 1992 and 1993 found living individuals at nine sites from the mouth to the uppermost reach, a distance of over 150 miles. Fresh dead individuals were found at an additional ten sites. In all, living or fresh dead specimens were found in 63% of the sites studied, although weathered shells occurred at 97% of the sites. The ages of individuals ranged from three to 17 years, indicating that this population probably is reproducing. Muskrat predation seemed to be a major cause of death at many sites, based on numerous shells in middens (USFWS 1994).

### 5.3.3 Life History

Clubshell eggs appear in May and the glochidia develop in June and July (Ortmann 1919). In Ohio, females release fragile, white, non-elastic conglutinates, and are barren by the end of June (Watters et al. 2009).

The clubshell is considered a short term brooder. Fishes reported to serve as glochidial hosts of the clubshell in laboratory trials include the central stoneroller (*Campostoma anomalum*), striped shiner (*Luxilus chrysocephalus*), logperch (*Percina caprodes*), and the blackside darter (*Percina maculata*) (Williams et al. 2008; Watters et al. 2009).



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### 5.3.4 Habitat Assessment Results

No potentially suitable habitat for the clubshell was documented within the Project area. However, potentially suitable habitat for freshwater mussel species was observed as potentially occurring within Eagle Creek and Aurand Run (USGS named perennial streams). Due to the proposed work in perennial streams, a more detailed mussel reconnaissance survey was conducted by Stantec biologists on July 25 and October 23, 2019 to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR/USFWS 2018), Eagle Creek and Aurand Run are listed as Group 1 stream systems. Therefore, federally listed mussel species are not known to occur and/or are not expected to occur within Eagle Creek or Aurand Run due to historical data. Since no potentially suitable habitat for the clubshell was observed and Eagle Creek and Aurand Run are listed as Group 1 stream systems per the Ohio Mussel Survey Protocol (ODNR/USFWS 2018), this project is not likely to adversely affect the clubshell. Please refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.

## 5.4 RAYED BEAN

### 5.4.1 Species Status

The USFWS listed the rayed bean as threatened on March 15, 2012, largely due to rapid population declines. Rayed bean-occupied waterways have declined by 73 percent across the range of the species. Reduced population sizes have occurred due to point and nonpoint source pollution, sedimentation, and changes in streambed structure (USFWS 2012).

### 5.4.2 Distribution and Population Status

The rayed bean was historically found across the midwestern and eastern United States, reaching north into Ontario, Canada (USFWS 2012). The rayed bean is known from the upper Mississippi River and upper Tennessee River watersheds and within the Great Lakes drainages (Watters et al. 2009). With records showing presence in at least 115 streams and lakes, the species is now only known from 31 streams and one lake, a 73 percent reduction in occupied waterways. The species has been extirpated from Illinois, Kentucky, and Virginia. Reintroductions have restored the rayed bean to Tennessee and West Virginia after extirpation (USFWS 2012).

### 5.4.3 Life History

The rayed bean is a small (rarely to 1 inch) freshwater mussel species within the genus *Villosa*. This species' shell is smooth and green, yellow-green, or brown with dark, wavy rays. Additionally, this species is sexually dimorphic. Males are elongated while females tend to be smaller and more elliptical (USFWS 2012).



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Reproduction occurs when a female's fertilized egg develops into a microscopic-larvae called glochidia. Through the use of lures, host fish bite the gravid female and the glochidia are released into the host fish's gills. The glochidia attach to the host fish and continue to develop for approximately 30 more days. After development, the glochidia will drop off of the host and continue to develop in the substrates of the waterway.

### **5.4.4 Habitat**

Habitat includes gravel or sandy substrates, especially in areas of thick roots of aquatic plants and increased substrate stability (Butler 2002; Parmalee and Bogan 1998). The rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes occurs in larger rivers and open waterbodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).

### **5.4.5 Habitat Assessment Results**

Potentially suitable habitat for the rayed bean was documented as potentially occurring within Eagle Creek and Aurand Run (USGS named perennial streams). Due to the proposed work in perennial streams, a more detailed mussel reconnaissance survey was conducted by Stantec biologists on July 25 and October 23, 2019 to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR/USFWS 2018), Eagle Creek and Aurand Run are listed as Group 1 stream systems. Therefore, federally listed mussel species are not known to occur and/or are not expected to occur within Eagle Creek or Aurand Run due to historical data. Though potentially suitable habitat for the rayed bean was present within Eagle Creek and/or Aurand Run within the Project area, Eagle Creek and Aurand Run are listed as Group 1 stream systems per the Ohio Mussel Survey Protocol (ODNR/USFWS 2018), and are not expected to contain the presence of federally listed mussel species. Therefore, this project may affect, but is not likely to adversely affect the rayed bean. Please refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.

## **5.5 BALD EAGLE**

### **5.5.1 Species Status**

The bald eagle is the only species of sea eagle native to North America. It was listed as federally endangered on March 11, 1967 and after monitoring of the species showed significant increases in reproduction and distribution through 1994, it was reclassified to threatened on July 12, 1995 (Federal Register 2006). On July 9, 2007, after continuous monitoring and protection, it was determined that the bald eagle had recovered and it was removed (delisted) from the federal



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list of threatened and endangered wildlife (Federal Register 2007). Although they are delisted, the bald eagle is still protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act. As part of the de-listing, the USFWS has developed a de-listing monitoring plan where states will monitor the status of the bald eagle by collecting data on occupied nests for the next 20 years with sampling held every five years which started in 2009. The State of Ohio currently does not have a special status assigned to the bald eagle.

The major declines in populations resulted from loss of habitat, shooting, trapping, and poisoning from environmental contaminants (USFWS 1983). The first declines occurred in the 1800s when eagles and their prey were recreationally hunted and trapped. Carrion treated with poison was used as bait to kill livestock predators and ultimately killed many eagles as well (Federal Register 2006). From the 1950s through mid-1970s, the use of dichloro-diphenyl-trichloroethane (DDT) and other pesticides dramatically reduced bald eagle productivity and reproduction. A breakdown product of DDT, known as DDE, accumulated in the fatty tissue of adult female bald eagles and impaired calcium metabolism necessary for normal egg formation which caused thinning of the eggshell. Many eggs broke during incubation or suffered embryonic mortality which led to the massive decline in the species (Federal Register 2006).

### 5.5.2 Distribution and Population Status

Historically the bald eagle was widespread across much of the United States and Canada (Vuilleumier 2009). Before the bald eagle was listed as an endangered species under the authority of the ESA, the population count of bald eagles in the lower 48 states was approximately 487 breeding pairs in 1963. As of 2007, the population in the lower 48 states had increased from 487 breeding pairs to 9,789 breeding pairs (Federal Register 2007). The recovery of the bald eagle was due to habitat protection and management plans and reduction of the use of pesticides (DDT) occurring in the environment (Federal Register 2007).

By 1979, bald eagles in Ohio had declined to just four breeding pairs (McCormac and Kennedy 2004). In 2004, it was estimated that there were 125 breeding pairs in Ohio (Federal Register 2007) and 352 wintering birds (McCormac and Kennedy 2004). According to the USFWS response letter received for the Project dated September 19, 2019, a known bald eagle nest is located approximately 280 meters (918 feet) due east of the northeast corner of the Project area (Appendix B).

### 5.5.3 Life History

The bald eagle is a large, long lived bird of prey that prefers habitat near large lakes, rivers, and along seacoasts. The average lifespan ranges from 28 to 30 years under normal circumstances. Adults have dark brown bodies with white heads and white tails; the adult plumage is not acquired until age four at the earliest after undergoing a series of color changes (USFWS 1983). It feeds primarily on carrion, especially fish, and also eats birds, mammals, reptiles;



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and often steals fish from osprey (Vuilleumier 2009). Nests are usually built in large trees that may be far from the water and are reused for many years (McCormac and Kennedy 2004).

The entire breeding cycle from initial activity at the nest through the period of fledgling dependency is about six months (USFWS 1983). Adults tend to use the same breeding area each year producing one to three eggs per each nesting attempt. Egg laying begins in late September in southern latitudes and may extend to May in northern latitudes. The time between egg laying and fledging is approximately four months (USFWS 1983). Some bald eagles stay in the vicinity of breeding areas while some migrate up to hundreds of miles to their wintering grounds looking for readily available food supply (Federal Register 2006).

### **5.5.4 Habitat Assessment Results**

Bald eagles are range wide species, and found throughout the U.S. Habitat is present within the Project area throughout forested woodlots and forested riparian areas adjacent to larger streams and rivers (Eagle Creek and Aurand Run). According to the USFWS response received dated September 19, 2019, a known bald eagle nest is located approximately 280 meters (918 feet) due east of the northeast corner of the Project area. Due to the proximity of the nest to the Project area, further bald eagle nest surveys and coordination with the USFWS could be required to determine the effects of the Project on bald eagles.



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## 6.0 STATE LISTED THREATENED AND ENDANGERED SPECIES

Table 2. Summary of Potential Ohio State-Listed Species within the Eagle Creek Dry-Storage Basin Project Area

Common Name	Scientific Name	State Status <sup>1</sup>	Known within one mile of the Project Area? <sup>2</sup>	Habitat Preference	Potential Habitat Observed in Project Area	Impact Assessment
Blue-spotted Salamander	<i>Ambystoma laterale</i>	E	No	The blue spotted salamander utilizes wet prairies and vernal pools for breeding. Outside of the breeding season, they live in damp forested areas, in burrows and under rotting logs. They appear to be limited to areas of sandy soils, such as the Oak Openings Region (ODNR 2019).	No	No potentially suitable habitat was observed within the Project area and no occurrences of this species are known within one mile of the Project area, according to the ODNR. Therefore, no impacts to this species are anticipated
Western Banded Killifish	<i>Fundulus diaphanus menona</i>	E	No	This species is found in areas with an abundance of rooted aquatic vegetation, clear waters, and with substrates of clean sand or organic debris free of silt. They were historically found in natural glacial lakes and slow-moving streams in the northern part of the state. Today they are limited to some tributaries of the Portage River system in	No	Due to the lack of rooted aquatic vegetation observed within the perennial streams and the abundance of agricultural runoff affecting larger streams within the Project area, no potentially suitable habitat was. Additionally, no occurrences of this species are known within one mile of the Project





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				Wood County and in Miller Bluehole of Sandusky County (ODNR 2019).		area, according to the ODNR. Therefore, no impacts to this species are anticipated
Plains Clubtail	<i>Gomphus externus</i>	E	No	This species prefers sandy to muddy streams and rivers with some current and grassy or wooded banks (MNHP 2019).	Yes	Suitable habitat was observed within Aurand Run and Eagle Creek. No occurrences of this species are known within one mile of the Project area, according to the ODNR. Therefore, impacts to this species are possible but not anticipated.
Purple Lilliput	<i>Toxolasma lividus</i>	E	No	This species inhabits fine-particle substrates and also sand, gravel, or cobbles and boulders in riffles or flats immediately above riffles. This species is reported from the headwaters of small to medium sized rivers (NatureServe 2019).	Yes	Potentially suitable habitat for this species was observed within Aurand Run and Eagle Creek. A mussel reconnaissance survey was conducted on July 25 and October 23, 2019 in order to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. No listed mussel species were observed within the Project during the survey. However, further efforts



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						could be warranted to determine the presence or probable absence of listed species within the Project area. Please refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.
Black Sandshell	<i>Ligumia recta</i>	T	No	This species is typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more (NatureServe 2019).	No	No potentially suitable habitat for this species was observed within the Project area. However, due to potentially suitable habitat for freshwater mussels present within the Project area. A mussel reconnaissance survey was conducted on July 25 and October 23, 2019 in order to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. No listed mussel species were observed within the Project during the survey.



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						<p>However, further efforts could be warranted to determine the presence or probable absence of listed species within the Project area. Please refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.</p>
Pondhorn	<i>Unio merus tetralasmus</i>	T	No	<p>This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud (NatureServe 2019).</p>	Yes	<p>Potentially suitable habitat for this species was observed within Aurand Run and Eagle Creek. A mussel reconnaissance survey was conducted on July 25 and October 23, 2019 in order to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. No listed mussel species were observed within the Project during the survey. However, further efforts could be warranted to determine the presence or</p>



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						probable absence of listed species within the Project area. Please refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.
Kirtland's Snake	<i>Clonophis kirtlandii</i>	T	No	The Kirtland's snake ranges throughout the glaciated western half of Ohio and into a few glacial out wash-filled valleys in southwestern Ohio. It is most common in the vicinity of Lucas and Hamilton counties, wherever wet fields remain (ODNR 2019).	Yes	Potentially suitable habitat was observed within the Project area. However, is not known recently to occur in Hancock County and was last observed in Hancock County in 1960 (ODNR 2016). Therefore, it is likely that the Project will not adversely affect this species.
<p><sup>1</sup> E = Endangered; T = Threatened  <sup>2</sup> According to ODNR Office of Real Estate and ONHP (Appendix B).</p>						





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## 7.0 FEDERAL AND STATE LISTED SPECIES DISCUSSION

Stantec conducted a habitat assessment for potentially suitable threatened and endangered species habitat for federally listed and state-listed species within the Project area during site visits completed on July 25 and 26, August 13 through 16, and September 6, 2019. As stated, the Project area primarily consists of mixed early successional/second growth deciduous forest, mixed early successional/second growth riparian forest, fallow field, agricultural row crop field, old field, new field, pasture, industrial land, mining land, and residential lawn habitats, as well as wetland habitats. In addition to the threatened and endangered species habitat assessment, Stantec conducted a wetland and waterbody delineation study for the Project, during this study Stantec identified 42 wetlands and 34 streams within the Project area. Two of these streams (Eagle Creek and Aurand Run) are USGS named perennial streams. Details regarding the wetlands and streams identified within the Project area can be found in the *Eagle Creek Dry-Storage Basin Project, Wetland and Waterbody Delineation Report* (Stantec 2019) dated October 25, 2019.

The USFWS (2018) and ODNR (2016) list the following federally listed and state-listed threatened and endangered species as occurring, or potentially occurring, in Hancock County: Indiana bat – federally endangered; northern long-eared bat - federally threatened; clubshell - federally endangered; rayed bean – federally endangered; blue-spotted salamander - state endangered; western banded killifish - state endangered; plains clubtail - state endangered; purple lilliput - state endangered; black sandshell - state threatened; pondhorn - state threatened; and Kirtland's snake - state threatened. The USFWS (2018) additionally lists the bald eagle (federal species of concern) as occurring or potentially occurring, in Hancock County.

Stantec sent an environmental review and OHNP database search request letter to the ODNR and a request for technical assistance to the USFWS on September 13, 2019 (Appendix B). A USFWS response letter was received from the USFWS on September 19, 2019 and a response letter from the ODNR Office of Real Estate was received on October 24, 2019 (Appendix B).

The ONHP database search results indicated that there are no records of federally listed or state-listed threatened or endangered species occurring within a one-mile radius of the Project area. In addition, the ONHP is unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the Project. However, per the ODNR Office of Real Estate response letter dated October 24, 2019, a known great blue heron rookery is located within a woodlot along Aurand Run adjacent to the Project area. Although the great blue heron is not listed as being threatened or endangered by the state or USFWS as threatened or endangered, nesting great blue herons are protected under the Migratory Bird Treaty Act of 1918. Impacts to great blue heron rookeries can have a significant impact on local populations due to the large number of birds that return each year to the same rookery to nest. The ODNR recommends that construction activities within the rookery be avoided to preserve the rookery. If construction activities within the rookery cannot be avoided, the ODNR



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recommends the rookery be avoided during the nesting season of March 1 through June 31 as to not interfere with nesting birds. In addition, the ODNR recommends a 100 yard no activity buffer be maintained around the rookery during the breeding season as to not interfere with nesting birds.

Additionally, the ODNR lists the Project as being within the range of several federally listed and/or state-listed threatened or endangered mussel species, including the clubshell, rayed bean, purple lilliput, pondhorn, and black sandshell. The ODNR response letter states that, per the Ohio Mussel Survey Protocol (2018), the Project must not have an impact on listed or non-listed freshwater native mussels at the Project site. All Group 2, 3, and 4 streams would require a mussel survey and all Group 1 and unlisted streams would require a mussel reconnaissance survey for Unionid mussels, to determine if mussels are present. Therefore, if in water work is planned in any stream that meets any of the above criteria, the ODNR recommends the applicant provide information to indicate no mussel impacts will occur. If impacts must occur, the ODNR recommends a mussel survey occur within the Project area and a professional malacologist collect and relocate the mussels to a suitable and similar habitat upstream of the Project site.

Potentially suitable habitat for federally and state-listed mussel species were documented as potentially occurring within Eagle Creek and Aurand Run (USGS named perennial streams). However, according to the USFWS and ODNR response letters, no known occurrences of federal or state-listed mussel species occur within the Project area or a one-mile radius of the Project area. However, due to the proposed work in perennial streams, a more detailed mussel reconnaissance survey was conducted by Stantec biologists on July 25 and October 23, 2019 to document the presence or probable absence of freshwater mussels within the Project area and to determine the potential effects the Project could have on federally and/or state-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR/USFWS 2018), Eagle Creek and Aurand Run are listed as Group 1 stream systems. Therefore, though potentially suitable habitat is present, federally listed mussel species are not known to occur and/or are not expected to occur within Eagle Creek or Aurand Run due to historical data. Additionally, though the presence of mussel species was confirmed at various locations throughout Eagle Creek and Aurand Run during the mussel reconnaissance survey, no listed species were observed. Additional efforts could be warranted to confirm presence or probable absence of listed species. Please refer to the findings within the mussel reconnaissance report for details pertaining to the presence or probable absence of freshwater mussel species within the Project area.

Furthermore, the ODNR states that the Project is within the range of the western banded killifish, a state endangered fish species. The ODNR recommends no in-water work in perennial streams take place from April 15 to June 30 in order to reduce impacts to aquatic species and their habitat. If no in-water work is proposed in a perennial stream, the Project is not likely to impact this species or other aquatic species.

In addition to the above responses from the ODNR, the USFWS response letter dated September 19, 2019 the ODNR and USFWS also state that the Project is within the range of the Indiana bat and



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northern long-eared bat. No potential Indiana bat or northern long-eared bat hibernacula were identified within the Project area. However, suitable foraging habitat and potentially suitable summer roosting habitat for the Indiana bat and northern long-eared bat were present within the Project area and multiple potentially suitable Indiana bat/northern long-eared bat roost trees were observed within the Project area. According to the USFWS response letter received September 19, 2019, the presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless presence/absence surveys dictate otherwise. Should the Project area contain trees  $\geq 3$  inches diameter at breast height (dbh), the ODNR and USFWS recommend that trees be saved wherever possible. If no caves or abandoned mines are present and tree clearing activities cannot be avoided, the ODNR and USFWS recommend that removal of trees occur between October 1 and March 31, in order to avoid adverse effects to the Indiana bat and northern long-eared bat. While incidental take of northern long-eared bats from most tree clearing activities is exempt under a 4(d) rule, incidental take of Indiana bats is prohibited without a project-specific exemption. If seasonal tree clearing is not possible, summer mist net surveys (summer surveys) may be required to determine presence or probable absence of Indiana bats within the Project area. If summer surveys determine probable absence of the Indiana bat, the 4(d) rule for the northern long-eared bat could be applied, exempting the Project from incidental take of northern long-eared bats by certain tree clearing activities.

Additionally, the USFWS response letter states that the Project lies within range of the bald eagle. Bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 688-668d, BGEPA), which prohibits, among other things, the killing and disturbance of eagles. Furthermore, the USFWS records indicate the occurrence of a bald eagle nest approximately 280 meters (918 feet) due east of the northeast corner of the Project area. To determine exact distance and current use of the nest, the USFWS recommends further evaluation of the site and surrounding areas to determine presence of the above nest and additional eagle nest locations (if any) within or in proximity to Project area. In order avoid take of bald eagles, the USFWS recommends that no tree clearing activities occur within 660 feet of a bald eagle nest or within any woodlot supporting a nest tree. Furthermore, the USFWS request any work within 660 feet of a nest site or within the direct line-of-sight of a nest be restricted from January 15 through July 31.

The ODNR and USFWS recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation into these features. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act Section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Additionally, all disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native invasive plant establishment is critical in maintaining high quality habitats.





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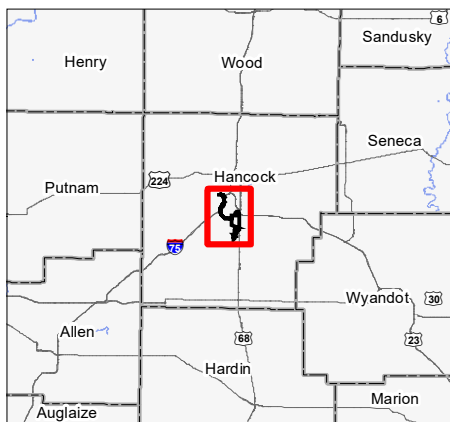
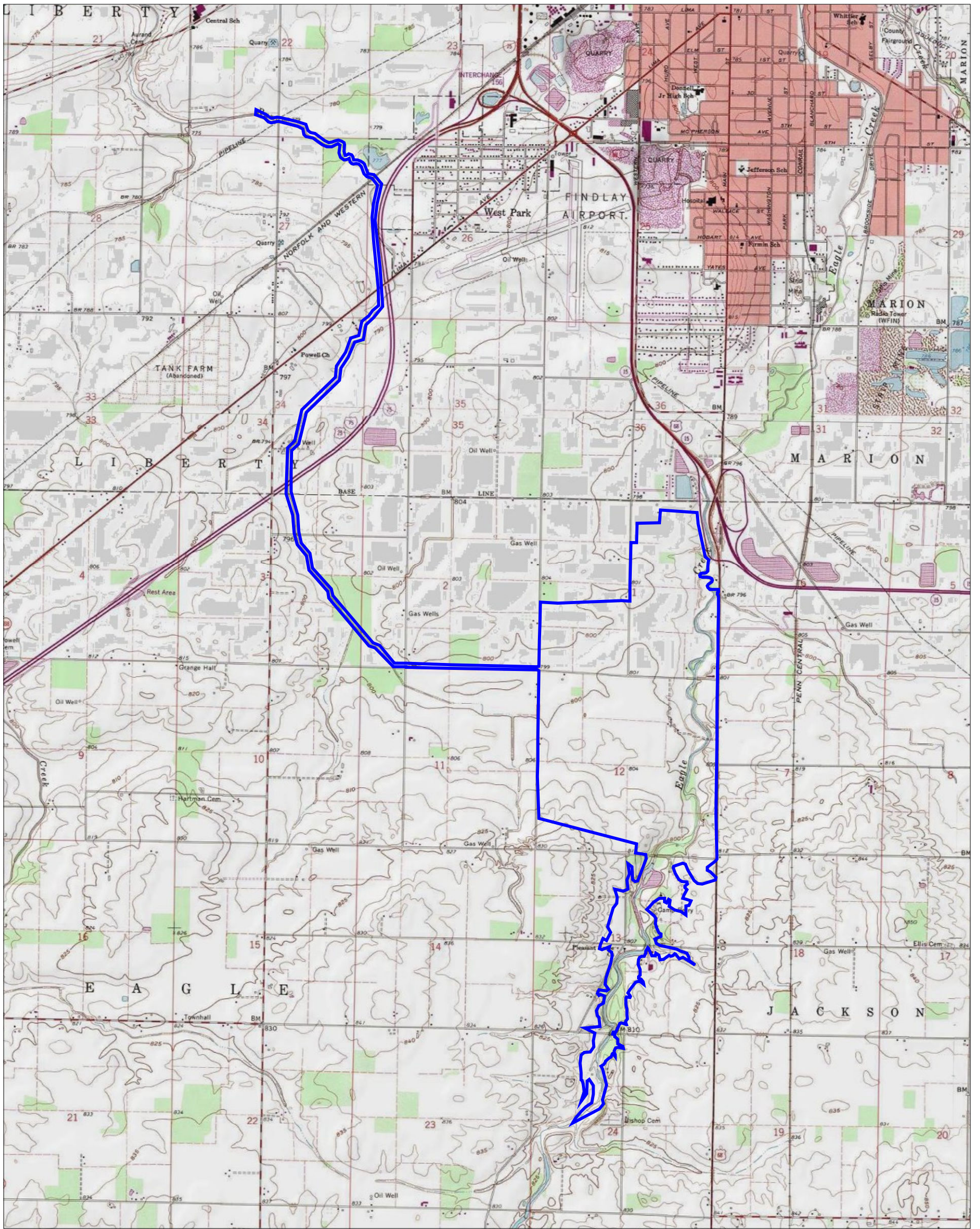


## Appendix A      FIGURES

### FIGURE 1. PROJECT LOCATION MAP



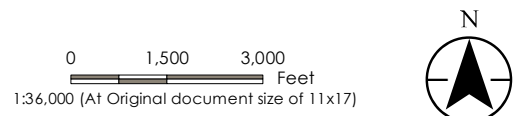




**Legend**  
 Project Area

**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, USGS, NADS  
 3. Background: 7.5' USGS Topographic Quadrangles  
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Figure No. **1**  
 Title **Project Location Map**  
 Client/Project **Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project**  
 Project Location **Hancock County, Ohio**  
 Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
 Independent Review by NTN on 2019-09-18

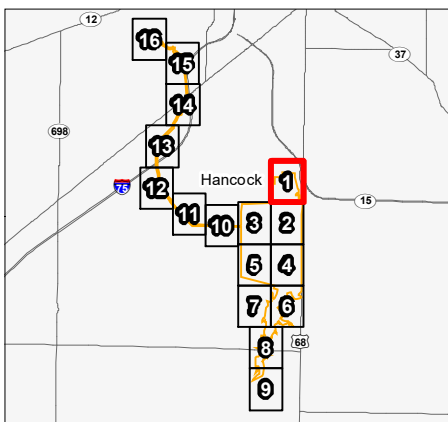
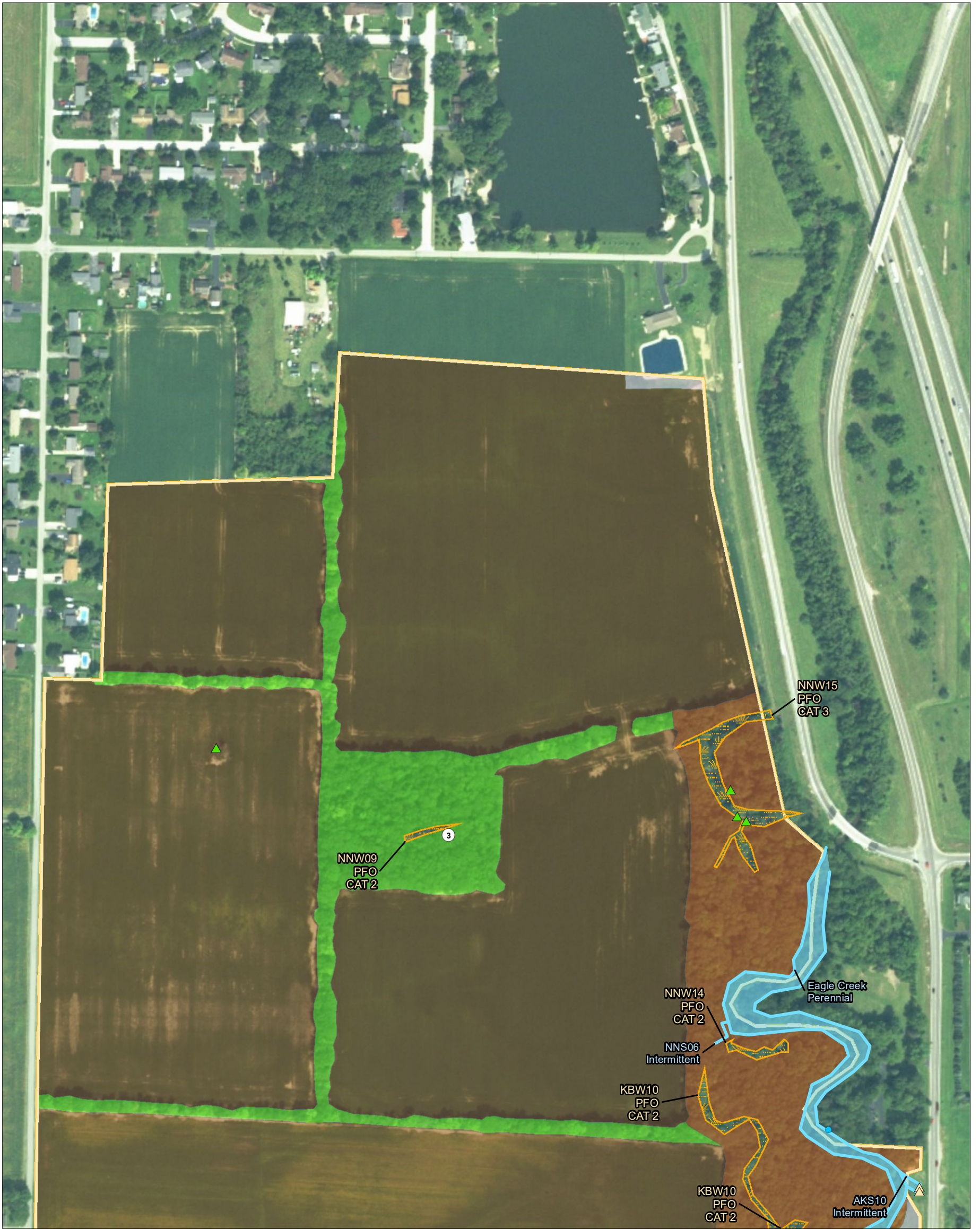




**FIGURE 2. HABITAT ASSESSMENT MAP**







**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, USGS, OGRIP, NADS  
 3. Orthophotography: 2017 NAIP

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**Legend**

- Project Area
- Existing Culvert
- Dam Location
- Seep or Spring
- ~ Upland Drainage Feature
- ~ Field Delineated Waterway
- ~ Field Delineated Waterway Area
- ~ Field Delineated Open Water
- ~ Field Delineated Emergent Wetland
- ~ Field Delineated Forested Wetland
- ~ Field Delineated Scrub-Shrub Wetland
- ~ Field Delineated Unconsolidated Bottom Wetland
- ~ Approximate Wetland
- Photo Location
- ▲ Potential Bat Roost Tree

**Habitat Area**

- Agricultural Row Crop Field
- Fallow Field
- Mixed Early Successional/Second Growth Deciduous Forest
- Mixed Early Successional/Second Growth Riparian Forest
- New Field
- Old Field
- Pasture
- Residential Lawn
- Industrial
- Railroad
- Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

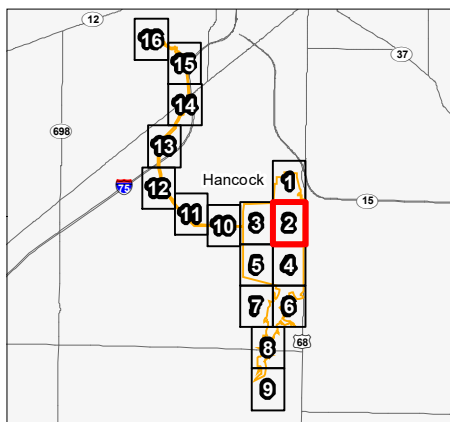
Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

174316204  
 Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
 Independent Review by NTN on 2019-09-18

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**Notes**

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- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
  - Seep or Spring
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Field Delineated Waterway Area
  - Field Delineated Open Water
  - Field Delineated Emergent Wetland
  - Field Delineated Forested Wetland
  - Field Delineated Scrub-Shrub Wetland
  - Field Delineated Unconsolidated Bottom Wetland
  - Approximate Wetland
  - Photo Location
  - ▲ Potential Bat Roost Tree
- Habitat Area**
- Agricultural Row Crop Field
  - Fallow Field
  - Mixed Early Successional/Second Growth Deciduous Forest
  - Mixed Early Successional/Second Growth Riparian Forest
  - New Field
  - Old Field
  - Pasture
  - Residential Lawn
  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

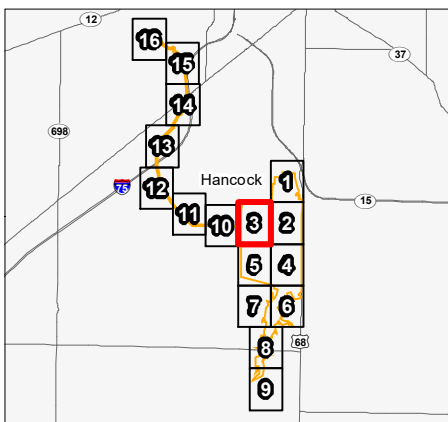
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**Legend**

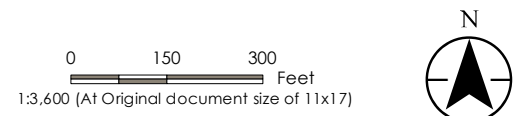
Project Area	Photo Location
Existing Culvert	Potential Bat Roost Tree
Dam Location	<b>Habitat Area</b>
Seep or Spring	Agricultural Row Crop Field
Upland Drainage Feature	Fallow Field
Field Delineated Waterway	Mixed Early Successional/Second Growth Deciduous Forest
Field Delineated Waterway Area	Mixed Early Successional/Second Growth Riparian Forest
Field Delineated Open Water	New Field
Field Delineated Emergent Wetland	Old Field
Field Delineated Forested Wetland	Pasture
Field Delineated Scrub-Shrub Wetland	Residential Lawn
Field Delineated Unconsolidated Bottom Wetland	Industrial
Approximate Wetland	Railroad
	Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

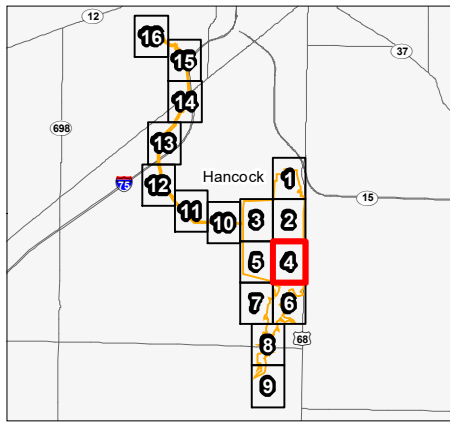
Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

174316204  
 Prepared by JLH on 2019-09-13  
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- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
  - Seep or Spring
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Field Delineated Waterway Area
  - Field Delineated Open Water
  - Field Delineated Emergent Wetland
  - Field Delineated Forested Wetland
  - Field Delineated Scrub-Shrub Wetland
  - Field Delineated Unconsolidated Bottom Wetland
  - Approximate Wetland
  - Photo Location
  - ▲ Potential Bat Roost Tree
- Habitat Area**
- Agricultural Row Crop Field
  - Fallow Field
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  - New Field
  - Old Field
  - Pasture
  - Residential Lawn
  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

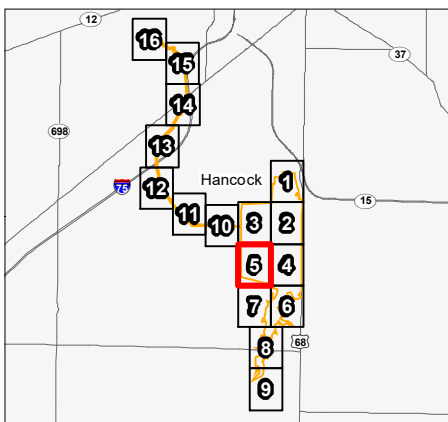
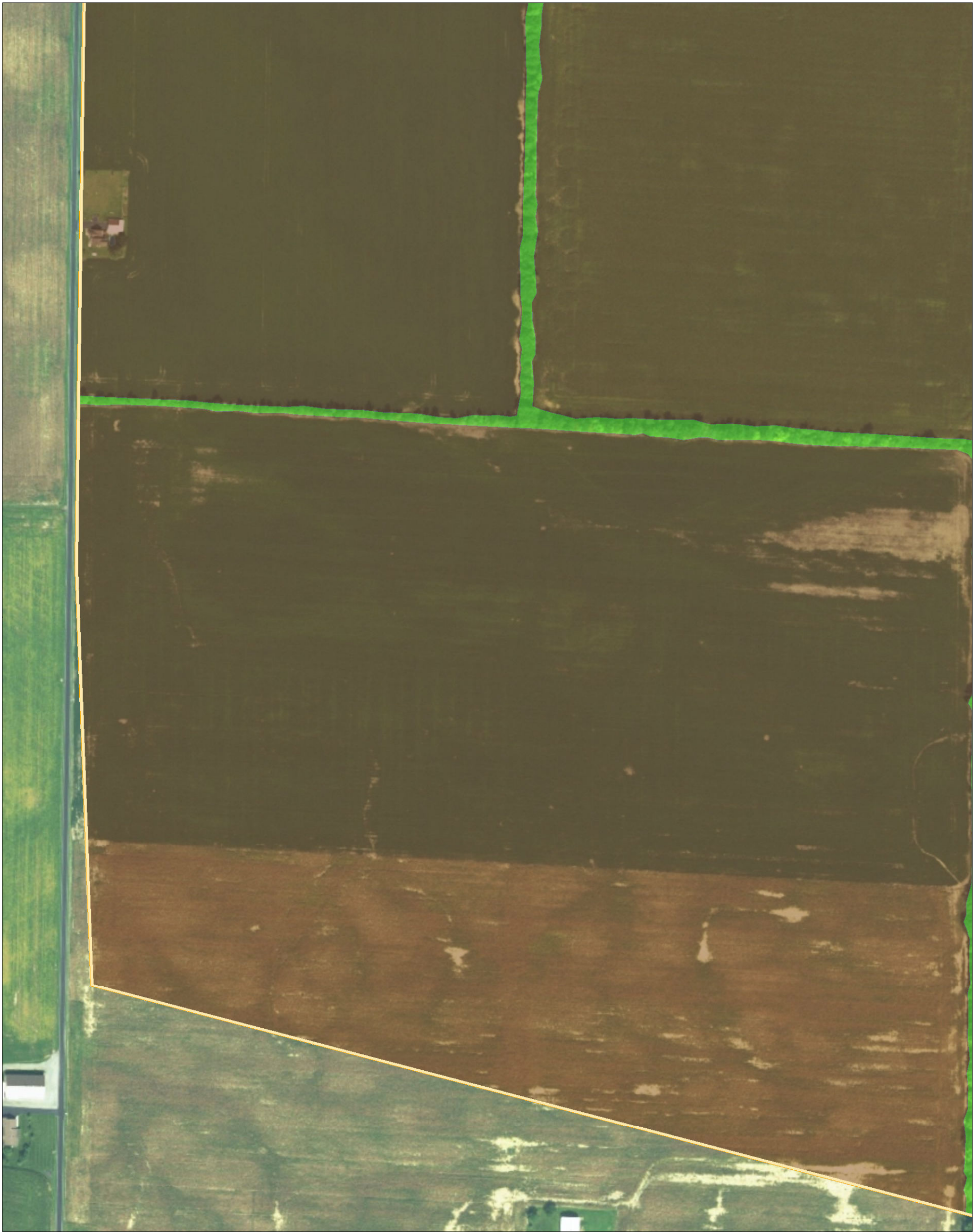
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**Legend**

- Project Area
- Existing Culvert
- Dam Location
- Seep or Spring
- Upland Drainage Feature
- Field Delineated Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
- Field Delineated Emergent Wetland
- Field Delineated Forested Wetland
- Field Delineated Scrub-Shrub Wetland
- Field Delineated Unconsolidated Bottom Wetland
- Approximate Wetland
- Photo Location
- ▲ Potential Bat Roost Tree

**Habitat Area**

- Agricultural Row Crop Field
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- Mixed Early Successional/Second Growth Riparian Forest
- New Field
- Old Field
- Pasture
- Residential Lawn
- Industrial
- Railroad
- Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

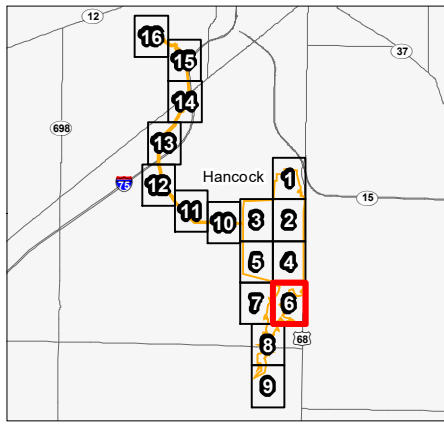
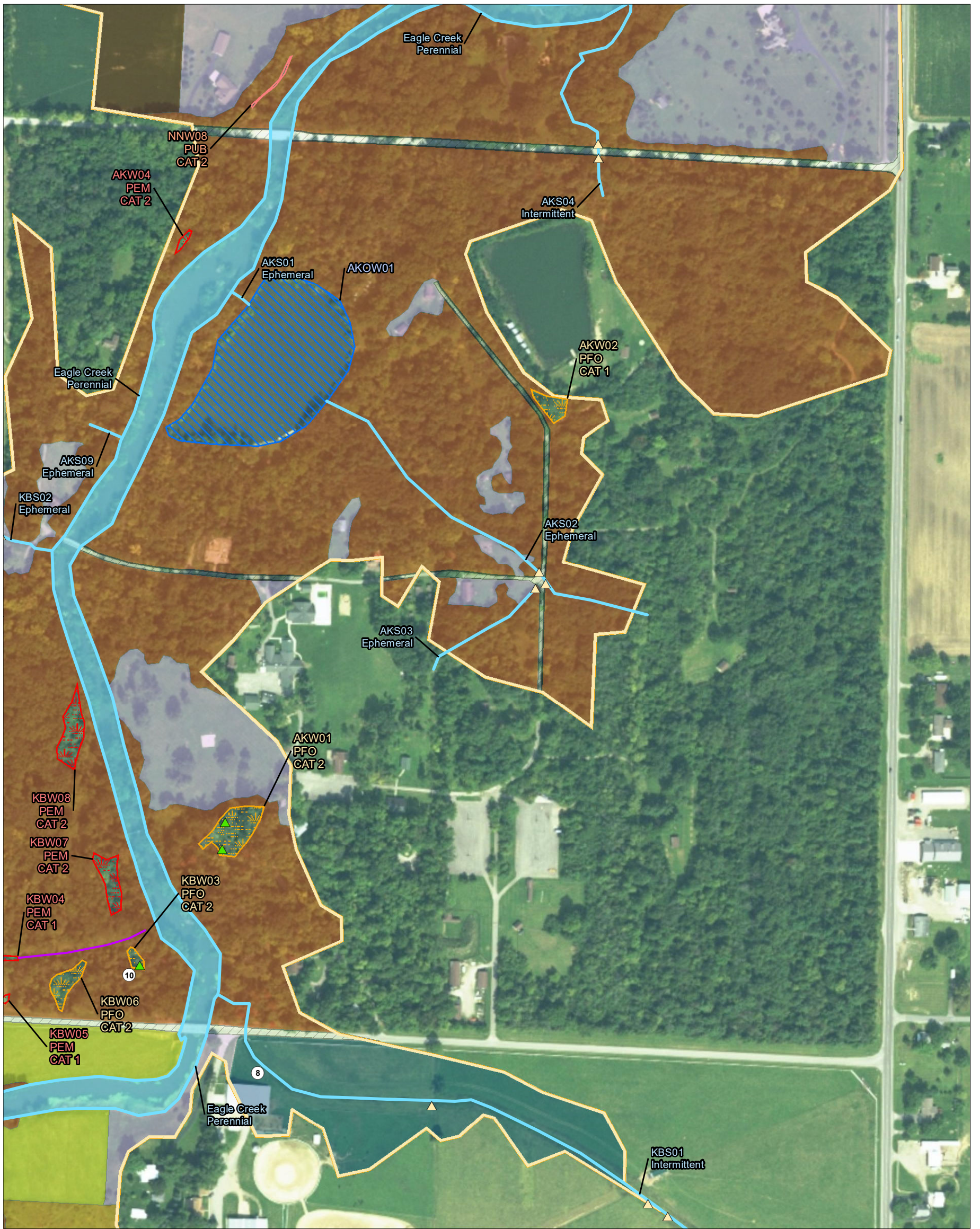
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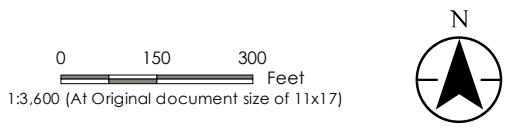
- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
  - Seep or Spring
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Field Delineated Waterway Area
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  - Photo Location
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  - Pasture
  - Residential Lawn
  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

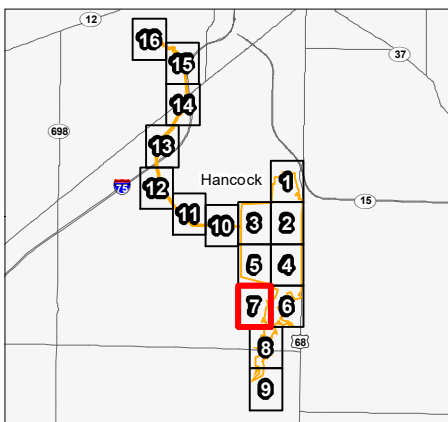
Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
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- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
  - Seep or Spring
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Field Delineated Waterway Area
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  - Field Delineated Emergent Wetland
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  - Residential Lawn
  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

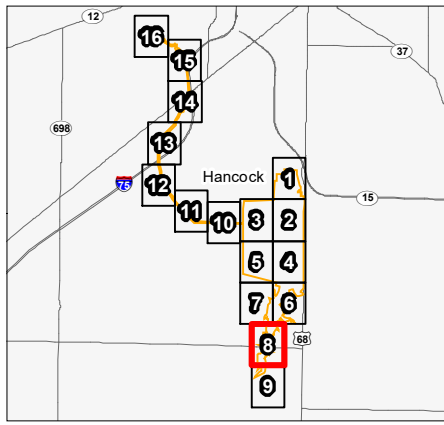
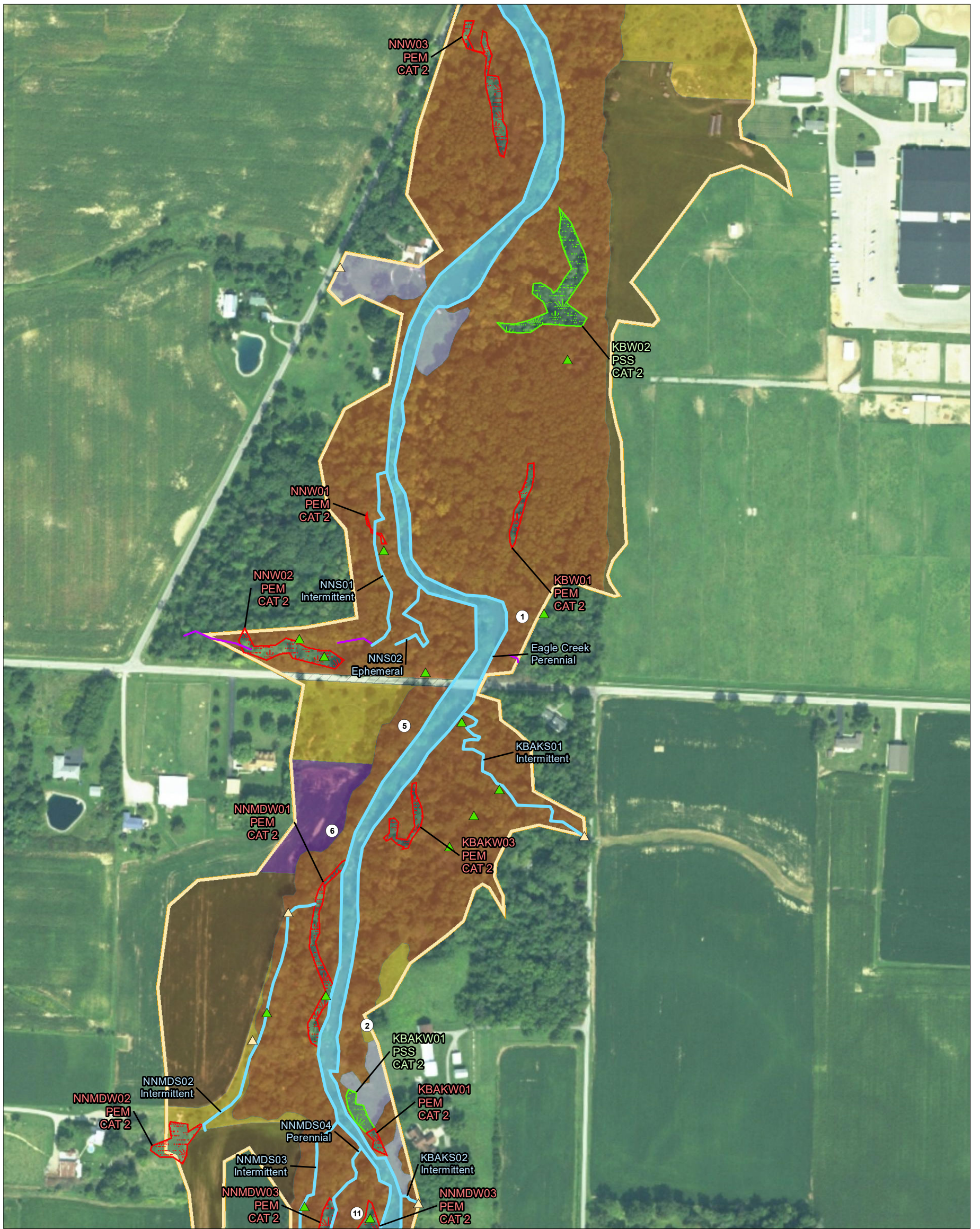
Project Location  
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17431\_6204  
 Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
 Independent Review by NTN on 2019-09-18

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**Legend**

Project Area	Photo Location
Existing Culvert	Potential Bat Roost Tree
Dam Location	<b>Habitat Area</b>
Seep or Spring	Agricultural Row Crop Field
Upland Drainage Feature	Fallow Field
Field Delineated Waterway	Mixed Early Successional/Second Growth Deciduous Forest
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Field Delineated Scrub-Shrub Wetland	Residential Lawn
Field Delineated Unconsolidated Bottom Wetland	Industrial
Approximate Wetland	Railroad
	Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

17431\_6204  
 Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
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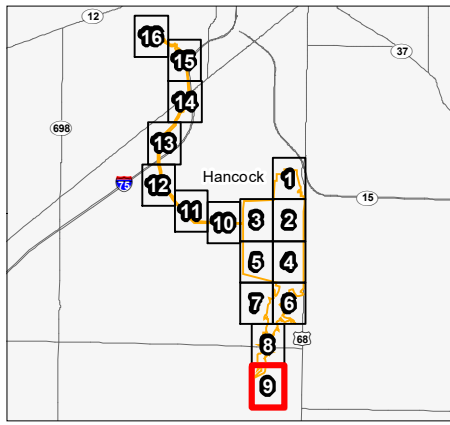
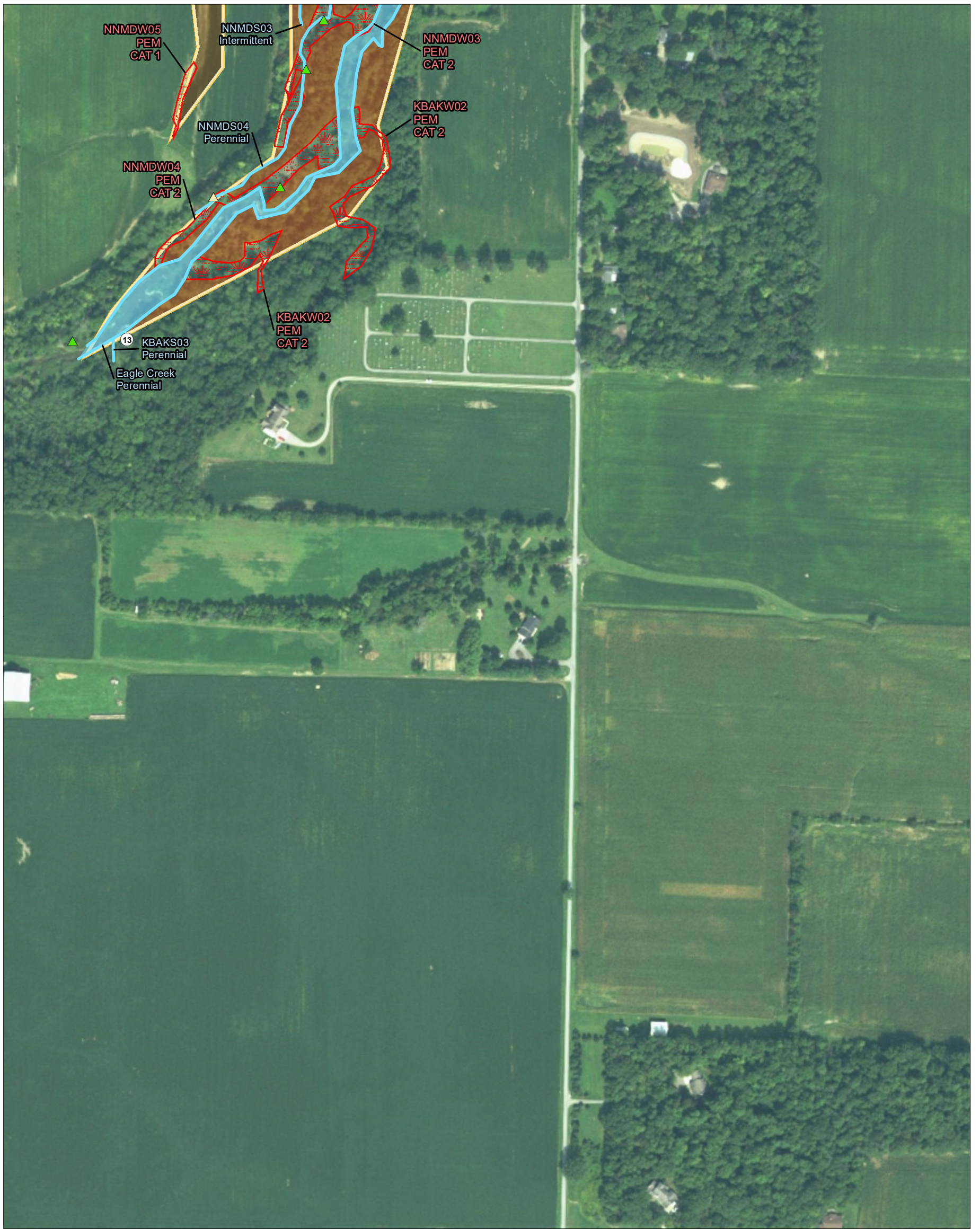
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Page 8 of 16



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**Notes**

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- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
  - Seep or Spring
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Field Delineated Waterway Area
  - Field Delineated Open Water
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  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

---

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

---

Project Location  
 Hancock County, Ohio

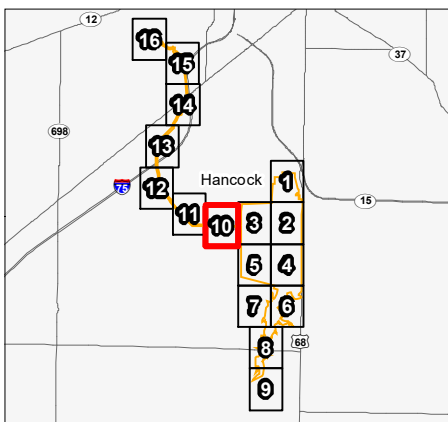
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- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
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  - Approximate Wetland
  - Photo Location
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  - Old Field
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  - Residential Lawn
  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

174316204  
 Prepared by JLH on 2019-09-13  
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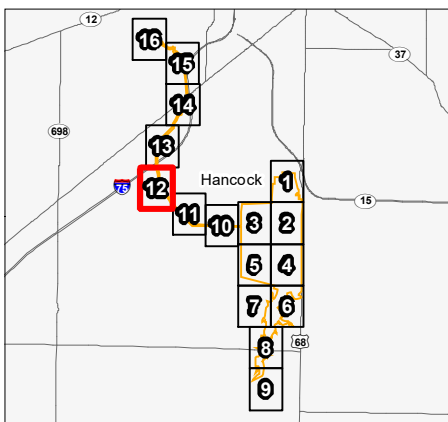
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**Legend**

- Project Area
- Existing Culvert
- Dam Location
- Seep or Spring
- Upland Drainage Feature
- Field Delineated Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
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- Field Delineated Scrub-Shrub Wetland
- Field Delineated Unconsolidated Bottom Wetland
- Approximate Wetland
- Photo Location
- Potential Bat Roost Tree

**Habitat Area**

- Agricultural Row Crop Field
- Fallow Field
- Mixed Early Successional/Second Growth Deciduous Forest
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- New Field
- Old Field
- Pasture
- Residential Lawn
- Industrial
- Railroad
- Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

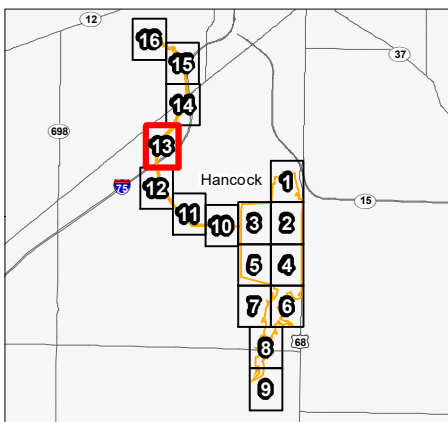
Project Location  
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174316204  
 Prepared by JLH on 2019-09-13  
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**Legend**

- Project Area
- Existing Culvert
- Dam Location
- Seep or Spring
- ~ Upland Drainage Feature
- ~ Field Delineated Waterway
- Field Delineated Waterway Area
- Field Delineated Open Water
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- Field Delineated Unconsolidated Bottom Wetland
- Approximate Wetland
- Photo Location
- ▲ Potential Bat Roost Tree

**Habitat Area**

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- Old Field
- Pasture
- Residential Lawn
- Industrial
- Railroad
- Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

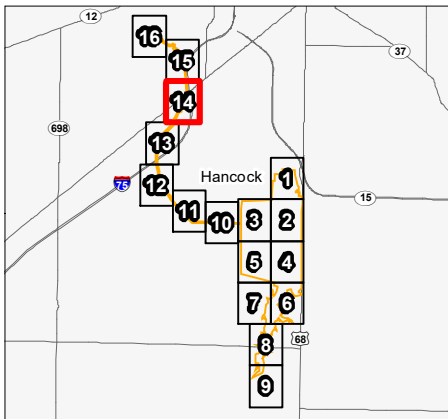
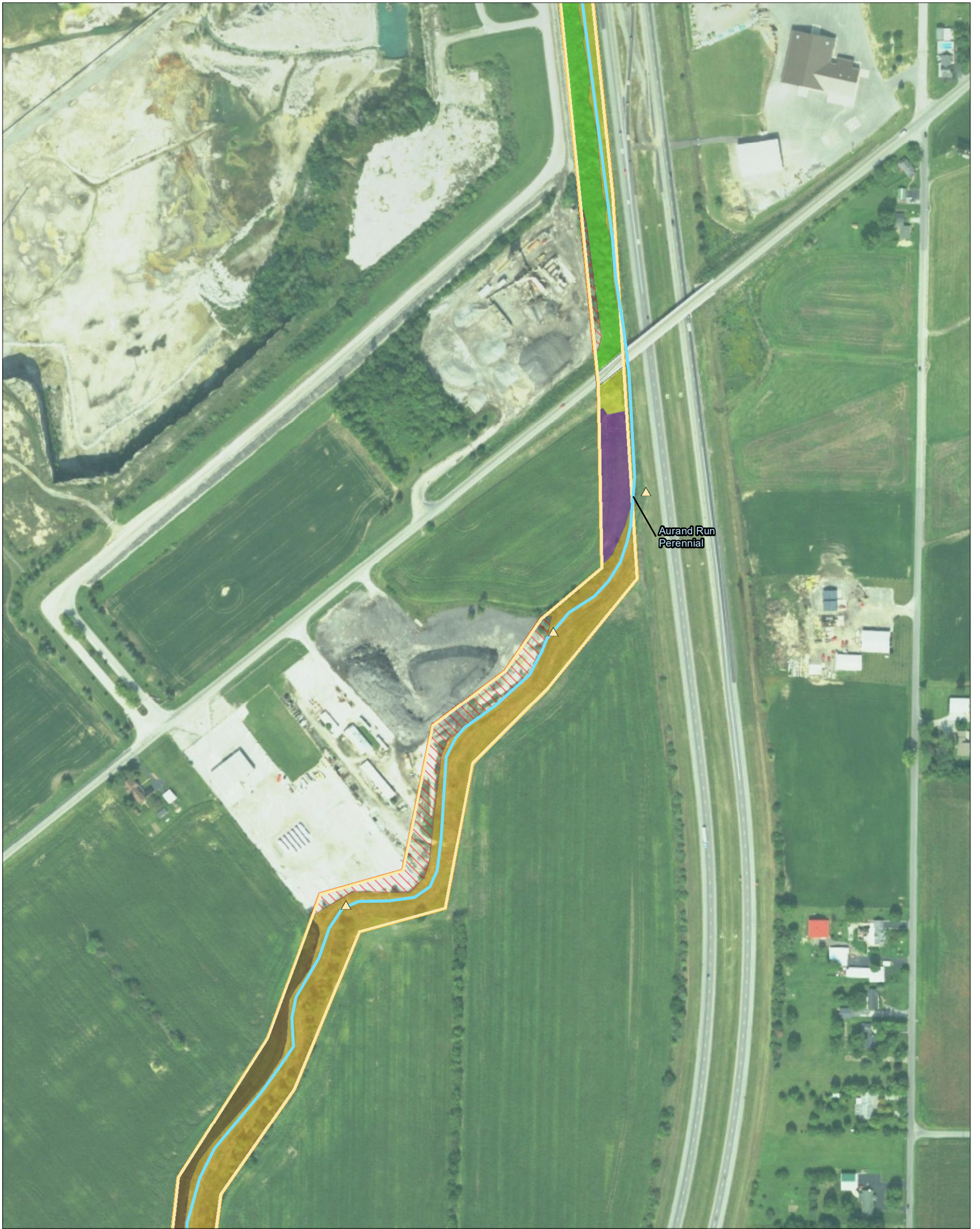
Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

174316204  
 Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
 Independent Review by NTN on 2019-09-18

0 150 300 Feet  
 1:3,600 (At Original document size of 11x17)





**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, USGS, OGRIP, NADS  
 3. Orthophotography: 2017 NAIP  
 Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

- Legend**
- Project Area
  - Existing Culvert
  - Dam Location
  - Seep or Spring
  - Upland Drainage Feature
  - Field Delineated Waterway
  - Field Delineated Waterway Area
  - Field Delineated Open Water
  - Field Delineated Emergent Wetland
  - Field Delineated Forested Wetland
  - Field Delineated Scrub-Shrub Wetland
  - Field Delineated Unconsolidated Bottom Wetland
  - Approximate Wetland
  - Photo Location
  - Potential Bat Roost Tree
  - Habitat Area**
  - Agricultural Row Crop Field
  - Fallow Field
  - Mixed Early Successional/Second Growth Deciduous Forest
  - Mixed Early Successional/Second Growth Riparian Forest
  - New Field
  - Old Field
  - Pasture
  - Residential Lawn
  - Industrial
  - Railroad
  - Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

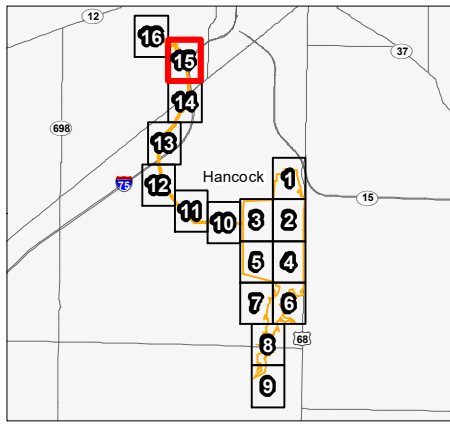
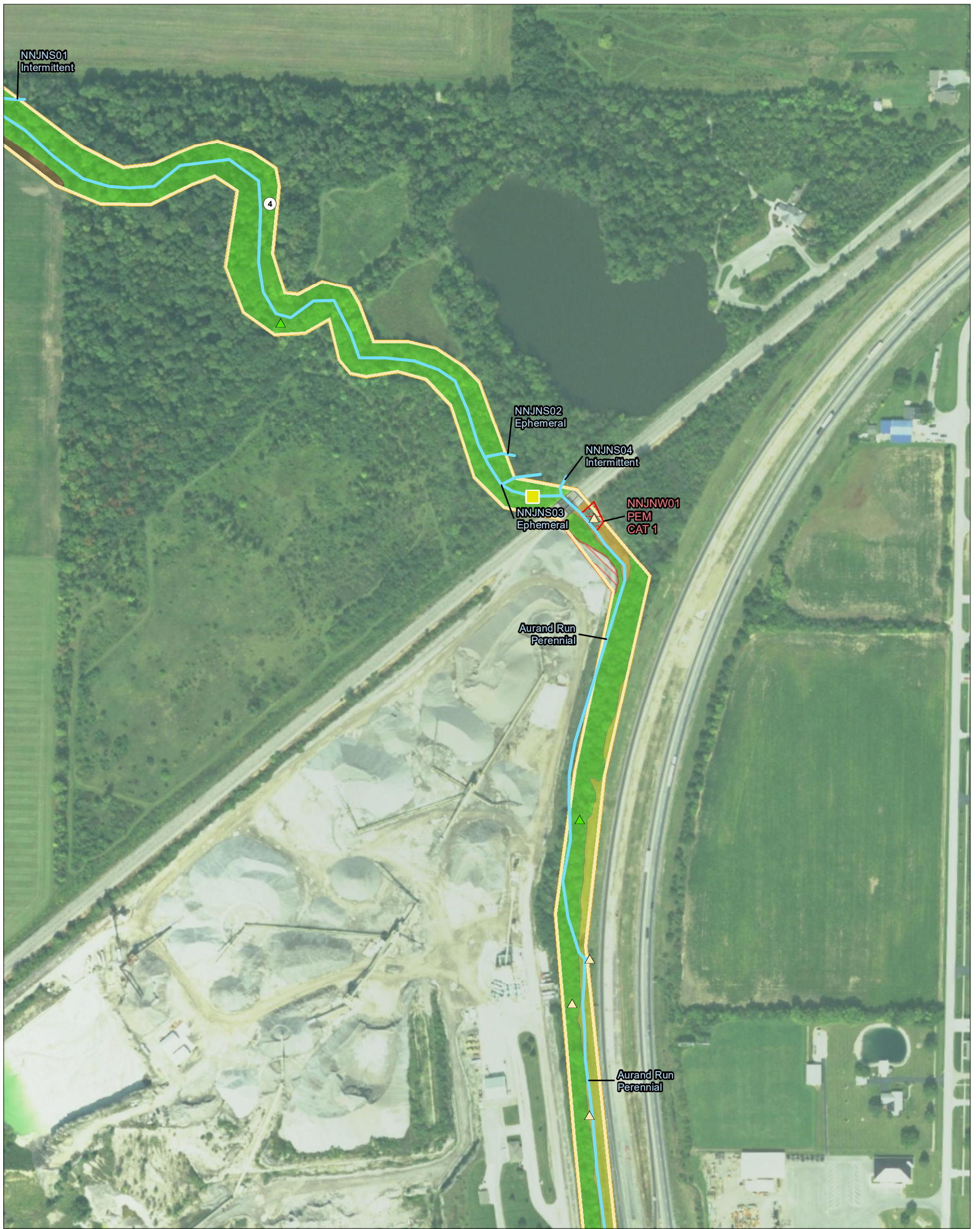
Project Location  
 Hancock County, Ohio

Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
 Independent Review by NTN on 2019-09-18



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**Legend**

- Project Area
- Existing Culvert
- Dam Location
- Seep or Spring
- ~ Upland Drainage Feature
- ~ Field Delineated Waterway
- ~ Field Delineated Waterway Area
- ~ Field Delineated Open Water
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- Pasture
- Residential Lawn
- Industrial
- Railroad
- Existing Roadway

Figure No. **2**  
 Title **Habitat Assessment Map**

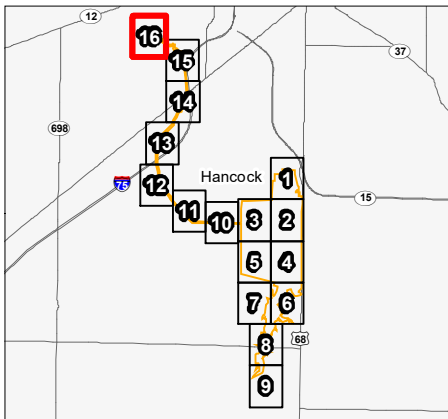
Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio

17431.6204  
 Prepared by JLH on 2019-09-13  
 Technical Review by BAE on 2019-09-16  
 Independent Review by NTN on 2019-09-18

0 150 300 Feet  
 1:3,600 (At Original document size of 11x17)





**Notes**  
 1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet  
 2. Data Sources Include: Stantec, USGS, OGRIP, NADS  
 3. Orthophotography: 2017 NAIP

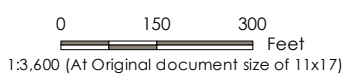
Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

- Legend**
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Figure No. **2**  
 Title **Habitat Assessment Map**

Client/Project  
 Maumee Watershed Conservancy District  
 Eagle Creek Dry-Storage Basin Project

Project Location  
 Hancock County, Ohio





## **Appendix B**      **AGENCY CORRESPONDENCE**





# Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

**Office of Real Estate**  
*John Kessler, Chief*  
2045 Morse Road – Bldg. E-2  
Columbus, OH 43229  
*Phone: (614) 265-6649*  
*Fax: (614) 267-4764*

October 24, 2019

Nathan Noland  
Stantec  
1500 Lake Shore Drive Suite 100  
Columbus OH 43204-3800

**Re:** 19-797; Hancock County Flood Diversion Project

**Project:** The proposed project involves implementing a dry storage detention basin adjacent to Eagle Creek, as well as the diversion of additional flood waters associated with Eagle Creek into Aurand Run, a tributary to the Blanchard River.

**Location:** The proposed project is located in Findlay, Hancock County, Ohio.

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

**Natural Heritage Database:** The Natural Heritage Database has no records at or within a one-mile radius of the project area.

A review of the Ohio Natural Heritage Database indicates there are no other records of state endangered or threatened plants or animals within the project area. There are also no records of state potentially threatened plants, special interest or species of concern animals, or any federally listed species. In addition, we are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests, national wildlife refuges, or other protected natural areas within the project area. The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

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

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

There is a great blue heron rookery along the proposed diversion ditch within the woodlot centered around the following coordinates: 83°41'23"W; 40°59'7"N. Nesting great blue herons are protected under the Migratory Bird Treaty Act of 1918. Impacts to great blue heron rookeries can have a significant impact on a local population due to the large number of birds that return each year to the same rookery to nest. Rookeries often include a certain set of characteristics that are not easily found elsewhere. The DOW recommends that construction activity within the rookery be avoided to preserve the rookery. If construction within the rookery cannot be avoided, the DOW recommends at the very least, the rookery be avoided during the nesting season of March 1 through June 31 as to not interfere with nesting birds. In addition, the DOW recommends a 100 yard no activity buffer be maintained around the rookery during the breeding season as to not interfere with nesting birds.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the clubshell (*Pleurobema clava*), a state and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federal endangered mussel species, the purple lilliput (*Toxolasma lividus*), a state endangered mussel, the pondhorn (*Uniomorus tentalasmus*), a state threatened mussel, and the black sandshell (*Ligumia recta*), a state threatened mussel.

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2018), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 10 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts

will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2018) can be found at:

<http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/licenses%20&%20permits/OH%20Mussel%20Survey%20Protocol.pdf>

The project is within the range of the western banded killifish (*Fundulus diaphanus menona*), a state endangered fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact this or other aquatic species.

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

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

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

[http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List\\_8\\_16.pdf](http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf)

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or [Sarah.Tebbe@dnr.state.oh.us](mailto:Sarah.Tebbe@dnr.state.oh.us) if you have questions about these comments or need additional information.

John Kessler  
Environmental Services Administrator

**From:** susan\_zimmermann@fws.gov  
**To:** [Noland, Nathan](mailto:Noland.Nathan); [Megan Seymour](mailto:Megan.Seymour)  
**Cc:** [nathan.reardon@dnr.state.oh.us](mailto:nathan.reardon@dnr.state.oh.us); [kate.parsons@dnr.state.oh.us](mailto:kate.parsons@dnr.state.oh.us)  
**Subject:** Hancock County Flood Diversion Project (MWCD)  
**Date:** Thursday, September 19, 2019 2:07:51 PM  
**Attachments:** [HancockCoFloodDiversionEagle.pdf](#)

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UNITED STATES DEPARTMENT OF THE INTERIOR  
U.S. Fish and Wildlife Service  
Ecological Services Office  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / Fax (614) 416-8994



TAILS# 03E15000-2019-TA-1963

Dear Mr. Noland,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

**FEDERALLY LISTED SPECIES COMMENTS:** All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags =3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

Should the proposed site contain trees  $\geq 3$  inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees  $\geq 3$  inches dbh cannot be avoided, we recommend that removal of any trees  $\geq 3$  inches dbh only occur between October 1 and March 31. Seasonal clearing is being recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the project area during the summer. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

**BALD EAGLE COMMENTS:** The project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*). Bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, BGEPA), which prohibits, among other things, the killing and disturbance of eagles. To evaluate your project's potential to affect bald eagles, please visit: <https://www.fws.gov/midwest/eagle/permits/baeatake/index.html>.

Our records indicate that a bald eagle nest is located within approximately 280 m due east of the northeast corner of the project area (*see attached map for approximate nest location*). Our database of nest locations may not be complete because new nests are built each year, and nesting pairs sometimes build multiple nests. Therefore, we recommend that the site and surrounding area be evaluated to determine if any additional eagle nests are present and to validate the actual nest location.

In order to avoid take of bald eagles, we recommend that no tree clearing occur within 660 feet of a bald eagle nest or within any woodlot supporting a nest tree. Further we request that work within 660 feet of a nest or within the direct line-of-site of a nest be restricted from January 15 through July 31. This will prevent disturbance of the eagles from the egg-laying period until the young fledge, which encompasses their most vulnerable times. Once site specific eagle nest information is available, we can work with you to determine the appropriate buffer from the nest(s) relative to your proposed activities.

If these recommendations cannot be implemented and take of bald eagles is likely, a bald eagle take permit for this project may be necessary. Further information on eagle take permits can be found at: <https://www.fws.gov/midwest/eagle/permits/baeatake/index.html>.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is

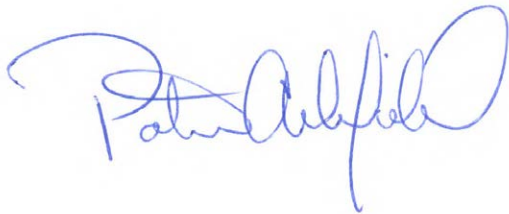
completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at [john.kessler@dnr.state.oh.us](mailto:john.kessler@dnr.state.oh.us).

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

Sincerely,



Patrice M. Ashfield  
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW  
Kate Parsons, ODNR-DOW





LIBERTY

MARION

Hancock

EAGLE

JACKSON

## Appendix C      SITE PHOTOGRAPHS





Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 1. Representative view of mixed early successional/second growth riparian forest habitat. Photograph taken facing north.



Photo Location 2. Representative view of old field habitat. Photograph taken facing north.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 2. Representative view of residential lawn habitat. Photograph taken facing south.



Photo Location 3. Representative view of mixed early successional/second growth deciduous forest. Photograph taken facing south.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 4. View of mixed early successional/second growth deciduous forest.  
Photograph taken facing south.



Photo Location 5. View of mixed early successional/second growth riparian forest habitat.  
Photograph taken facing north.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 6. View of fallow agricultural field. Photograph taken facing northwest.



Photo Location 7. Representative view of agricultural row crop field. Photograph taken facing north.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 8. Representative view of pasture habitat. Photograph taken facing southeast.



Photo Location 9. Representative view of new field habitat. Photograph taken facing north.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 10. Representative view of potential bat roost tree.



Photo Location 11. Representative view of potential bat roost tree.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 12. Representative view of potential bat roost tree.



Photo Location 13. View of Eagle Creek. Photograph taken facing upstream/south.



Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 13. View of Eagle Creek. Photograph taken facing downstream/north.



Photo Location 14. View of Aurand Run. Photograph taken facing upstream/south.

Maumee Watershed Conservancy District  
Eagle Creek Dry-Storage Basin Project  
Hancock County, Ohio



Photo Location 14. View of Aurand Run. Photograph taken facing downstream/north.