APPENDIX B: Environmental Overview

Environmental Overview (EO) – KY 716 Corridor Study, Boyd County, Kentucky

KYTC Item No. 9-180.00

September 8, 2023

Prepared for:

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Abbreviations

ASBESTOS	Asbestos Notification System
AST	Above Ground Storage Tanks
ECHO	Enforcement & Compliance History Information
EDR	Environmental Data Resources
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EO	Environmental Overview
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
FEMA	Federal Emergency Management Agency
FINDS	Facility Index System/Facility Registry System
HMIRS	Hazardous Materials Information Reporting System
IPaC	Information for Planning and Consultation
KDFWR	Kentucky Department of Fish and Wildlife Resources
KDOW	Kentucky Division of Water
KYTC	Kentucky Transportation Cabinet
LEAD	Environmental Lead Program Report Tracking Database
LWCF	Land and Water Conservation Fund
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFHL	National Flood Hazard Layer
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory

OSA	Kentucky Office of State Archaeology
OKNP	Office of Kentucky State Nature Preserve
PADUS	Protected Areas Database of the United States
PSTEAF	Petroleum Storage Tank Environmental Assurance Fund
RCRA	Resource Conservation Recovery Act
RGA HWS	Recovered Government Archive State Hazardous Waste Facilities List
SHWS	State Hazardous Waste Sites
SSTS	Section 7 Tracking Systems
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tanks

Executive Summary

This Environmental Overview (EO) has been prepared to support the corridor study of KY 716 between the intersection with US 60 (MP 0.000) and the intersection with KY 3293 (MP 0.565) near Summit in Boyd County, Kentucky for the Kentucky Transportation Cabinet (KYTC). The objective of this EO is to identify environmental resources of significance, potential jurisdictional features, and other environmental areas of concern that need to be considered. Natural and human environmental resources within the study area were identified from secondary source information including available electronic databases, data files, and published data that may be publicly available or restricted to subject matter experts. Based on this information, key environmental features within the study area include:

USGS Streams and Wetlands: There are zero NWI wetland features and zero NHD streams mapped within the study area. No Kentucky Division of Water (KDOW) outstanding state resource, 303(d) list, 305(b) list waters were identified within the study area. (Figure 2)

FEMA NFHL Floodplain & Floodway: No 100-Year floodplains or FEMA designated floodway areas were identified within the study area. (Figure 2)

Threatened and Endangered Species: According to U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC), there are 11 federally listed endangered species, one federally listed threatened species, and one federally listed candidate species. All have the potential to occur within the study area; however, freshwater mussels typically require perennial waters for their habitat. Some forested areas are present that could provide suitable bat habitat. (Figure 4; Attachment 1a-e)

Groundwater: The EDR Well Report and a search of the University of Kentucky Groundwater Data Repository found no public water supply system and 50 water well records were identified, 33 of which were marked as Active including: Federal Correctional Institute – Ashland FCI (17), Borders Summitt Market BP (11), Lewis Grocery (4), and Domestic Residence – Matt Davis (1). Only 11 of the listed water wells were within 0.125-0.25 mile of the project study area. Subsurface flow is assumed to flow generally south. Although not within the project study boundary, approximately 0.10-0.25 mile north is designated by KDOW as a Source Water Protection Area for Russell Water Company and Ashland Water Works; implementation of best management practices (BMPs) is recommended if disturbance in the vicinity of surface waters occurs. (Figure 5)

Karst: Based on information from the USGS US Karst Occurrence Map, the majority of the study area is underlain by bedrock with limited or no potential for karst development. The KyGovMaps Open Data Portal identified zero sinkhole polygons within the study area. The OKNP report found no record of caves or sinkholes within the study area. The KSS database showed no caves within the 5km buffered project. KSS

identified the nearest known cave as one approximately 25 miles away in the adjoining Carter County. (Attachments 1e, 1f, & 3)

Farmland: Approximately 24.2 acres or 61% of the soils in the study area are identified as 'Prime Farmland'. 'Prime Farmland if drained' constituted 4.32 acres, or 11% of the study area. Approximately 2.54 acres or 6% are 'Farmlands of Statewide Import'. 'Non-Prime Farmland' totals 8.47 acres or 12% of the soils in the study area. (Figure 3; Attachment 5)

Hazardous Materials Concerns: The EDR report revealed two (2) EDR Hist Auto sites (Borders Summit Market and Speedway SuperAmerica) within approximately 0.125 mile of the project study area. Within approximately 0.25 mile of the study area, the EDR report identified five (5) database records for UST sites, two (2) aboveground storage tank sites, and four (4) RCRA NonGen/NLR sites [Dollar General Store, Family Dollar, Speedway, KY National Guard-OM Shop]. Potential hazardous materials concerns exist throughout the study area. For additional information on specific hazardous materials concerns in and around the surrounding study area, please reference the full EDR report (provided separately). (Attachment 7)

Oil and Gas Wells: According to both the EDR and KGS reports, 19 oil and gas wells were identified. Only three (3) were located within approximately 0.25-0.50 mile of the project study area. The 12 oil and gas wells listed as "Gas producer" or "Combined oil and gas producer" named the original operators as American Rolling Mill Co (4), Ashland Brick & Tile Co -Summit (1), Unknown (3), Summit Oil & Gas Co (1), Ohio Southern Gas Corp (2), and Kentucky Ohio Gas Co (1). (Figure 5; Attachment 7)

Archaeological, Cultural and Historic Resources: Although a couple archaeological surveys areas were previously performed in the area, The Kentucky Office of State Archaeology (OSA) preliminary records review indicated no previously recorded archaeological sites within the project study area or its additional 30-meter buffer. A records review of Kentucky Heritage Council (KHC) data revealed that there are 14 previously recorded historic properties located within or adjacent to the study area (BD 63-65, 69-75 and 362-365); Table 1 provides a summary of each property's eligibility status. Two properties, the Federal Corrections Institute: Ashland (BD 63) and Summitt Missionary Baptist Church (BD 363) have been previously determined eligible for listing in the National Register of Historic Places (NRHP). Two historic properties that are associated with the Federal Corrections Institute: Ashland are located just outside of the study area (BD 64 and 65) and have been determined ineligible for listing in the NRHP. The ten remaining previously recorded properties (BD 69-75, 362, 364 and 365) are residential structures. KHC survey form notations indicated seven of these historic properties (BD 65, 69, 72, 74, 362, 364 and 365) have been previously determined ineligible for listing in the NRHP by the KHC. The NRHP eligibility status of three previously recorded properties (BD 70, 73 and 75) is currently undetermined by the KHC. Two of these properties have been demolished (BD 71 and 362). Historic USGS aerial photography and topographic maps were also consulted. According to the 1976 photorevised USGS Ashland, KY 7.5-minute topographic

quadrangle, there are 48 buildings depicted, 44 of which are also visible on the 1971 USGS aerial photograph. Ten of these buildings appear to be demolished (Figure 6; Attachment 4).

Table 1. Historic Architecture Property Eligibility Status

Property Name	Status
BD 63	**NRHP Eligible**
BD 64	Ineligible
BD 65	Ineligible *
BD 69	Ineligible*
BD 70	**Undetermined - Residential**
BD 71	[Demolished]
BD 72	Ineligible*
BD 73	**Undetermined – Residential**
BD 74	Ineligible*
BD 75	**Undetermined - Residential**
BD 362	Ineligible* [Demolished]
BD 363	**NRHP Eligible**
BD 364	Ineligible*
BD 365	Ineligible*

* As notated on KHC survey forms

Community Resources: Community resources and sensitive noise receptors in the study area include numerous houses and residential neighborhoods. Two houses of worship were identified within the study area. Although the school building falls outside the study area extent, Summitt Elementary has two primary entrances on this segment of KY 716. Armco Park encompasses the northeast end of the study area on the north side of the intersection of KY 716 and US 60. A Kentucky State Police Post is located adjacent to the park's eastern boundary, along US 60. In addition to Armco Park, the OKNP data request also identified Fannin Park as a managed area within 1 mile of the study area. No electric transmission lines, electric substations, or natural gas pipelines were identified in the study area. (Figure 5)

Section 4(f) and Section 6(f) Resources: Armco Park is a 4(f) public recreational park. It is also a 6(f) protected resource because the Boyd County Fiscal Court received Land and Water Conservation Fund (LWCF) funds in 2002 for a development project and the Kentucky Department for Local Government also received LWCF funds in 2015 for development of an outdoor recreational complex (Trust for Public Land 2023). The playground at Summit Elementary School may also serve as a 4(f) public recreational facility. (Figure 5)

1.0 ENVIRONMENTAL OVERVIEW

Stantec Consulting Services has prepared this Environmental Overview (EO) as part of the KY 716 Corridor Study for the Kentucky Transportation Cabinet (KYTC). This overview identifies known natural and human features which occur within the study area that should be considered during the development and advancement of improvement concepts, as well as the avoidance or minimization of impacts.

1.1 PROJECT DESCRIPTION

This Environmental Overview (EO) has been prepared as part of the Kentucky Transportation Cabinet's (KYTC) corridor study of KY 716 between the intersection with US 60 and the intersection with KY 3293 near Summit in Boyd County, Kentucky (Figure 1). The objective of the study is to identify and evaluate potential improvement options to improve safety and decrease congestion on KY 716 in the study area.

The objective of this EO is to identify environmental resources of significance, potential jurisdictional features, and other environmental areas of concern that need to be considered in development of improvement concepts. Natural and human environmental resources within the study area were identified from secondary source information including available electronic databases, data files, and published data that may be publicly available or restricted to subject matter experts. Please recognize and adhere to restrictions for any report Attachments identified within as for "Internal Use Only".

1.2 RECORDS REVIEW

A review of agency databases and secondary sources was conducted to document known environmental resources including, but not limited to:

- Ecological resources in Attachments 1-7:
    - IPaC threatened and endangered species list
    - Known northern long-eared bat habitat in Kentucky
    - Known Indiana bat habitat in Kentucky
    - Kentucky Department of Fish and Wildlife Resources state species list
    - Office of Kentucky Nature Preserves Kentucky Biological Assessment Tool database report
    - Kentucky Speleological Society caves and sinkholes database report
    - Kentucky Karst Potential Map
    - Kentucky Heritage Council report

  - Kentucky NAAQs Air Quality map
  - NRCS Soils Report for Boyd County in Kentucky (**Figures 3**)
  - EDR DataMap research report
  - EDR topographic maps
  - Kentucky Office of State Archaeology preliminary records review
  - NWI and USGS water data map for Kentucky (**Figure 2**)
- Project Overview Map (**Figure 1**)
- FEMA National Flood Hazard Layer (NFHL) Data, USGS NHD Streams, and USFWS National Wetland Inventory (NWI) (**Figure 2**)
- Farmland Classification of Soils (**Figure 3**)
- NRCS Hydric Soils (**Figure 3**)
- Potential Bat Habitat (**Figure 4**)
- Human Environment (**Figure 5**)
- KGS Oil and Gas Wells (**Figure 5**)
- Hazardous Materials records (**Figure 5**)
- Cultural and Historic (**Figure 6**)
- **Table 2** below provides a summary of the features that were identified within the study area. Project location and aerial features are identified in **Figure 1**. This information provides an overview of resources of significance within the study area as well as other environmental issues of potential concern. More detailed environmental studies may be required as individual actions are further developed in accordance with the National Environmental Policy Act (NEPA).

Table 2. Environmental Resources/Features in KY 716 Corridor Study Area, Boyd County, Kentucky

Environmental Category	Resource/Feature	Source/Information
USGS Streams	There are zero NHD mapped streams within the study area. The Kentucky Watershed Viewer shows this part of this project falls within the Shope Creek-East Fork Little Sandy River watershed (HUC12: 050901040404). No KDOW outstanding state resource waters, 303(d) list waters, or 305(b) list waters were identified. Please refer to Figure 2 for more information.	Source: KDOW Special Waters tables, KDOW 305(b) and 303(d) tables (2016), USFWS NWI, USGS National Map, KY Water Health Portal
Other Streams	Surface streams are potentially present in the study area. These would likely consist of small headwater streams or springs and roadside drainage features not indicated on traditional mapping. Field reconnaissance would be required. Please refer to Figure 2 for more information.	Source: USGS maps, ESRI topo maps
Wetlands	There are no NRCS Wetland Reserve Program lands within the study area. No NWI mapped wetlands were identified within the study area. Please refer to Figure 2 for more information.	Source: USFWS NWI, USGS National Map
Lakes/Ponds	The NWI dataset indicated no freshwater pond features or lakes within the study area. Please refer to Figure 2 for more information.	Source: USFWS NWI, USGS National Map

USWFS Species List	The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) resource list indicated the following twelve species were of concern for the study area: • Northern long-eared bat (*Myotis septentrionalis*) - Endangered • Gray bat (*Myotis grisescens*) - Endangered • Indiana bat (*Myotis sodalis*) - Endangered • Clubshell (*Pleurobema clava*) - Endangered • Fanshell (*Cyprogenia stegaria*) - Endangered • Northern riffleshell (*Epioblasma rangiana*)- Endangered • Orangefoot pimpleback (*Plethobasus cooperianus*) - Endangered • Pink mucket (*Lampsilis abrupta*) - Endangered • Rabbitsfoot (*Quadrula cylindrica cylindrica*)- Threatened • Ring pink (*Obovaria retusa*) - Endangered • Rough pigtoe (*Pleurobema plenum*) - Endangered • Monarch Butterfly (*Danaus plexippus*) - Candidate Please refer to Figure 4 and Attachment 1a for more information regarding species data.	Source: USFWS IPaC Trust Resource Report (2023), USFWS Kentucky Ecological Field Office (2019).
KDFWR Species List	Kentucky Department of Fish and Wildlife Resources (KDFWR) lists 31 additional State Threatened, Endangered, and Special Concern Species as occurring (either recently or historically) in Boyd County. These include: • Nine state endangered species (seven Aves, one Actinopterygii, and one Mammalia); • Nine state threatened species (four Aves, two Bivalvia, two Mammalia, and one Petromyzontida); • Thirteen state sensitive species (nine Aves, one Actinopterygii, one Amphibia, and two Malacostraca); • One historic species (Insecta); • 66 species listed in Kentucky's State Wildlife Action Plan. Please refer to Attachment 1d for more information regarding species data.	Source: KDFWR – Boyd County (2023)

OKNP Species Database	The Office of Kentucky Nature Preserves (OKNP) provided four records of species occurrences and two managed areas which have been noted either in or within one mile of the study area. Within one mile of the study area there are four state species listed: • Southern maidenhair fern (*Adiantum capillus-veneris*) • Tawny cotton-grass (*Eriophorum virginicum*) • Gray treefrog (*Hyla versicolor*) • Creeping phlox (*Phlox stolonifera*) Within one mile of the study area there are two managed areas listed: • Armco Park • Fannin Park The OKNP Natural Heritage Database report summarizes the existing information known to the program at the time of the request for the study area provided. These biological elements or locations in question should not be regarded as final statements, nor should they be substituted for on-site surveys required for environmental assessments. Due to the sensitive nature of this data, the specific species' locations have been redacted. Please refer to Attachment 1e for more information regarding species data.	Source: OKNP Natural Heritage Database response (March 28, 2023)
Groundwater	The EDR well report found no public water supply and 11 water wells within the study area. Subsurface flow is assumed to flow generally south. Please see Attachment 6 for NHD and topographic maps. Approximate 0.10-0.25 mile north of the project study area is designated as a KDOW Source Water Protection Area. Please refer to Figure 5 for more information regarding groundwater data.	Source: Kentucky Watershed Viewer (2023), EDR DataMap Well Search Report (2023), and Water Protection Viewer (2023), EDR Topographic Maps (2023)
Karst Areas	Based on information from the USGS US Karst Occurrence Map, the majority of the study area is underlain by bedrock with limited or no potential for karst development. The KyGovMaps Open Data Portal identified zero sinkhole polygons within the study area. The OKNP report found no record of caves or sinkholes within the study area and buffer zone. The KSS database showed no caves within the 5km buffered project. Please refer to Attachment 1e for OKNP database report, Attachment 1f for KSS database response, and Attachment 3 for Kentucky karst potential map.	Source: Karst Occurrence in Kentucky map (Paylor and Currens 2002), KyGovMaps Open Data Portal – KY Water Resources Polygons Sinkholes, OKNP database response (2023), USGS

Floodplain	According to NFHL data, there are no FEMA 100-Year floodplains occurring within the study area. Please refer to Figure 2 for more information regarding floodplain mapping.	Source: FEMA NFHL (2021)
Floodway	There are no FEMA designated floodway areas within the study area. Please refer to Figure 2 for more information regarding floodway mapping.	Source: FEMA NFHL (2021)
Farmlands	Approximately 24.2 acres or 61% of the soils in the study area are identified as 'Prime Farmland'. 'Prime Farmland if drained' constituted 4.32 acres, or 11% of the study area. Approximately 2.54 acres or 6% are 'Farmlands of Statewide Import'. 'Non-Prime Farmland' totals 8.47 acres or 12% of the soils in the study area. Please refer to Figure 3 and Attachment 5 for the full USGS NRCS Soil Survey Report and mapping.	Source: NRCS Web Soil Survey Map Data (2023)
Hazardous Materials	The EDR report revealed two (2) EDR Hist Auto sites within approximately 0.125 mile of the project study area. Within approximately 0.25 mile of the study area the EDR report identified five (5) database records for UST sites, two (2) aboveground storage tank sites, and four (4) RCRA NonGen/NLR sites. Please refer to digital Attachment 7 for more information regarding EDR data.	Source: Environmental Data Resources Report (EDR 2023)
Oil and Gas Wells	The EDR and KGS reports three wells within the study area. Please refer to digital Attachment 7 and Figure 5 for more information regarding well data.	Source: EDR DataMap Well Search Report (December 2023), KGS (2023)
Section 4(f)	There are no NRCS Wetland Reserve Program Lands within the study area. No Wildlife Management Areas or Federal Public Lands located within the study area. There are no Protected Areas Database of United States (PADUS) results within the study area; however, Armco Park is considered 4(f) as a public recreational park and the Summit Elementary School playground might also be considered a 4(f) public recreational facility.	Source: KDFWR (2023), Google Earth Pro Maps, PADUS (2023)
Section 6(f)	Based on the Land and Water Conservation Fund (LWCF) records map, Armco Park is a Section 6(f) public recreational park since it received LWCF funds in 2002 for development project and again in 2015 for an outdoor recreational complex.	Source: Trust for Public Land LWCF Federal and State Funding Map Data (2023)

Air Quality	The study area is not located in a Non-attainment Area for 8-hour ozone (2015 standard) or a Maintenance area for PM 2.5 (2012 standard) for transportation-related criteria pollutants, for which the EPA has established National Ambient Air Quality Standards (NAAQS). There are no USEPA air emissions facilities located within the study area. Please refer to Attachment 2 for more information regarding air quality data.	Source: KYTC Air Quality Maps (2019), USEPA Green Book (2015), USEPA Envirofacts (2018)
Noise	Sensitive noise receptor areas include several residential neighborhoods and houses.	Source: KYTC Noise Policy (2020)
Cultural-Archaeology	Although a couple archaeological surveys areas were previously performed in the area, The Kentucky Office of State Archaeology (OSA) preliminary records review indicated no previously recorded archaeological sites within the project study area or its additional 30-meter buffer. Please refer to Attachment 4 and Figure 6 for more information regarding cultural-archeology data.	Source: KY OSA report (2023) KHC did not respond at the time of report completion
Cultural- Historic	There are 14 previously recorded historic properties within or adjacent to the study area. Two properties, Federal Corrections Institute: Ashland and Summitt Missionary Baptist Church, have been determined eligible for listing in the NRHP. Two are associated with Federal Corrections Institute: Ashland and are located just outside the study area. Five have been determined ineligible for listing in the NRHP and the eligibility status of three previously recorded properties is currently undetermined. Two have been demolished. Additionally, 48 buildings appear within the study area on the 1976 photorevised USGS topographic quadrangle. Ten of these buildings appear to be demolished. Please refer to Attachment 4 and Figure 6 for more information regarding cultural-historic data.	Source: Kentucky Heritage Council Site Files; National Register of Historic Places Map (2020), USGS topo maps
Houses of Worship	There are two houses of worship within the study area, Summitt Missionary Baptist Church. Please refer to Attachment 4 and Figure 5 for more Human Resources data.	Source: Google Earth Pro Maps, ESRI topo maps
Schools	There is one school within the study area, Summitt Elementary. Please refer to Attachment 4 and Figure 5 for more Human Resources data.	Source: Google Earth Pro Maps, ESRI topo maps, HIFLD

Cemeteries	There are no cemeteries within the study area, however, McCormic Cemetery, is located approximately 0.15 mi south of the study area along Summitt Rd. There may be additional private or family cemeteries present in the study area that have not been previously mapped or located. Please refer to Attachment 4 and Figure 5 for more Human Resources data.	Source: Google Earth Pro Maps, ESRI topo maps, USGS topo maps
Public Services	There are no electric transmission lines, electrical substations, or natural gas pipelines identified within the study area.	Source: U.S. Department of Homeland Security Infrastructure data (2023). Google Earth Pro Maps, National Pipeline Mapping Systems Public Viewer (2023)
Residences and Businesses	The majority of the study area is comprised of residential development interspersed with commercial businesses along KY 716. Commercial development is also concentrated at the eastern end of the study area, along the south side of the intersection of KY 716 and US 60.	Source: Google Earth Pro Maps, ESRI topo maps, NLCD (2019)

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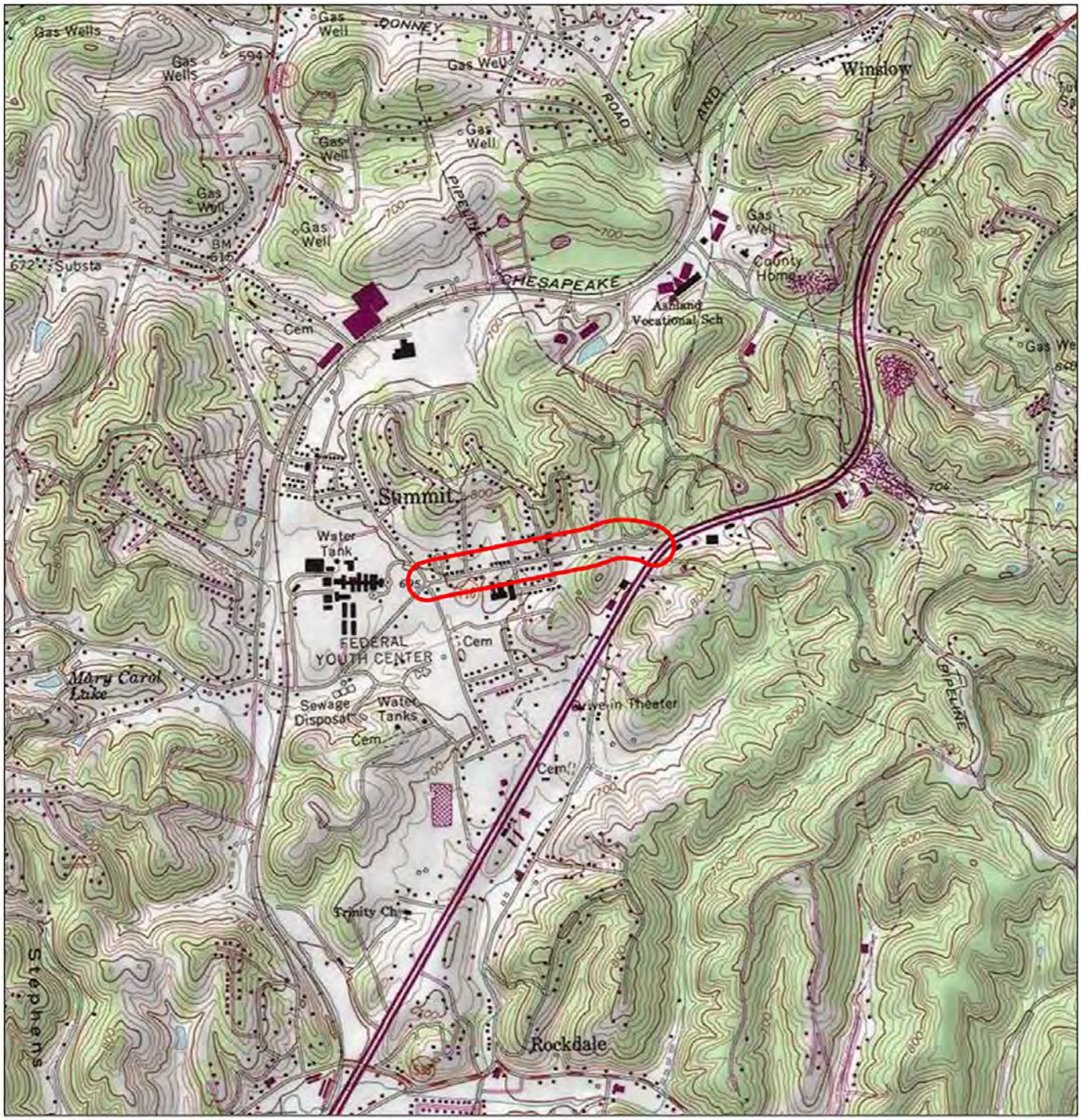
FIGURES



Legend

Study Area

0 0.25 .50 Miles

(At original document size of 8.5x11)

1:24,000

N

Stantec

Project Location
Boyd County, Kentucky

Prepared by TCN on 2023-05-18
TR by EM on 2023-05-19
IR by LC on 2023-05-XX

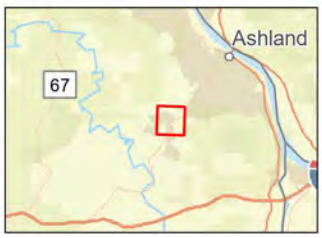
Client/Project
Kentucky Transportation Cabinet
KY-716 Corridor Study: Item No. 9-180
Environmental Overview

Figure No.
1

Title
Project Overview

Notes

1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: Stantec, KYTC
3. Background: USGS 7.5' Topographic Map



Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: Stantec, KYTC, FEMA, USFWS, KDOW
3. Background: USGS 7.5' Topographic Map

Legend
- Study Area
- US Highway
- State Route
- Local Road
- NHD Waterbody
- FEMA 100-Year Floodplain*
- DOW Source Water Protection Area

National Wetlands Inventory
- Lake/Pond
- Riverine

*No Features Within Data Frame

0 500 1,000 Feet
(At original document size of 8.5x11)
1:12,000

N

Stantec

Project Location
Boyd County, Kentucky

Prepared by TCN on 2023-05-19
TR by EM on 2023-05XX
IR by LC on 2023-05-XX

Client/Project
Kentucky Transportation Cabinet
KY-716 Corridor Study: Item No. 9-180
Environmental Overview

Figure No.
2

Title
Water Resources

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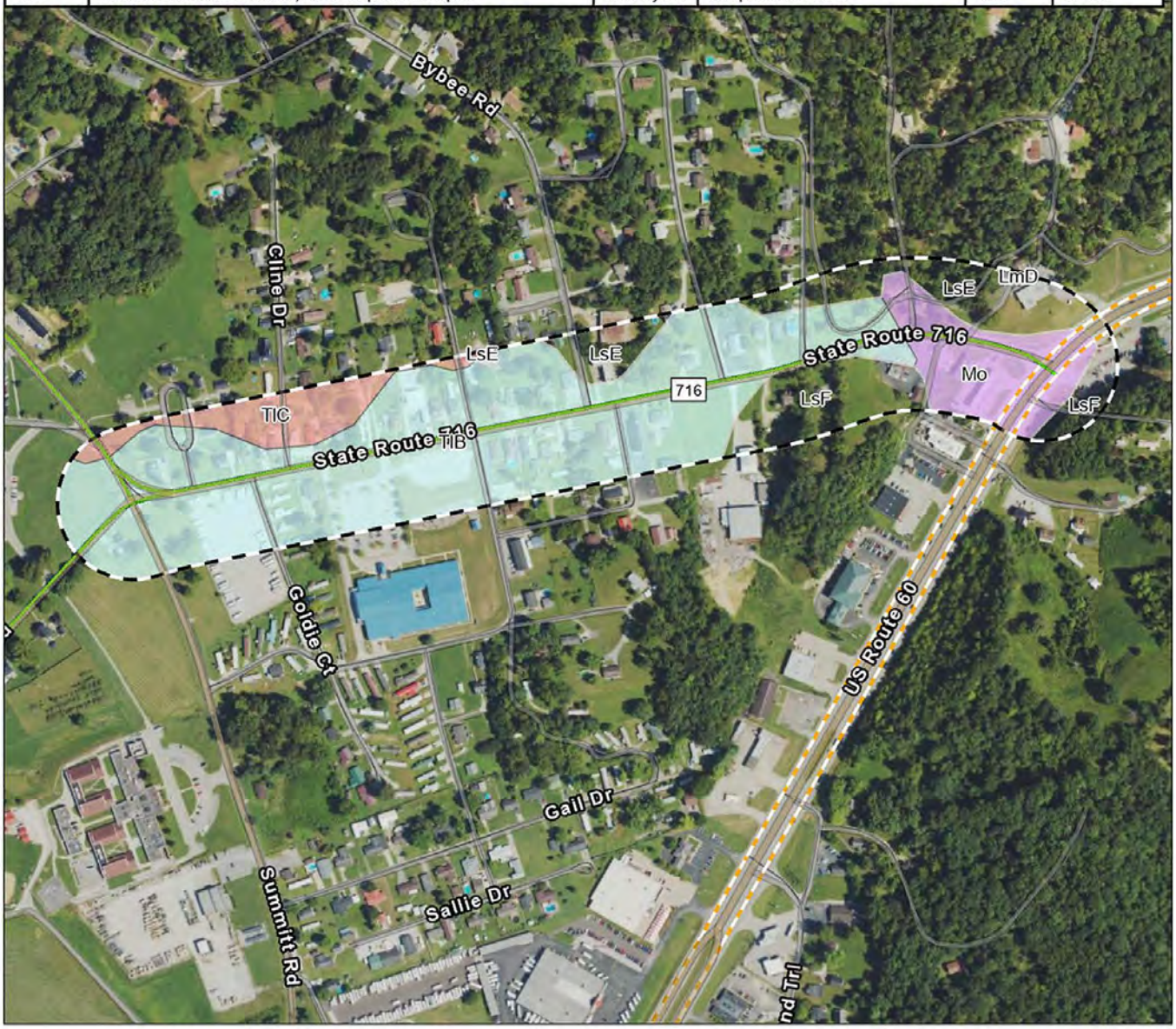
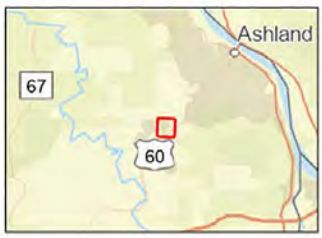
MUSYM	Name	Hydric	Farmland	Acreage	Percentage
LsF	Latham-Shelocta silt loams, 30 to 50 percent slopes	Non-Hydric	Not prime farmland	3.94	0.1%
LmD	Latham-Steinsburg complex, 12 to 20 percent slopes	Non-Hydric	Not prime farmland	0.08	0%
TIC	Tilsit silt loam, 6 to 12 percent slopes - residual & alluvial landforms	Non-Hydric	Farmland of statewide importance	2.54	0.06%
TIB	Tilsit silt loam, 2 to 6 percent slopes - residual & alluvial landforms	Non-Hydric	All areas are prime farmland	24.2	0.61%
Mo	Morehead silt loam	Non-Hydric	Prime farmland if drained	4.32	0.11%
LsE	Latham-Shelocta silt loams, 20 to 30 percent slopes	Non-Hydric	Not prime farmland	4.45	0.11%





Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: Stantec, KYTC, USDA
3. Background: USGS 7.5' Topographic Map

Legend
- Study Area
- US Highway
- State Route
- Local Road

Farmland Indicator
- All areas are prime farmland
- Prime farmland if drained
- Farmland of statewide importence
- Not prime farmland

0 250 500 Feet
(At original document size of 8.5x11)
1:6,555

N

Stantec

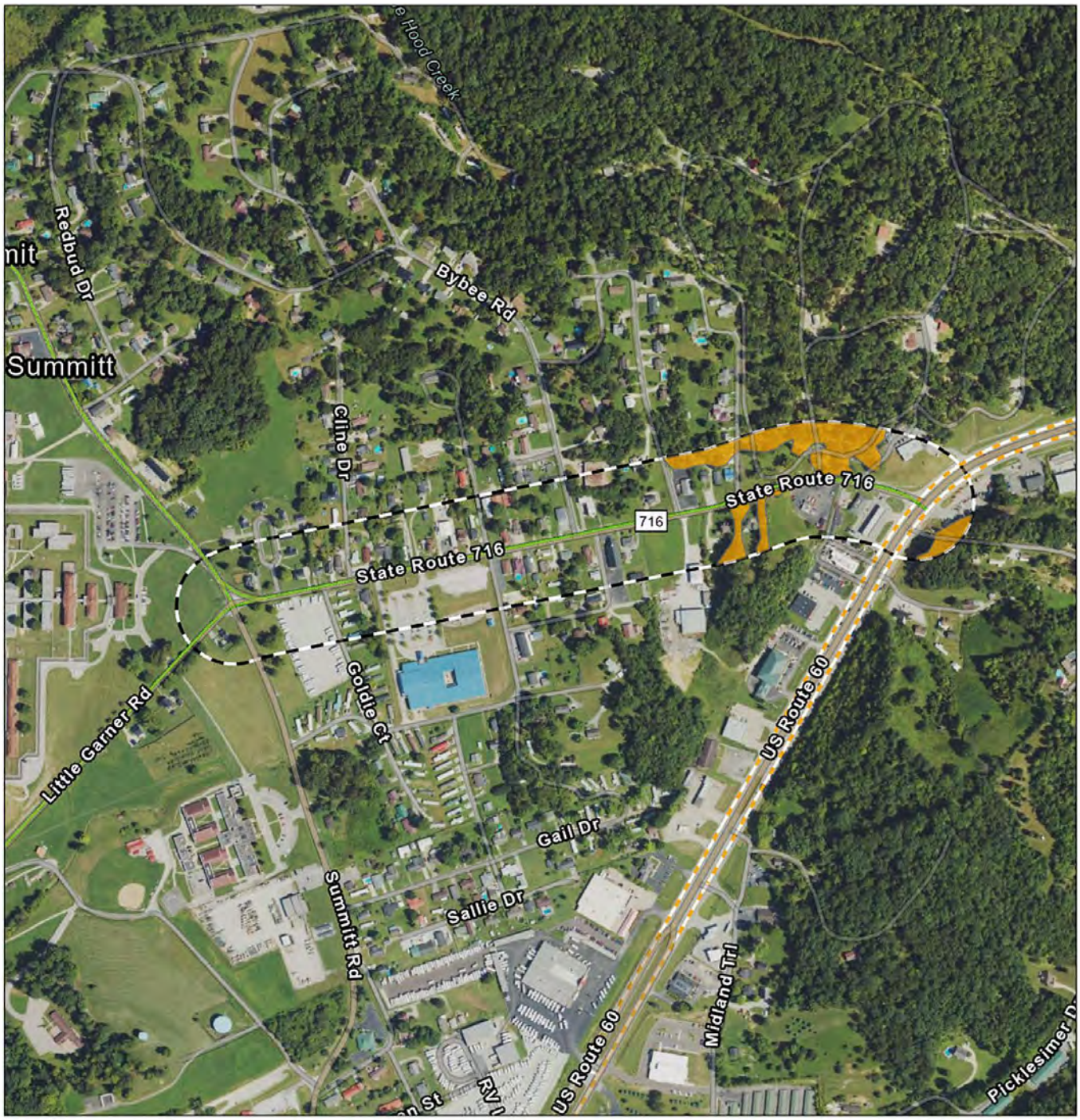
Project Location
Boyd County, Kentucky

Prepared by TCN on 2023-05-18
TR by EM on 2023-05-19
IR by LC on 2023-05-XX

Client/Project
Kentucky Transportation Cabinet
KY-716 Corridor Study: Item No. 9-180
Environmental Overview

Figure No.
3

Title
Farmland Classification



Legend
- Study Area
- Potential Bat Habitat
- US Highway
- State Route
- Local Road

0 250 500 Feet
(At original document size of 8.5x11)
1:8,000

N

Stantec

Project Location
Boyd County, Kentucky

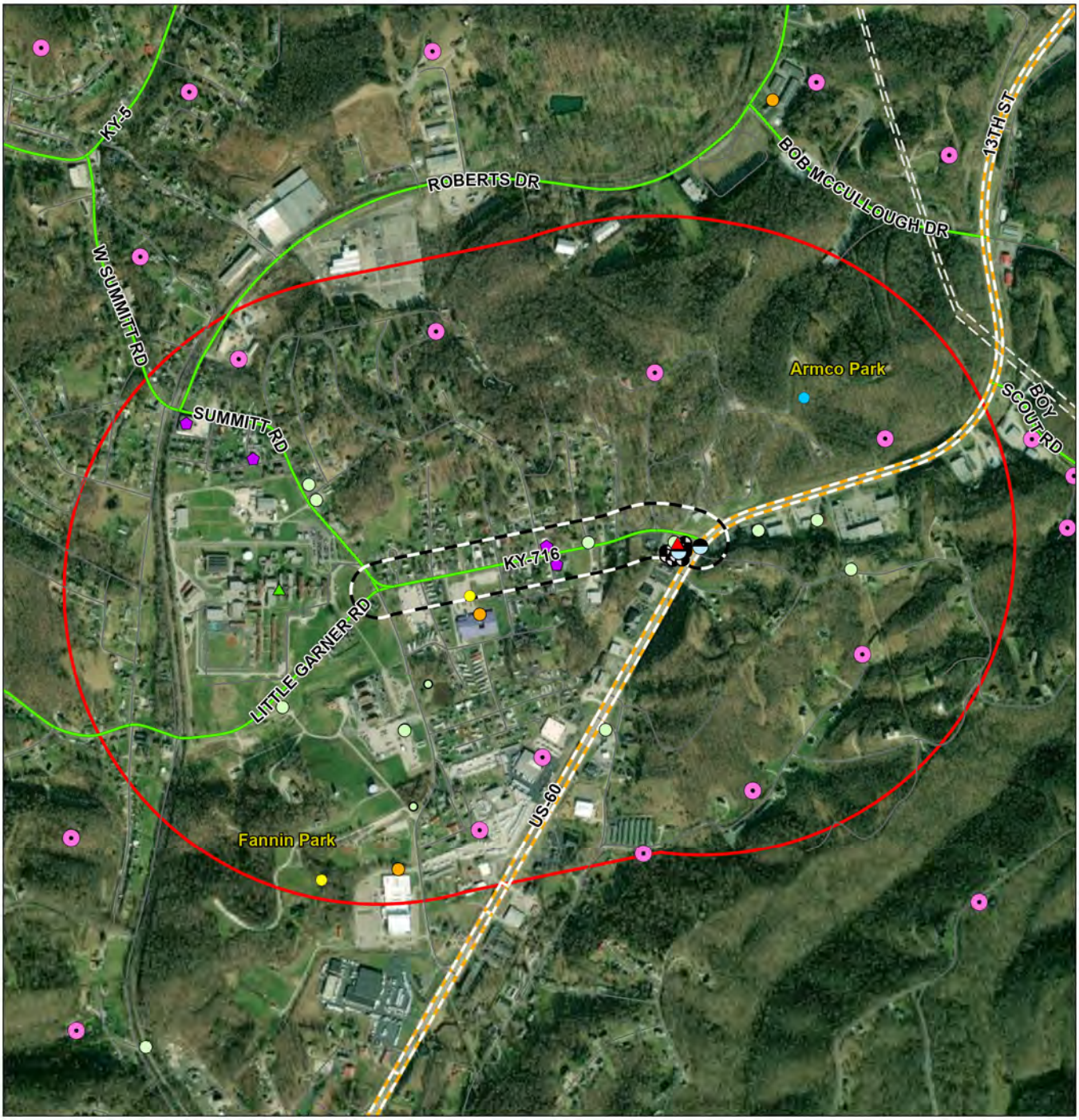
Prepared by TCN on 2023-06-21
TR by EM on 2023-06-21
IR by LC on 2023-05-XX

Client/Project
Kentucky Transportation Cabinet
KY-716 Corridor Study: Item No. 9-180
Environmental Overview

Figure No.
4

Title
Potential Bat Habitat

Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: Stantec, KYTC
3. Background: NAIPP 2022



Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: Stantec, KYTC, USDA
3. Background: USGS 7.5' Topographic Map

Legend
- Study Area
- Half Mile Buffer
- US Highway
- State Route
- Local Road
- Electric Power Transmission Lines*
- Natural Gas Pipeline*
- Cemetery
- Prison
- Potential Haz-Mat Site
- Gas Station
- Church
- Substation*
- School/Child Care Center
- 4f- School Playground/Public Park
- 6f/4f - Armco Park
- Oil and Gas Well

Water Wells
Type
- Monitoring
- Other

0 500 1,000 Feet
(At original document size of 8.5x11)
1:16,926

N

Stantec

Project Location
Boyd County, Kentucky

Prepared by TCN on 2023-05-18
TR by EM on 2023-05-19
IR by LC on 2023-05-XX

Client/Project
Kentucky Transportation Cabinet
KY-716 Corridor Study: Item No. #9-180
Environmental Overview

Figure No.
5

Title
Human Environment

*No Features Within Data Frame

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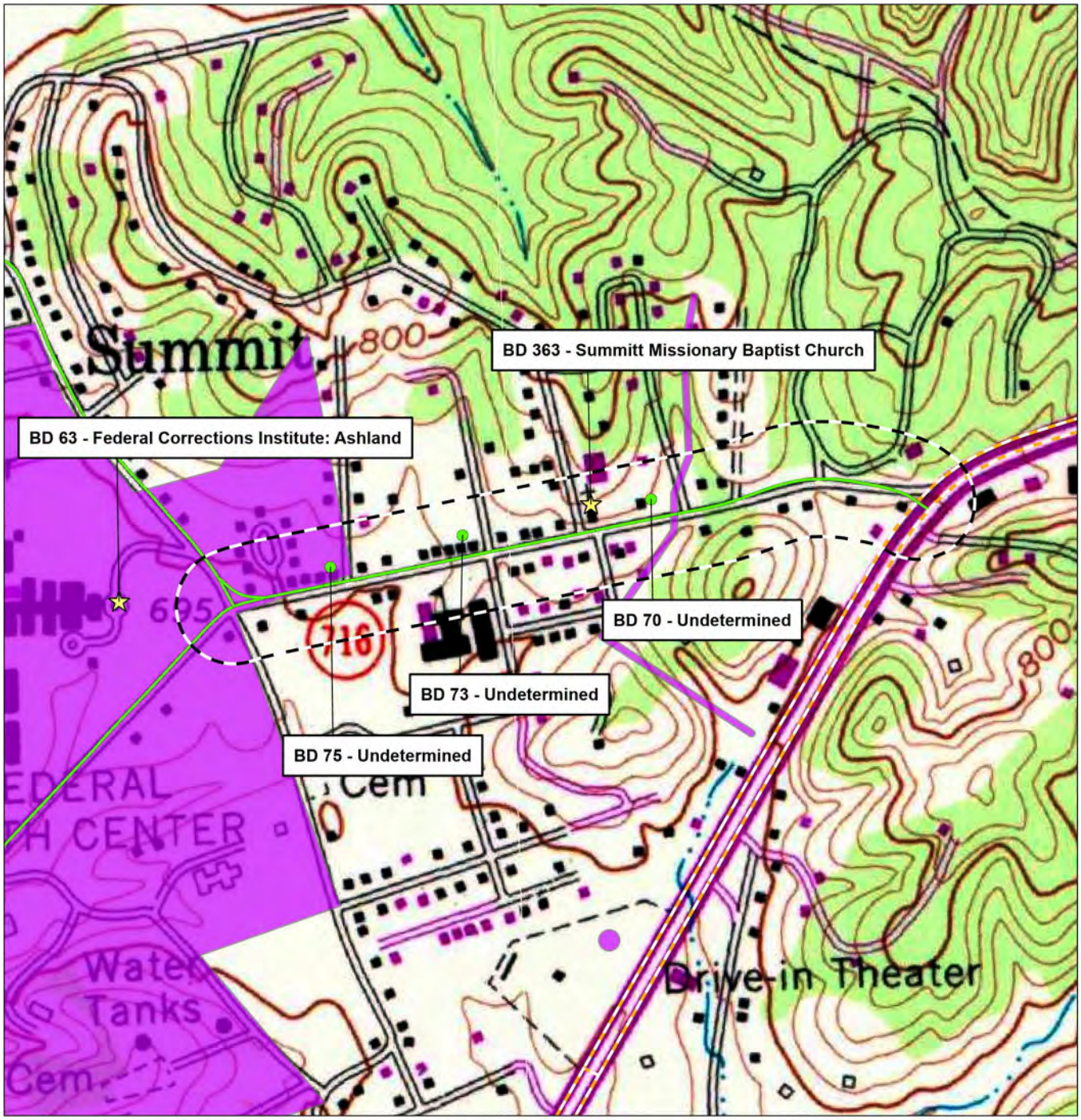

Notes
1. Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
2. Data Sources: Stantec, KYTC, NRCS, NADS, SHPO
3. Background: USGS 7.5' Topographic Map
4. For Internal Use Only. Not for Public Release

Legend
- Study Area
- Kentucky Historic Council NRHP Eligible Property
- NRHP Status Undetermined - Residential
- Archaeological Project Areas
- US Highway
- State Route
- Local Road

0 250 500 Feet
(At original document size of 8.5x11)
1:8,000

N

For Internal Use Only.
Not for Public Release.

Stantec

Project Location
Madison County, Kentucky

Prepared by TCN on 2023-05-18
TR by EM on 2023-05-19
IR by LC on 2023-05-XX

Client/Project
Kentucky Transportation Cabinet
KY-716 Corridor Study: Item No. 9-180
Environmental Overview

Figure No.
6

Title
Cultural/Historic Resources

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ATTACHMENTS

1. **Threatened and Endangered Species**
2. **Areas of Air Quality Concern in Kentucky**
3. **Kentucky Karst Potential Map**
4. **Cultural and Archaeological Historic Resources** **(Contains sensitive information. Not available for public use.)**
5. **USDA Soil Resource Report**
6. **USGS Topographical Map**
7. **EDR Report** **(Provided in separate digital format due to size)**

ATTACHMENT 1

Threatened and Endangered Species

a. USFWS IPaC Trust Resource Report
b. USFWS Map of Known Northern Long-eared Bat Habitat
c. USFWS Map of Known Indiana Bat Habitat
d. KDFWR State-Listed Species, Boyd County
e. OKNP Natural Heritage Database Response (For Internal Use Only. Not for Public Release.)
f. KSS database response (For Internal Use Only. Not for Public Release.)

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Boyd County, Kentucky

Local office

Kentucky Ecological Services Field Office

(502) 695-0468
(502) 695-1024
kentuckyes@fws.gov

J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens* Wherever found This species only needs to be considered if the following condition applies: • The project area includes potential gray bat habitat. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* Wherever found This species only needs to be considered if the following condition applies: • The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered

Clams

NAME	STATUS
Clubshell *Pleurobema clava* This species only needs to be considered if the following condition applies: • The species may be affected by projects that significantly impact the Ohio River. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3789	Endangered

Fanshell Cyprogenia stegaria — Endangered

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Ohio River.

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4822

Northern Riffleshell Epioblasma rangiana — Endangered

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Green, Licking, or Ohio.

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/527

Orangefoot Pimpleback (pearlymussel) Plethobasus cooperianus — Endangered

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Ohio River.

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1132

Pink Mucket (pearlymussel) Lampsilis abrupta — Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7829

Rabbitsfoot Quadrula cylindrica cylindrica — Threatened

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Ohio River.

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5165

Ring Pink (mussel) Obovaria retusa — Endangered

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Ohio River.

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4128

Rough Pigtoe Pleurobema plenum — Endangered

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Ohio River.

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6894

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

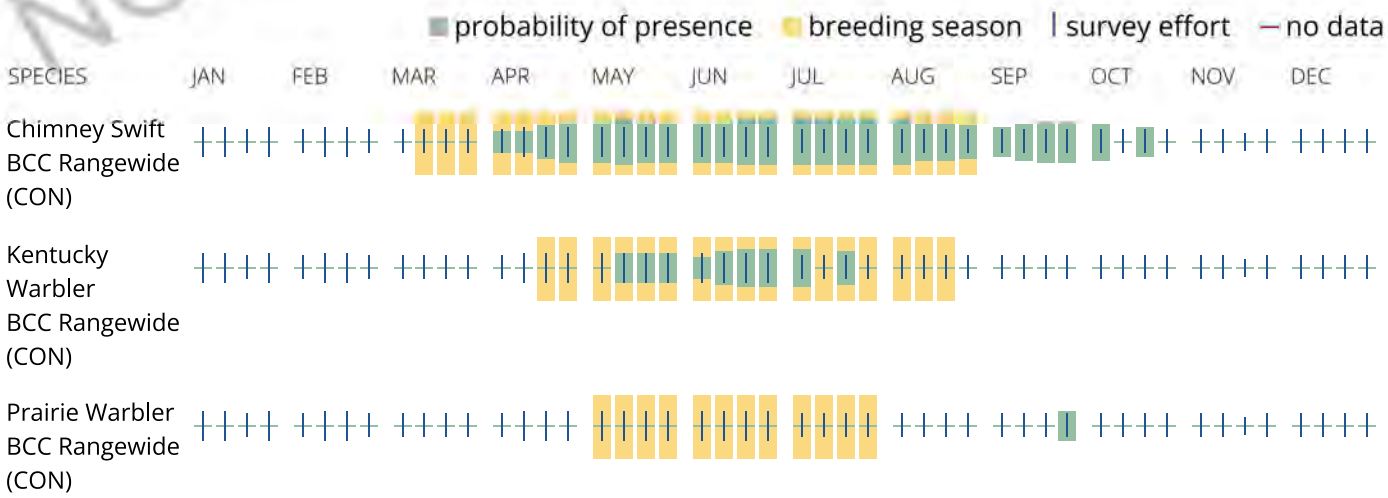
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

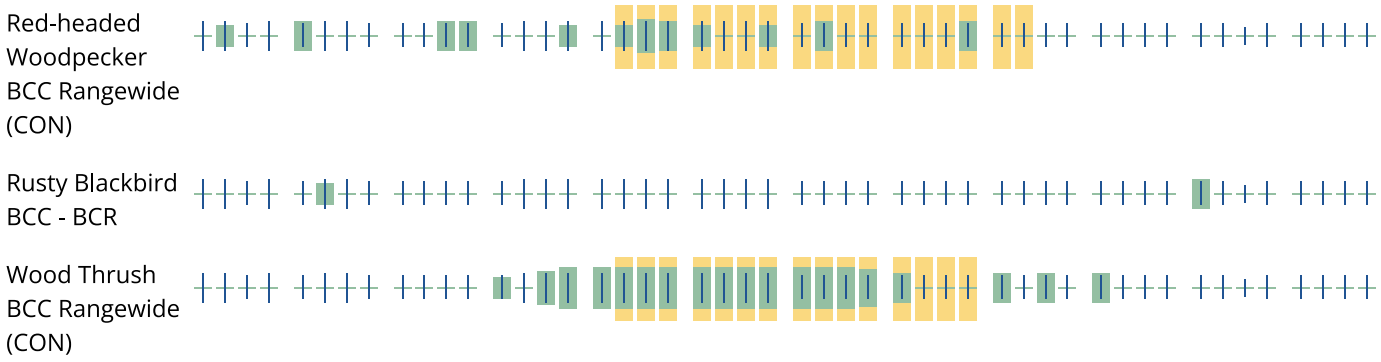
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability

of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

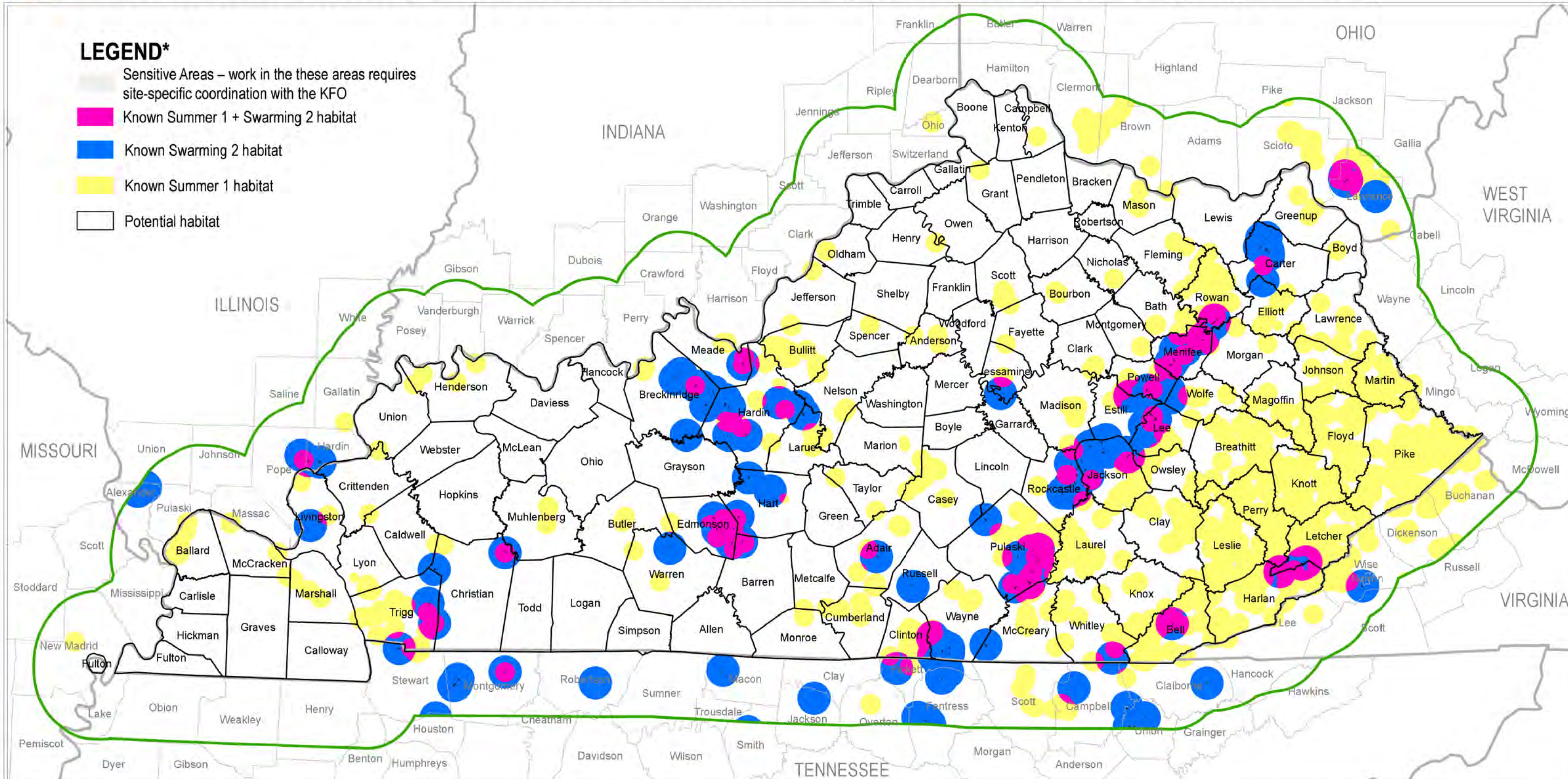
Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

U.S. Fish & Wildlife Service

Known northern long-eared bat habitat in Kentucky and within 20 miles (August 2019)



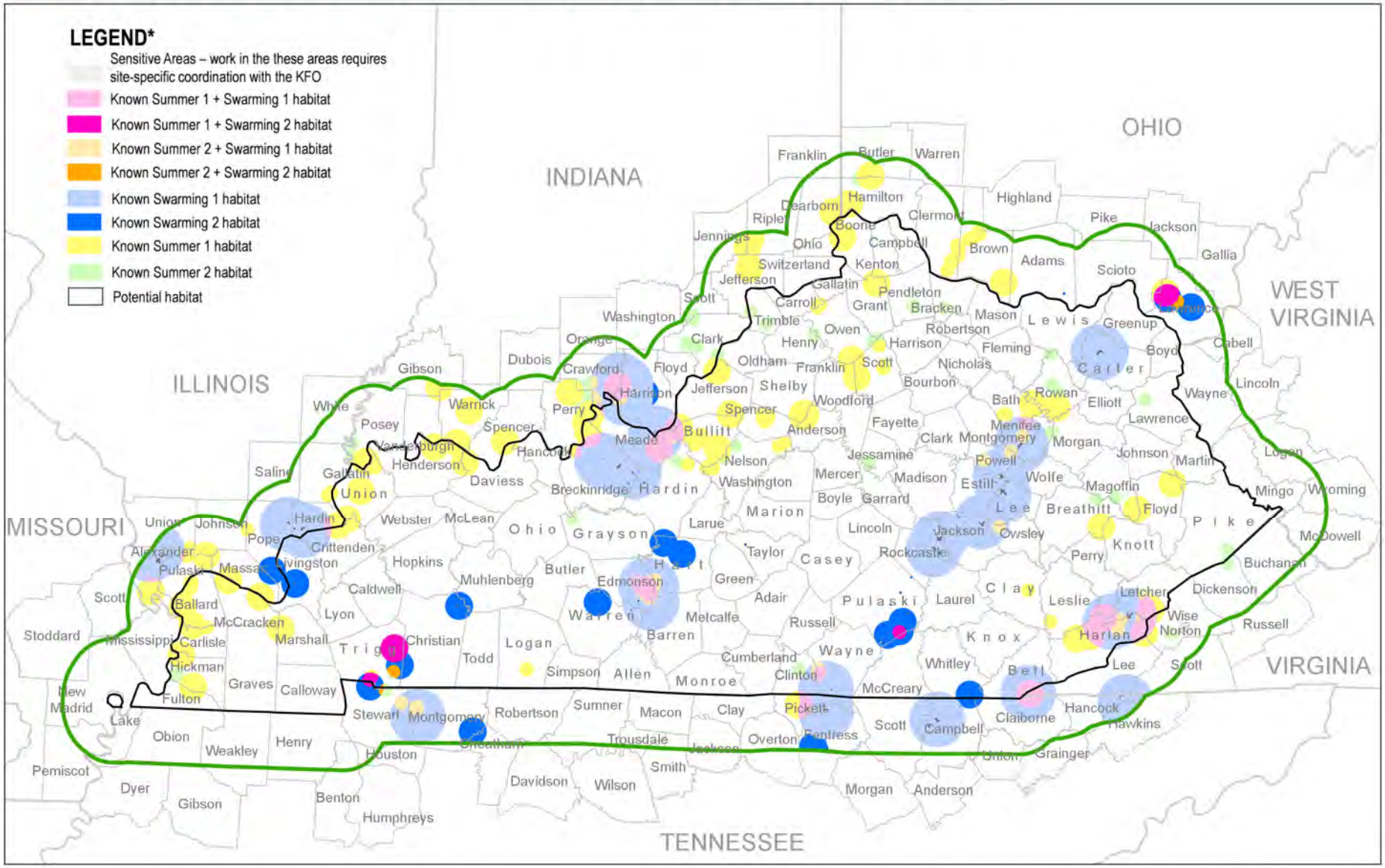
NOTE: This map is based on species occurrence information and is subject to change as new data become available. Please contact our office at 502/695-0468 to ensure you are working with the most current version.
*For an explanation of terms, please see the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky.

0 10 20 40 60 80 100 Miles

The USFWS makes no warranty for use of this map and cannot be held liable for actions or decisions based on map content. This map was produced as an appendix to the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky and should only be used in the context of this Strategy.

U.S. Fish & Wildlife Service

Known Indiana bat habitat in Kentucky and within 20 miles (August 2019)



NOTE: This map is based on species occurrence information and is subject to change as new data becomes available. Please contact our office at 502-695-0468 to ensure you are working with the most current version.

*For an explanation of terms, please see the Conservation Strategy for Forest-Dwelling Bats in the Commonwealth of Kentucky.

0 100 Miles

0 100 Kilometers

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Datum: NAD 83

Species Information

Species observations for selected counties

Linked life history provided courtesy of NatureServe Explorer .
Records may include both recent and historical observations.
US Status Definitions Kentucky Status Definitions

List Species observations in 1 selected county.
Selected county is: Boyd.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
Accipiter cooperii	Cooper's Hawk	Aves	Boyd	N	N		Reference
Accipiter striatus	Sharp-shinned Hawk	Aves	Boyd	N	S	Yes	Reference
Acipenser fulvescens	Lake Sturgeon	Actinopterygii	Boyd	N	E	Yes	Reference
Acris blanchardi	Blanchard's Cricket Frog	Amphibia	Boyd	N	N	Yes	Reference
Actinonaias ligamentina	Mucket	Bivalvia	Boyd	N	N		Reference
Actitis macularius	Spotted Sandpiper	Aves	Boyd	N	E	Yes	Reference
Agelaius phoeniceus	Red-winged Blackbird	Aves	Boyd	N	N		Reference
Agkistrodon contortrix	Eastern Copperhead	Reptilia	Boyd	N	N		Reference
Aix sponsa	Wood Duck	Aves	Boyd	N	N		Reference
Alosa chrysochloris	Skipjack Herring	Actinopterygii	Boyd	N	N		Reference
Amblema plicata	Threeridge	Bivalvia	Boyd	N	N		Reference
Ambloplites rupestris	Rock Bass	Actinopterygii	Boyd	N	N		Reference
Ambystoma barbouri	Streamside Salamander	Amphibia	Boyd	N	N	Yes	Reference

Ambystoma jeffersonianum	Jefferson Salamander	Amphibia	Boyd	N	N		Reference
Ambystoma maculatum	Spotted Salamander	Amphibia	Boyd	N	N		Reference
Ambystoma opacum	Marbled Salamander	Amphibia	Boyd	N	N		Reference
Ambystoma tigrinum	Eastern Tiger Salamander	Amphibia	Boyd	N	N		Reference
Ameiurus melas	Black Bullhead	Actinopterygii	Boyd	N	N		Reference
Ameiurus natalis	Yellow Bullhead	Actinopterygii	Boyd	N	N		Reference
Ameiurus nebulosus	Brown Bullhead	Actinopterygii	Boyd	N	N		Reference
Ammocrypta pellucida	Eastern Sand Darter	Actinopterygii	Boyd	N	N		Reference
Ammodramus savannarum	Grasshopper Sparrow	Aves	Boyd	N	N	Yes	Reference
Anas platyrhynchos	Mallard	Aves	Boyd	N	N		Reference
Anas rubripes	American Black Duck	Aves	Boyd	N	N	Yes	Reference
Anaxyrus americanus	American Toad	Amphibia	Boyd	N	N		Reference
Anaxyrus fowleri	Fowler's Toad	Amphibia	Boyd	N	N		Reference
Antigone canadensis	Sandhill Crane	Aves	Boyd	N	N		Reference
Antrostomus vociferus	Whip-poor-will	Aves	Boyd	N	N	Yes	Reference
Apalone spinifera spinifera	Eastern Spiny Softshell	Chelonia	Boyd	N	N		Reference
Aplodinotus grunniens	Freshwater Drum	Actinopterygii	Boyd	N	N		Reference
Archilochus colubris	Ruby-throated Hummingbird	Aves	Boyd	N	N		Reference
Ardea herodias	Great Blue Heron	Aves	Boyd	N	N		Reference
Asio flammeus	Short-eared Owl	Aves	Boyd	N	E	Yes	Reference
Aythya affinis	Lesser Scaup	Aves	Boyd	N	N	Yes	Reference
Aythya americana	Redhead	Aves	Boyd	N	N		Reference

Aythya collaris	Ring-necked Duck	Aves	Boyd	N	N		Reference
Aythya marila	Greater Scaup	Aves	Boyd	N	N	Yes	Reference
Aythya valisineria	Canvasback	Aves	Boyd	N	N		Reference
Baeolophus bicolor	Tufted Titmouse	Aves	Boyd	N	N		Reference
Blarina brevicauda	Northern Short-tailed Shrew	Mammalia	Boyd	N	N		Reference
Blarina carolinensis	Southern Short-tailed Shrew	Mammalia	Boyd	N	N		Reference
Bombycilla cedrorum	Cedar Waxwing	Aves	Boyd	N	N		Reference
Bonasa umbellus	Ruffed Grouse	Aves	Boyd	N	N	Yes	Reference
Branta canadensis	Canada Goose	Aves	Boyd	N	N		Reference
Bubo virginianus	Great Horned Owl	Aves	Boyd	N	N		Reference
Bucephala albeola	Bufflehead	Aves	Boyd	N	N		Reference
Bucephala clangula	Common Goldeneye	Aves	Boyd	N	N		Reference
Buteo jamaicensis	Red-tailed Hawk	Aves	Boyd	N	N		Reference
Buteo lineatus	Red-shouldered Hawk	Aves	Boyd	N	N		Reference
Buteo platypterus	Broad-winged Hawk	Aves	Boyd	N	N		Reference
Butorides virescens	Green Heron	Aves	Boyd	N	N	Yes	Reference
Calidris fuscicollis	White-rumped Sandpiper	Aves	Boyd	N	N		Reference
Calidris melanotos	Pectoral Sandpiper	Aves	Boyd	N	N		Reference
Calidris minutilla	Least Sandpiper	Aves	Boyd	N	N		Reference
Cambarus bartonii cavatus	Appalachian Brook Crayfish	Malacostraca	Boyd	N	N	Yes	Reference
Cambarus theepiensis	Coalfields Crayfish	Malacostraca	Boyd	N	S		Reference
Campostoma anomalum	Ohio Stoneroller	Actinopterygii	Boyd	N	N		Reference

Canis latrans	Coyote	Mammalia	Boyd	N	N		Reference
Carassius auratus	Goldfish	Actinopterygii	Boyd	N	N		Reference
Cardellina pusilla	Wilson's Warbler	Aves	Boyd	N	N		Reference
Cardinalis cardinalis	Northern Cardinal	Aves	Boyd	N	N		Reference
Carphophis amoenus	Common Wormsnake	Reptilia	Boyd	N	N		Reference
Carpiodes carpio	River Carpsucker	Actinopterygii	Boyd	N	N		Reference
Carpiodes cyprinus	Quillback	Actinopterygii	Boyd	N	N		Reference
Carpiodes velifer	Highfin Carpsucker	Actinopterygii	Boyd	N	N	Yes	Reference
Castor canadensis	American Beaver	Mammalia	Boyd	N	N		Reference
Cathartes aura	Turkey Vulture	Aves	Boyd	N	N		Reference
Catharus fuscescens	Veery	Aves	Boyd	N	N		Reference
Catharus guttatus	Hermit Thrush	Aves	Boyd	N	N		Reference
Catharus ustulatus	Swainson's Thrush	Aves	Boyd	N	N		Reference
Catostomus commersonii	White Sucker	Actinopterygii	Boyd	N	N		Reference
Centronyx henslowii	Henslow's Sparrow	Aves	Boyd	N	S	Yes	Reference
Certhia americana	Brown Creeper	Aves	Boyd	N	T		Reference
Chaetura pelagica	Chimney Swift	Aves	Boyd	N	N		Reference
Charadrius vociferus	Killdeer	Aves	Boyd	N	N		Reference
Chelydra serpentina	Snapping Turtle	Chelonia	Boyd	N	N		Reference
Chordeiles minor	Common Nighthawk	Aves	Boyd	N	N		Reference
Chroicocephalus philadelphia	Bonaparte's Gull	Aves	Boyd	N	N		Reference
Chrosomus erythrogaster	Southern Redbelly Dace	Actinopterygii	Boyd	N	N		Reference
Chrysemys picta	Painted Turtle	Chelonia	Boyd	N	N		Reference
Circus hudsonius	Northern Harrier	Aves	Boyd	N	T	Yes	Reference

Clangula hyemalis	Long-tailed Duck	Aves	Boyd	N	N		Reference
Coccothraustes vespertinus	Evening Grosbeak	Aves	Boyd	N	N		Reference
Coccyzus americanus	Yellow-billed Cuckoo	Aves	Boyd	N	N	Yes	Reference
Coccyzus erythropthalmus	Black-billed Cuckoo	Aves	Boyd	N	N		Reference
Colaptes auratus	Northern Flicker	Aves	Boyd	N	N		Reference
Colinus virginianus	Northern Bobwhite	Aves	Boyd	N	N	Yes	Reference
Coluber constrictor	North American Racer	Reptilia	Boyd	N	N		Reference
Columba livia	Rock Pigeon	Aves	Boyd	N	N		Reference
Contopus virens	Eastern Wood-Pewee	Aves	Boyd	N	N		Reference
Coragyps atratus	Black Vulture	Aves	Boyd	N	N		Reference
Corbicula fluminea	Asian Clam	Bivalvia	Boyd	N	N		Reference
Corvus brachyrhynchos	American Crow	Aves	Boyd	N	N		Reference
Crotalus horridus	Timber Rattlesnake	Reptilia	Boyd	N	N	Yes	Reference
Ctenopharyngodon idella	Grass Carp	Actinopterygii	Boyd	N	N		Reference
Cyanocitta cristata	Blue Jay	Aves	Boyd	N	N		Reference
Cyclonaias pustulosa	Pimpleback	Bivalvia	Boyd	N	N		Reference
Cyprinella spiloptera	Spotfin Shiner	Actinopterygii	Boyd	N	N		Reference
Cyprinella whipplei	Steelcolor Shiner	Actinopterygii	Boyd	N	N		Reference
Cyprinus carpio	Common Carp	Actinopterygii	Boyd	N	N		Reference
Desmognathus fuscus	Northern Dusky Salamander	Amphibia	Boyd	N	N	Yes	Reference
Diadophis punctatus edwardsii	Northern Ringneck Snake	Reptilia	Boyd	N	N		Reference
Didelphis virginiana	Virginia Opossum	Mammalia	Boyd	N	N		Reference

Dolichonyx oryzivorus	Bobolink	Aves	Boyd	N	S	Yes	Reference
Dorosoma cepedianum	Gizzard Shad	Actinopterygii	Boyd	N	N		Reference
Dreissena polymorpha	Zebra Mussel	Bivalvia	Boyd	N	N		Reference
Dryobates pubescens	Downy Woodpecker	Aves	Boyd	N	N		Reference
Dryobates villosus	Hairy Woodpecker	Aves	Boyd	N	N		Reference
Dryocopus pileatus	Pileated Woodpecker	Aves	Boyd	N	N		Reference
Dumetella carolinensis	Gray Catbird	Aves	Boyd	N	N		Reference
Empidonax flaviventris	Yellow-bellied Flycatcher	Aves	Boyd	N	N		Reference
Empidonax minimus	Least Flycatcher	Aves	Boyd	N	E	Yes	Reference
Empidonax traillii	Willow Flycatcher	Aves	Boyd	N	N	Yes	Reference
Empidonax virescens	Acadian Flycatcher	Aves	Boyd	N	N		Reference
Eptesicus fuscus	Big Brown Bat	Mammalia	Boyd	N	N		Reference
Eremophila alpestris	Horned Lark	Aves	Boyd	N	N		Reference
Ericymba buccata	Silverjaw Minnow	Actinopterygii	Boyd	N	N		Reference
Erimystax dissimilis	Streamline Chub	Actinopterygii	Boyd	N	N		Reference
Esox americanus	Grass Pickerel	Actinopterygii	Boyd	N	N		Reference
Etheostoma blennioides	Greenside Darter	Actinopterygii	Boyd	N	N		Reference
Etheostoma caeruleum	Rainbow Darter	Actinopterygii	Boyd	N	N		Reference
Etheostoma flabellare	Fantail Darter	Actinopterygii	Boyd	N	N		Reference
Etheostoma nigrum	Johnny Darter	Actinopterygii	Boyd	N	N		Reference
Etheostoma zonale	Banded Darter	Actinopterygii	Boyd	N	N		Reference
Euphagus carolinus	Rusty Blackbird	Aves	Boyd	N	N	Yes	Reference

Eurycea cirrigera	Southern Two-lined Salamander	Amphibia	Boyd	N	N		Reference
Eurycea longicauda	Long-tailed Salamander	Amphibia	Boyd	N	N		Reference
Falco sparverius	American Kestrel	Aves	Boyd	N	N	Yes	Reference
Faxonius cristavarius	Spiny Stream Crayfish	Malacostraca	Boyd	N	N		Reference
Faxonius sanbornii	Sanborn's Crayfish	Malacostraca	Boyd	N	S		Reference
Fulica americana	American Coot	Aves	Boyd	N	E		Reference
Fusconaia flava	Wabash Pigtoe	Bivalvia	Boyd	N	N		Reference
Gallinago delicata	Wilson's Snipe	Aves	Boyd	N	N	Yes	Reference
Geothlypis formosa	Kentucky Warbler	Aves	Boyd	N	N	Yes	Reference
Geothlypis philadelphia	Mourning Warbler	Aves	Boyd	N	N		Reference
Geothlypis trichas	Common Yellowthroat	Aves	Boyd	N	N		Reference
Glaucomys volans	Southern Flying Squirrel	Mammalia	Boyd	N	N		Reference
Haemorhous mexicanus	House Finch	Aves	Boyd	N	N		Reference
Haemorhous purpureus	Purple Finch	Aves	Boyd	N	N		Reference
Haliaeetus leucocephalus	Bald Eagle	Aves	Boyd	N	S	Yes	Reference
Helmitheros vermivorum	Worm-eating Warbler	Aves	Boyd	N	N		Reference
Heterodon platirhinos	Eastern Hog-nosed Snake	Reptilia	Boyd	N	N		Reference
Hiodon alosoides	Goldeye	Actinopterygii	Boyd	N	N		Reference
Hiodon tergisus	Mooneye	Actinopterygii	Boyd	N	N		Reference
Hirundo rustica	Barn Swallow	Aves	Boyd	N	N		Reference
Hyalella azteca	No Common Name (Hyalella azteca)	Malacostraca	Boyd	N	N		Reference

Hydroprogne caspia	Caspian Tern	Aves	Boyd	N	N		Reference
Hyla chrysoscelis	Cope's Gray Treefrog	Amphibia	Boyd	N	N		Reference
Hyla versicolor	Gray Treefrog	Amphibia	Boyd	N	S	Yes	Reference
Hylocichla mustelina	Wood Thrush	Aves	Boyd	N	N	Yes	Reference
Hypentelium nigricans	Northern Hog Sucker	Actinopterygii	Boyd	N	N		Reference
Ichthyomyzon unicuspis	Silver Lamprey	Petromyzontida	Boyd	N	N		Reference
Ictalurus punctatus	Channel Catfish	Actinopterygii	Boyd	N	N		Reference
Icteria virens	Yellow-breasted Chat	Aves	Boyd	N	N		Reference
Icterus galbula	Baltimore Oriole	Aves	Boyd	N	N		Reference
Icterus spurius	Orchard Oriole	Aves	Boyd	N	N		Reference
Ictiobus bubalus	Smallmouth Buffalo	Actinopterygii	Boyd	N	N		Reference
Junco hyemalis	Dark-eyed Junco	Aves	Boyd	N	S		Reference
Labidesthes sicculus	Brook Silverside	Actinopterygii	Boyd	N	N		Reference
Lacunicambarus thomai	Little Brown Mudbug	Malacostraca	Boyd	N	N		Reference
Lampetra aepyptera	Least Brook Lamprey	Petromyzontida	Boyd	N	N		Reference
Lampropeltis nigra	Eastern Black Kingsnake	Reptilia	Boyd	N	N		Reference
Lampropeltis triangulum	Eastern Milksnake	Reptilia	Boyd	N	N		Reference
Lampsilis siliquoidea	Fatmucket	Bivalvia	Boyd	N	N		Reference
Larus argentatus	Herring Gull	Aves	Boyd	N	N		Reference
Larus delawarensis	Ring-billed Gull	Aves	Boyd	N	N		Reference
Lasiurus borealis	Eastern Red Bat	Mammalia	Boyd	N	N		Reference
Lasmigona complanata	White Heelsplitter	Bivalvia	Boyd	N	N		Reference

Leaunio lienosus	Little Spectaclecase	Bivalvia	Boyd	N	T	Yes	Reference
Leiothlypis celata	Orange-crowned Warbler	Aves	Boyd	N	N		Reference
Leiothlypis peregrina	Tennessee Warbler	Aves	Boyd	N	N		Reference
Leiothlypis ruficapilla	Nashville Warbler	Aves	Boyd	N	N		Reference
Lepisosteus osseus	Longnose Gar	Actinopterygii	Boyd	N	N		Reference
Lepomis cyanellus	Green Sunfish	Actinopterygii	Boyd	N	N		Reference
Lepomis humilis	Orangespotted Sunfish	Actinopterygii	Boyd	N	N		Reference
Lepomis macrochirus	Bluegill	Actinopterygii	Boyd	N	N		Reference
Lepomis megalotis	Longear Sunfish	Actinopterygii	Boyd	N	N		Reference
Lepomis microlophus	Redear Sunfish	Actinopterygii	Boyd	N	N		Reference
Leptodea fragilis	Fragile Papershell	Bivalvia	Boyd	N	N		Reference
Lethenteron appendix	American Brook Lamprey	Petromyzontida	Boyd	N	T	Yes	Reference
Limax maximus	Giant Gardenslug	Gastropoda	Boyd	N	N		Reference
Lithobates catesbeianus	American Bullfrog	Amphibia	Boyd	N	N		Reference
Lithobates clamitans	Green Frog	Amphibia	Boyd	N	N		Reference
Lithobates palustris	Pickerel Frog	Amphibia	Boyd	N	N		Reference
Lithobates sylvaticus	Wood Frog	Amphibia	Boyd	N	N		Reference
Lontra canadensis	Northern River Otter	Mammalia	Boyd	N	N		Reference
Luxilus chrysocephalus	Striped Shiner	Actinopterygii	Boyd	N	N		Reference
Lynx rufus	Bobcat	Mammalia	Boyd	N	N		Reference
Lythrurus fasciolaris	Scarlet Shiner	Actinopterygii	Boyd	N	N		Reference
Lythrurus umbratilis	Redfin Shiner	Actinopterygii	Boyd	N	N		Reference
Macrhybopsis hyostoma	Shoal Chub	Actinopterygii	Boyd	N	N	Yes	Reference

Macrhybopsis storeriana	Silver Chub	Actinopterygii	Boyd	N	N		Reference
Mareca americana	American Wigeon	Aves	Boyd	N	N		Reference
Mareca strepera	Gadwall	Aves	Boyd	N	N		Reference
Marmota monax	Woodchuck	Mammalia	Boyd	N	N		Reference
Megaceryle alcyon	Belted Kingfisher	Aves	Boyd	N	N		Reference
Megalonaias nervosa	Washboard	Bivalvia	Boyd	N	N		Reference
Megascops asio	Eastern Screech-Owl	Aves	Boyd	N	N		Reference
Melanerpes carolinus	Red-bellied Woodpecker	Aves	Boyd	N	N		Reference
Melanerpes erythrocephalus	Red-headed Woodpecker	Aves	Boyd	N	N	Yes	Reference
Melanitta deglandi	White-winged Scoter	Aves	Boyd	N	N		Reference
Meleagris gallopavo	Wild Turkey	Aves	Boyd	N	N		Reference
Melospiza georgiana	Swamp Sparrow	Aves	Boyd	N	N		Reference
Melospiza melodia	Song Sparrow	Aves	Boyd	N	N		Reference
Mephitis mephitis	Striped Skunk	Mammalia	Boyd	N	N		Reference
Mergus merganser	Common Merganser	Aves	Boyd	N	N		Reference
Mergus serrator	Red-breasted Merganser	Aves	Boyd	N	N		Reference
Micropterus dolomieu	Smallmouth Bass	Actinopterygii	Boyd	N	N		Reference
Micropterus punctulatus	Spotted Bass	Actinopterygii	Boyd	N	N		Reference
Micropterus salmoides	Largemouth Bass	Actinopterygii	Boyd	N	N		Reference
Microtus ochrogaster	Prairie Vole	Mammalia	Boyd	N	N		Reference
Microtus pennsylvanicus	Meadow Vole	Mammalia	Boyd	N	N		Reference

Mimus polyglottos	Northern Mockingbird	Aves	Boyd	N	N		Reference
Minytrema melanops	Spotted Sucker	Actinopterygii	Boyd	N	N		Reference
Mniotilta varia	Black-and-white Warbler	Aves	Boyd	N	N		Reference
Molothrus ater	Brown-headed Cowbird	Aves	Boyd	N	N		Reference
Morone chrysops	White Bass	Actinopterygii	Boyd	N	N		Reference
Morone saxatilis	Striped Bass	Actinopterygii	Boyd	N	N		Reference
Moxostoma anisurum	Silver Redhorse	Actinopterygii	Boyd	N	N		Reference
Moxostoma breviceps	Smallmouth Redhorse	Actinopterygii	Boyd	N	N		Reference
Moxostoma carinatum	River Redhorse	Actinopterygii	Boyd	N	N		Reference
Moxostoma erythrurum	Golden Redhorse	Actinopterygii	Boyd	N	N		Reference
Myiarchus crinitus	Great Crested Flycatcher	Aves	Boyd	N	N		Reference
Myotis lucifugus	Little Brown Bat	Mammalia	Boyd	N	T	Yes	Reference
Myotis septentrionalis	Northern Long-Eared Bat	Mammalia	Boyd	T	E	Yes	Reference
Napaeozapus insignis	Woodland Jumping Mouse	Mammalia	Boyd	N	N		Reference
Necturus maculosus	Mudpuppy	Amphibia	Boyd	N	N		Reference
Neohelix albolabris	Whitelip	Gastropoda	Boyd	N	N		Reference
Neotoma magister	Allegheny Woodrat	Mammalia	Boyd	N	N	Yes	Reference
Neovison vison	American Mink	Mammalia	Boyd	N	N		Reference
Nerodia sipedon	Common Watersnake	Reptilia	Boyd	N	N		Reference
Nixe flowersi	A Heptageniid Mayfly	Insecta	Boyd	N	H		Reference
Notemigonus crysoleucas	Golden Shiner	Actinopterygii	Boyd	N	N		Reference

Notophthalmus viridescens	Eastern Newt	Amphibia	Boyd	N	N		Reference
Notropis atherinoides	Emerald Shiner	Actinopterygii	Boyd	N	N		Reference
Notropis blennius	River Shiner	Actinopterygii	Boyd	N	N		Reference
Notropis buchanani	Ghost Shiner	Actinopterygii	Boyd	N	N	Yes	Reference
Notropis photogenis	Silver Shiner	Actinopterygii	Boyd	N	N		Reference
Notropis rubellus	Rosyface Shiner	Actinopterygii	Boyd	N	N		Reference
Notropis stramineus	Sand Shiner	Actinopterygii	Boyd	N	N		Reference
Notropis volucellus	Mimic Shiner	Actinopterygii	Boyd	N	N		Reference
Notropis wickliffi	Channel Shiner	Actinopterygii	Boyd	N	N		Reference
Noturus miurus	Brindled Madtom	Actinopterygii	Boyd	N	N		Reference
Nycticorax nycticorax	Black-crowned Night-heron	Aves	Boyd	N	T	Yes	Reference
Obliquaria reflexa	Threehorn Wartyback	Bivalvia	Boyd	N	N		Reference
Odocoileus virginianus	White-tailed Deer	Mammalia	Boyd	N	N		Reference
Oncorhynchus mykiss	Rainbow Trout	Actinopterygii	Boyd	N	N		Reference
Ondatra zibethicus	Muskrat	Mammalia	Boyd	N	N	Yes	Reference
Opheodrys aestivus	Rough Greensnake	Reptilia	Boyd	N	N		Reference
Oporornis agilis	Connecticut Warbler	Aves	Boyd	N	N		Reference
Oxyura jamaicensis	Ruddy Duck	Aves	Boyd	N	N		Reference
Pandion haliaetus	Osprey	Aves	Boyd	N	S	Yes	Reference
Pantherophis spiloides	Gray Ratsnake	Reptilia	Boyd	N	N		Reference
Parkesia motacilla	Louisiana Waterthrush	Aves	Boyd	N	N	Yes	Reference
Parkesia noveboracensis	Northern Waterthrush	Aves	Boyd	N	N		Reference
Passer domesticus	House Sparrow	Aves	Boyd	N	N		Reference

Passerculus sandwichensis	Savannah Sparrow	Aves	Boyd	N	S	Yes	Reference
Passerella iliaca	Fox Sparrow	Aves	Boyd	N	N		Reference
Passerina caerulea	Blue Grosbeak	Aves	Boyd	N	N		Reference
Passerina cyanea	Indigo Bunting	Aves	Boyd	N	N		Reference
Perca flavescens	Yellow Perch	Actinopterygii	Boyd	N	N		Reference
Percina caprodes	Logperch	Actinopterygii	Boyd	N	N		Reference
Percina copelandi	Channel Darter	Actinopterygii	Boyd	N	N		Reference
Percina maculata	Blackside Darter	Actinopterygii	Boyd	N	N		Reference
Percina phoxocephala	Slenderhead Darter	Actinopterygii	Boyd	N	N		Reference
Percina sciera	Dusky Darter	Actinopterygii	Boyd	N	N		Reference
Percina shumardi	River Darter	Actinopterygii	Boyd	N	N		Reference
Percopsis omiscomaycus	Trout-Perch	Actinopterygii	Boyd	N	S	Yes	Reference
Perimyotis subflavus	Tricolored Bat	Mammalia	Boyd	N	T	Yes	Reference
Peromyscus leucopus	White-footed Mouse	Mammalia	Boyd	N	N		Reference
Petrochelidon pyrrhonota	Cliff Swallow	Aves	Boyd	N	N		Reference
Phalacrocorax auritus	Double-crested Cormorant	Aves	Boyd	N	S		Reference
Phenacobius mirabilis	Suckermouth Minnow	Actinopterygii	Boyd	N	N		Reference
Pheucticus ludovicianus	Rose-breasted Grosbeak	Aves	Boyd	N	S		Reference
Physa gyrina	Tadpole Physa	Gastropoda	Boyd	N	N		Reference
Pimephales notatus	Bluntnose Minnow	Actinopterygii	Boyd	N	N		Reference
Pimephales vigilax	Bullhead Minnow	Actinopterygii	Boyd	N	N		Reference
Pipilo erythrophthalmus	Eastern Towhee	Aves	Boyd	N	N		Reference
Piranga olivacea	Scarlet Tanager	Aves	Boyd	N	N		Reference

Piranga rubra	Summer Tanager	Aves	Boyd	N	N		Reference
Plestiodon fasciatus	Common Five-lined Skink	Reptilia	Boyd	N	N		Reference
Plethodon glutinosus	Northern Slimy Salamander	Amphibia	Boyd	N	N		Reference
Plethodon kentucki	Cumberland Plateau Salamander	Amphibia	Boyd	N	N	Yes	Reference
Plethodon richmondi	Southern Ravine Salamander	Amphibia	Boyd	N	N		Reference
Podiceps auritus	Horned Grebe	Aves	Boyd	N	N	Yes	Reference
Podilymbus podiceps	Pied-billed Grebe	Aves	Boyd	N	E	Yes	Reference
Poecile atricapillus	Black-capped Chickadee	Aves	Boyd	N	N		Reference
Poecile carolinensis	Carolina Chickadee	Aves	Boyd	N	N		Reference
Polioptila caerulea	Blue-gray Gnatcatcher	Aves	Boyd	N	N		Reference
Polyodon spathula	Paddlefish	Actinopterygii	Boyd	N	N	Yes	Reference
Pomoxis annularis	White Crappie	Actinopterygii	Boyd	N	N		Reference
Pomoxis nigromaculatus	Black Crappie	Actinopterygii	Boyd	N	N		Reference
Potamilus alatus	Pink Heelsplitter	Bivalvia	Boyd	N	N		Reference
Potamilus ohiensis	Pink Papershell	Bivalvia	Boyd	N	N		Reference
Procyon lotor	Northern Raccoon	Mammalia	Boyd	N	N		Reference
Progne subis	Purple Martin	Aves	Boyd	N	N		Reference
Pseudacris brachyphona	Mountain Chorus Frog	Amphibia	Boyd	N	N		Reference
Pseudacris crucifer	Spring Peeper	Amphibia	Boyd	N	N		Reference
Pseudotriton montanus diastictus	Midland Mud Salamander	Amphibia	Boyd	N	N	Yes	Reference
Pseudotriton ruber	Red Salamander	Amphibia	Boyd	N	N		Reference
Pyganodon grandis	Giant Floater	Bivalvia	Boyd	N	N		Reference

Pylodictis olivaris	Flathead Catfish	Actinopterygii	Boyd	N	N		Reference
Quadrula quadrula	Mapleleaf	Bivalvia	Boyd	N	N		Reference
Quiscalus quiscula	Common Grackle	Aves	Boyd	N	N		Reference
Regulus calendula	Ruby-crowned Kinglet	Aves	Boyd	N	N		Reference
Regulus satrapa	Golden-crowned Kinglet	Aves	Boyd	N	N		Reference
Rhinichthys obtusus	Western Blacknose Dace	Actinopterygii	Boyd	N	N		Reference
Sander canadensis	Sauger	Actinopterygii	Boyd	N	N		Reference
Sander vitreus	Walleye	Actinopterygii	Boyd	N	N		Reference
Sayornis phoebe	Eastern Phoebe	Aves	Boyd	N	N		Reference
Sceloporus undulatus	Eastern Fence Lizard	Reptilia	Boyd	N	N		Reference
Scincella lateralis	Little Brown Skink	Reptilia	Boyd	N	N		Reference
Sciurus carolinensis	Eastern Gray Squirrel	Mammalia	Boyd	N	N		Reference
Sciurus niger	Eastern Fox Squirrel	Mammalia	Boyd	N	N		Reference
Seiurus aurocapilla	Ovenbird	Aves	Boyd	N	N		Reference
Selasphorus rufus	Rufous Hummingbird	Aves	Boyd	N	N		Reference
Semotilus atromaculatus	Creek Chub	Actinopterygii	Boyd	N	N		Reference
Setophaga americana	Northern Parula	Aves	Boyd	N	N		Reference
Setophaga caerulescens	Black-throated Blue Warbler	Aves	Boyd	N	N		Reference
Setophaga castanea	Bay-breasted Warbler	Aves	Boyd	N	N		Reference
Setophaga cerulea	Cerulean Warbler	Aves	Boyd	N	N	Yes	Reference
Setophaga citrina	Hooded Warbler	Aves	Boyd	N	N		Reference

Setophaga coronata	Yellow-rumped Warbler	Aves	Boyd	N	N		Reference
Setophaga discolor	Prairie Warbler	Aves	Boyd	N	N	Yes	Reference
Setophaga dominica	Yellow-throated Warbler	Aves	Boyd	N	N		Reference
Setophaga fusca	Blackburnian Warbler	Aves	Boyd	N	T		Reference
Setophaga magnolia	Magnolia Warbler	Aves	Boyd	N	N		Reference
Setophaga palmarum	Palm Warbler	Aves	Boyd	N	N		Reference
Setophaga pensylvanica	Chestnut-sided Warbler	Aves	Boyd	N	N		Reference
Setophaga petechia	Yellow Warbler	Aves	Boyd	N	N		Reference
Setophaga pinus	Pine Warbler	Aves	Boyd	N	N		Reference
Setophaga ruticilla	American Redstart	Aves	Boyd	N	N		Reference
Setophaga striata	Blackpoll Warbler	Aves	Boyd	N	N	Yes	Reference
Setophaga tigrina	Cape May Warbler	Aves	Boyd	N	N	Yes	Reference
Setophaga virens	Black-throated Green Warbler	Aves	Boyd	N	N	Yes	Reference
Sialia sialis	Eastern Bluebird	Aves	Boyd	N	N		Reference
Simpsonaias ambigua	Salamander Mussel	Bivalvia	Boyd	N	T	Yes	Reference
Sitta canadensis	Red-breasted Nuthatch	Aves	Boyd	N	E		Reference
Sitta carolinensis	White-breasted Nuthatch	Aves	Boyd	N	N		Reference
Sorex fumeus	Smoky Shrew	Mammalia	Boyd	N	N	Yes	Reference
Sphaerium simile	Grooved Fingernailclam	Bivalvia	Boyd	N	N		Reference
Sphyrapicus varius	Yellow-bellied Sapsucker	Aves	Boyd	N	N		Reference
Spinus pinus	Pine Siskin	Aves	Boyd	N	N		Reference
Spinus tristis	American Goldfinch	Aves	Boyd	N	N		Reference

Spiza americana	Dickcissel	Aves	Boyd	N	N	Yes	Reference
Spizella passerina	Chipping Sparrow	Aves	Boyd	N	N		Reference
Spizella pusilla	Field Sparrow	Aves	Boyd	N	N	Yes	Reference
Spizelloides arborea	American Tree Sparrow	Aves	Boyd	N	N		Reference
Stelgidopteryx serripennis	Northern Rough-winged Swallow	Aves	Boyd	N	N		Reference
Sternotherus odoratus	Eastern Musk Turtle	Chelonia	Boyd	N	N		Reference
Storeria dekayi	Dekay's Brownsnake	Reptilia	Boyd	N	N		Reference
Strix varia	Barred Owl	Aves	Boyd	N	N		Reference
Strophitus undulatus	Creeper	Bivalvia	Boyd	N	N		Reference
Sturnella magna	Eastern Meadowlark	Aves	Boyd	N	N	Yes	Reference
Sturnus vulgaris	European Starling	Aves	Boyd	N	N		Reference
Sylvilagus floridanus	Eastern Cottontail	Mammalia	Boyd	N	N		Reference
Synaptomys cooperi	Southern Bog Lemming	Mammalia	Boyd	N	N	Yes	Reference
Tachycineta bicolor	Tree Swallow	Aves	Boyd	N	N		Reference
Terrapene carolina	Eastern Box Turtle	Chelonia	Boyd	N	N		Reference
Thamnophis sirtalis	Common Gartersnake	Reptilia	Boyd	N	N		Reference
Thryothorus ludovicianus	Carolina Wren	Aves	Boyd	N	N		Reference
Toxostoma rufum	Brown Thrasher	Aves	Boyd	N	N		Reference
Trachemys scripta elegans	Red-eared Slider	Chelonia	Boyd	N	N		Reference
Tringa solitaria	Solitary Sandpiper	Aves	Boyd	N	N	Yes	Reference
Troglodytes aedon	House Wren	Aves	Boyd	N	N		Reference
Troglodytes hiemalis	Winter Wren	Aves	Boyd	N	N		Reference

Turdus migratorius	American Robin	Aves	Boyd	N	N		Reference
Tyrannus tyrannus	Eastern Kingbird	Aves	Boyd	N	N		Reference
Urocyon cinereoargenteus	Gray Fox	Mammalia	Boyd	N	N	Yes	Reference
Ursus americanus	American Black Bear	Mammalia	Boyd	N	N		Reference
Vermivora chrysoptera	Golden-winged Warbler	Aves	Boyd	N	E	Yes	Reference
Vermivora cyanoptera	Blue-winged Warbler	Aves	Boyd	N	N	Yes	Reference
Vireo flavifrons	Yellow-throated Vireo	Aves	Boyd	N	N		Reference
Vireo gilvus	Warbling Vireo	Aves	Boyd	N	N		Reference
Vireo griseus	White-eyed Vireo	Aves	Boyd	N	N		Reference
Vireo olivaceus	Red-eyed Vireo	Aves	Boyd	N	N		Reference
Vireo philadelphicus	Philadelphia Vireo	Aves	Boyd	N	N		Reference
Vireo solitarius	Blue-headed Vireo	Aves	Boyd	N	N		Reference
Vulpes vulpes	Red Fox	Mammalia	Boyd	N	N		Reference
Zenaida macroura	Mourning Dove	Aves	Boyd	N	N		Reference
Zonotrichia albicollis	White-throated Sparrow	Aves	Boyd	N	N		Reference
Zonotrichia leucophrys	White-crowned Sparrow	Aves	Boyd	N	N		Reference

382 species are listed

Andy Beshear
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
Office of Kentucky Nature Preserves
300 Sower Boulevard
Frankfort, Kentucky 40601
Phone: (502) 564-3350

Rebecca Goodman
SECRETARY

Sunni Carr
Executive Director

May 3, 2023

Ellen Mullins
Stantec
3052 Beaumont Centre Circle
Lexington, KY 40513-1703

Project:	KY-716 Env. Overview Report; 178568101
Project ID:	23-0327
Project Type:	Standard (*customers will be invoiced), 1 mile buffer ($120 fee)
Site Acreage:	39.53
Site Lat/Lon:	38.436248 / -82.695564
County:	Boyd
USGS Quad:	ASHLAND
Watershed HUC12:	Shope Creek-East Fork Little Sandy River

Dear Ellen Mullins,

This letter is in response to your data request for the project referenced above. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Office of Kentucky Nature Preserves occur within your general project area. Your project does pose a concern at this time, therefore please see the attached reports and report key for more detailed information.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Office of Kentucky Nature Preserves, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Office of Kentucky Nature Preserves." The exact location of plants, animals, and natural communities, if released by the Office of Kentucky Nature Preserves, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Biological Assessment Branch (300 Sower Blvd - 4th Floor, Frankfort, KY, 40601. Phone: 502-782-7828).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site

surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

If you have any questions, or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Alexis R Schoenlaub
Geoprocessing Specialist

Standard Occurrence Report
KNP monitored species within 1 Miles of Project Area

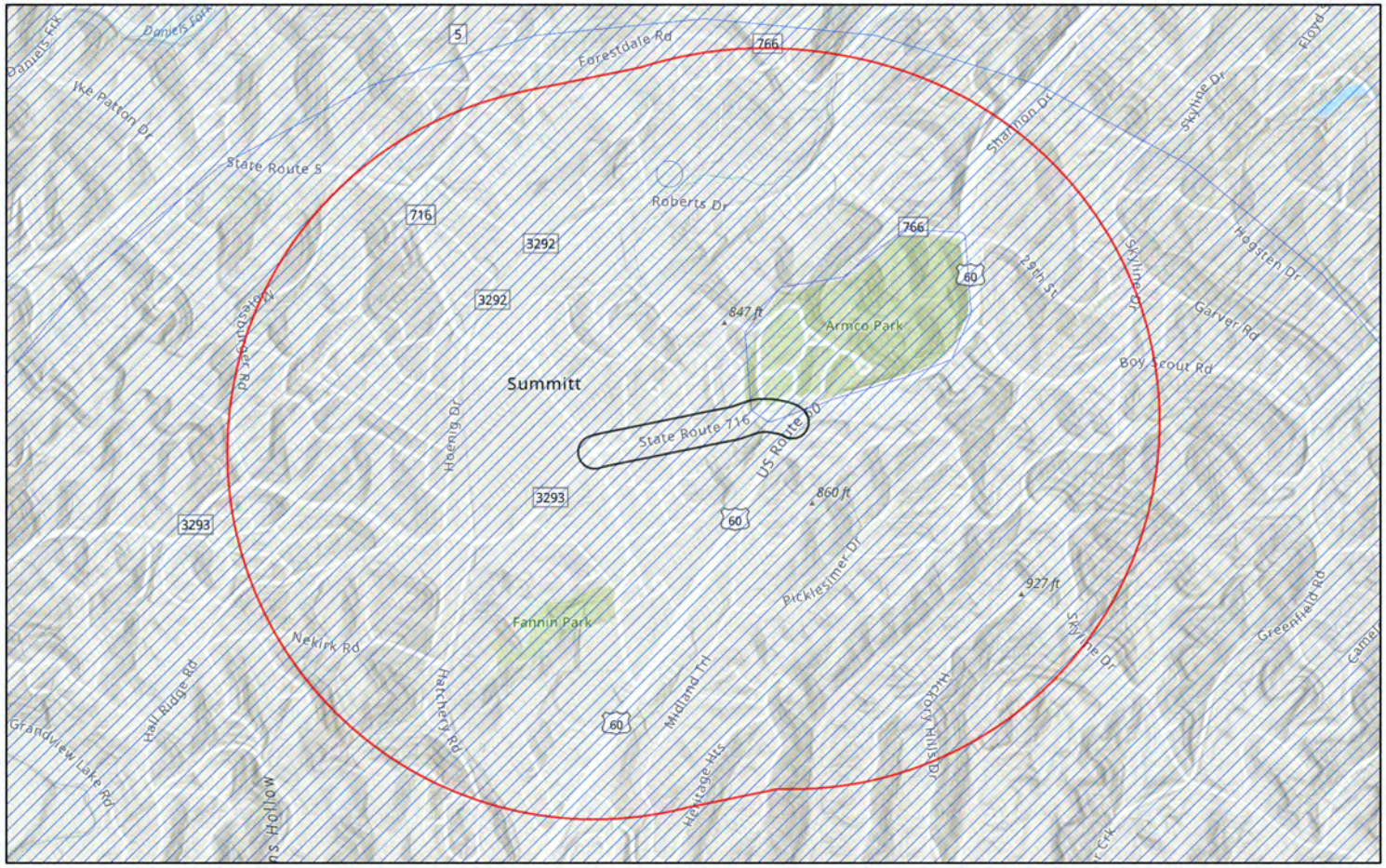
EO ID	Scientific Name	Common Name	GRank	SRank	SPROT	USESA	STWG	Last Obs Date	Precision	EO Rank	Lat / Lon	Directions	Habitat
9781	*Adiantum capillus-veneris*	Southern Maidenhair-fern	G5	S2S3	T		Y	1938-Pre	C	H?	38.3596 / -82.6877	Boyd County	Moist to wet limestone seeps. reported on shale, often in association with waterfalls or near travertine deposits..
15493	*Eriophorum virginicum*	Tawny Cotton-grass	G5	S1	E		Y	1928	G	H	38.4173 / -82.6957	Collected from "Rockdale"	Peaty sites, occurring in the mountains in bogs and fens, in the piedmont (formerly) in bogs, in the fall-line sandhills in burned-out pocosins, in the coastal plain in pocosins, acidic seeps, and peat-burn pools (Weakley 2011).
6814	*Hyla versicolor*	Gray Treefrog	G5	S2S3	S		Y	2000-05-24	S	D	38.4469 / -82.6964	Summit, undeveloped area N of RR tracks at KY 3292, 0.45 air mi WNW of Ashland Vocational School.	Permanent and temporary ponds in semi-open habitats. Native habitat is unknown.
14409	*Phlox stolonifera*	Creeping Phlox	G4G5	S3?	N			1987-04-26	M	E	38.4404 / -82.6866	Armco Family Park; Rich woods; Near creek; N facing slope.	MOIST WOODS AND BOTTOMS. KY- LOWER SLOPES AND TERRACES IN MIXED-MESOPHYTIC FOREST-JC.

Managed Areas within 1 Miles of Project Area

MA ID	Managed Area Name	Unit Type	Owner Name	Managing Institution
1605	*Armco Park*	Local Park/Preserve	Boyd County	Boyd County
1606	*Fannin Park*	Local Park/Preserve	Boyd County	Boyd County

THESE DATA ARE VALID ONLY ON THE DATE ON WHICH THE REPORT WAS GENERATED.
THESE DATA MAY ONLY BE USED FOR THE PROJECT NAMED ABOVE.

KY-716 Env. Overview Report



May 3, 2023

Element Occurences

Project Boundary

Buffered Project Boundary

1:24,817

0 0.2 0.4 0.8 mi

0 0.33 0.65 1.3 km

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA,

From:	sean vanderhoff
To:	Mullins, Ellen
Cc:	databasecommittee@ksscaves.org; michaelketzner@gmail.com; sarah.arpin@uky.edu; cdecelle@ksscaves.org; hkalnitz@fuse.net; benjamin.tobin@uky.edu; bobroth88@yahoo.com; pat.kambesis@wku.edu; gary1@wgbush.com; admin@ksscaves.com; kzachary@ksscaves.org; sarahmariecaver@gmail.com
Subject:	Re: New KSS Data Request from Ellen Mullins
Date:	Wednesday, May 3, 2023 1:20:10 PM
Attachments:	20230503171049_kytc-ky-716-boyd-co.zip

Hi Ellen,

You caught me at a good time to fulfill this request quickly.

According to our database, there are no cave locations within the provided buffer located in Boyd County. The nearest known cave is in adjoining Carter County approximately 25 miles away.

There is a $50 search fee, and you will be invoiced by our new treasurer, Julie Roush.

This data is shared to aid in our organizational goals of conservation, research, and exploration of caves throughout the Commonwealth of Kentucky. Please remember that data reported by KSS is as has been reported to us, but not guaranteed to be complete or correct. There may be unknown caves, sinks or other unreported or unknown karst features. Additionally unreported or filled in cave entrances can open or subside at any time. Use caution when using this data.

Please mark supplied locations as Privileged and Confidential on all maps associated with this project, if provided.

Please note our updated guidelines on request turnaround timing:

> *KSS is a volunteer organization. We do try to process standard requests as fast as possible, but cannot guarantee a turnaround time. We try to process non-voted requests in less than 1 month, and will attempt to vote on more complicated requests within 2 months.*
> *Requestors can contact us if a quick turnaround time is specifically needed.*
> *Timing is greatly reduced if an ArcGIS .shp file is provided*

Sean Vanderhoff
President
Kentucky Speleological Survey

On Wednesday, May 3, 2023 at 01:10:54 PM EDT, Kentucky Speleological Survey <admin@ksscaves.com> wrote:

Your Name Ellen Mullins

Address: 3052 Baumont Centre Circle

City:	Lexington
State:	Kentucky
Phone:	8599485664
Email Address	ellen.mullins@stantec.com
Organization:	Stantec
Data Information Requested:	We request locations of any portals or caves within the attached shapefile. If there are not any, if you could just include a rough distance of the nearest cave record that would be great.
Intended Use of Data/Information:	KYTC KY-716 road project
Qualifications:	Environmental Project Manager
Attachments:	20230503171049_kytc-ky-716-boyd-co.zip

ATTACHMENT 2

Areas of Air Quality Concern in Kentucky

Areas of Air Quality Concern in KY

2015 8-hour ozone:**

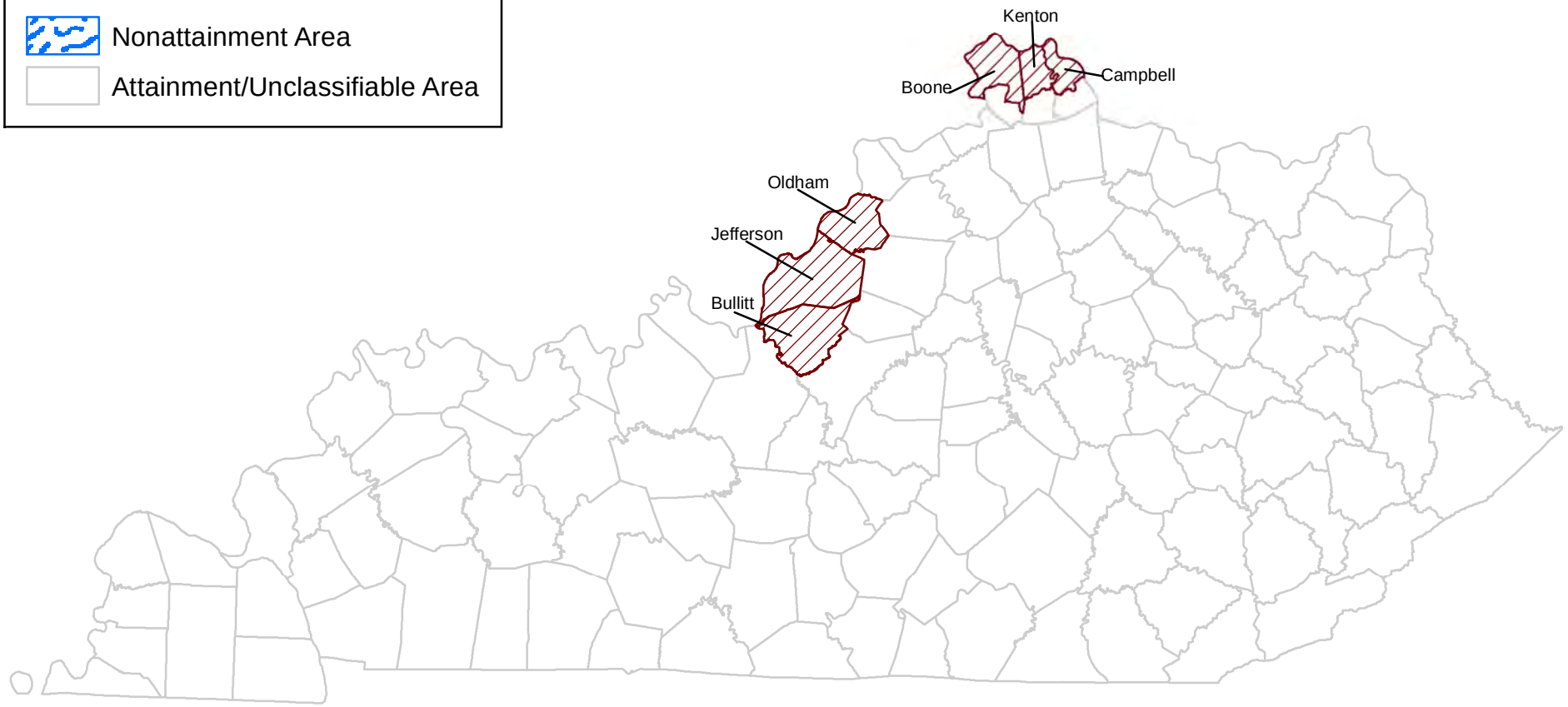
Nonattainment Area

Attainment/Unclassifiable Area

2012 PM2.5:

Nonattainment Area

Attainment/Unclassifiable Area



**The 2015 8-hour ozone NAAQS includes the counties of Jefferson, Oldham, Bullitt, and partial counties of Boone, Kenton, and Campbell .

As of March 2019

KENTUCKY'S AIR QUALITY DESIGNATIONS FOR TRANSPORTATION CONFORMITY PURPOSES (Updated 03/15/2019)						
AIRSHEDS	**1-Hour Ozone Vacated (1979 NAAQS)**	**8-Hour Ozone Vacated (1997 NAAQS)**	**8-Hour Ozone Implemented (2008 NAAQS)**	**8-Hour Ozone Implemented (2015 NAAQS)**	**$PM_{2.5}$ Annual Vacated (1997 NAAQS)**	**$PM_{2.5}$ Annual Implemented (2012 NAAQS)**
Cincinnati - Hamilton (OH, KY, IN)						
Boone Co, KY*	Vacated	Vacated	Maintenance (P)	Nonattainment (P)	Vacated	Attainment/Unclassifiable
Campbell Co, KY*	Vacated	Vacated	Maintenance (P)	Nonattainment (P)	Vacated	Attainment/Unclassifiable
Kenton Co, KY*	Vacated	Vacated	Maintenance (P)	Nonattainment (P)	Vacated	Attainment/Unclassifiable
Louisville (KY, IN)						
Bullitt Co, KY*	Vacated (P)	Vacated	Attainment/Unclassifiable	Nonattainment	Vacated	Attainment/Unclassifiable
Jefferson Co, KY*	Vacated	Vacated	Attainment/Unclassifiable	Nonattainment	Vacated	Attainment/Unclassifiable
Oldham Co, KY*	Vacated (P)	Vacated	Attainment/Unclassifiable	Nonattainment	Vacated	Attainment/Unclassifiable
Huntington - Ashland (WV, KY)						
Boyd Co, KY*	N/A	Vacated	Attainment/Unclassifiable	Attainment/Unclassifiable	Vacated	Attainment/Unclassifiable
Greenup Co, KY**	Vacated (P)	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	Vacated	Attainment/Unclassifiable
Lawrence Co, KY**	N/A	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	Vacated (P)	Attainment/Unclassifiable
Clarksville - Hopkinsville (TN, KY)						
Christian Co, KY*	N/A	Vacated	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Muhlenberg, TN (P)	N/A	Vacated	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Lexington						
Fayette Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Scott Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Owensboro						
Daviess Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Hancock Co, KY**	Vacated (P)	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Paducah						
Livingston Co, KY**	Vacated (P)	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Marshall Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
Other						
Edmondson, Co, KY*	Vacated	N/A	Attainment/Unclassifiable	Attainment/Unclassifiable	N/A	Attainment/Unclassifiable
National Ambient Air Quality Standards (NAAQS), Particulate Matter (PM), Partial (P)						
(*) indicates entire counties eligible for CMAQ. (**) indicates partial counties eligible for CMAQ						

ATTACHMENT 3

Kentucky Karst Potential Map

KENTUCKY GEOLOGICAL SURVEY
James C. Cobb, State Geologist and Director
UNIVERSITY OF KENTUCKY, LEXINGTON

MAP AND CHART 33
Series XII, 2001

KARST OCCURRENCE IN KENTUCKY

Randall L. Paylor and
James C. Currens

This map was compiled from a digital version of the 1:500,000-scale geologic map of Kentucky (Noger, M.C., comp., 1988, Geologic map of Kentucky: U.S. Geological Survey). The areas of potential karst development were delineated using stratigraphic units mapped on the geologic map. The classification of the potential for karst development was based on the field experience of the authors and other data. A number of isolated carbonate units that would not have otherwise been differentiated on the geologic map were newly digitized for this map.

This karst map should not be used for evaluating karst geologic hazards or hydrogeology at scales larger than 1:500,000. The base geologic map was digitized at 1:500,000 scale and is limited in precision to that scale. Because of the small scale of the original geologic map, lithostratigraphic units were consolidated into thicker chronostratigraphic units to create an area large enough to delineate on the geologic map. In some cases, the consolidation resulted in carbonates (limestone or dolomite) and noncarbonates (sandstone or shale, for example) being grouped; these rocks are not redivided on this map. Although the potential for karst development can be predicted from lithology, other factors such as relief and length of time the rock is exposed are also important and were not considered in the making of this map. Finally, areas where the near-surface bedrock is insoluble and closely underlain by soluble rock are common, particularly in the Eastern Pennyroyal. Conduits that pirate drainage commonly extend through ridges capped with insoluble rocks. Therefore, some areas mapped as having limited potential that are adjacent to areas of higher potential are actually karst, but cannot be differentiated on this map.

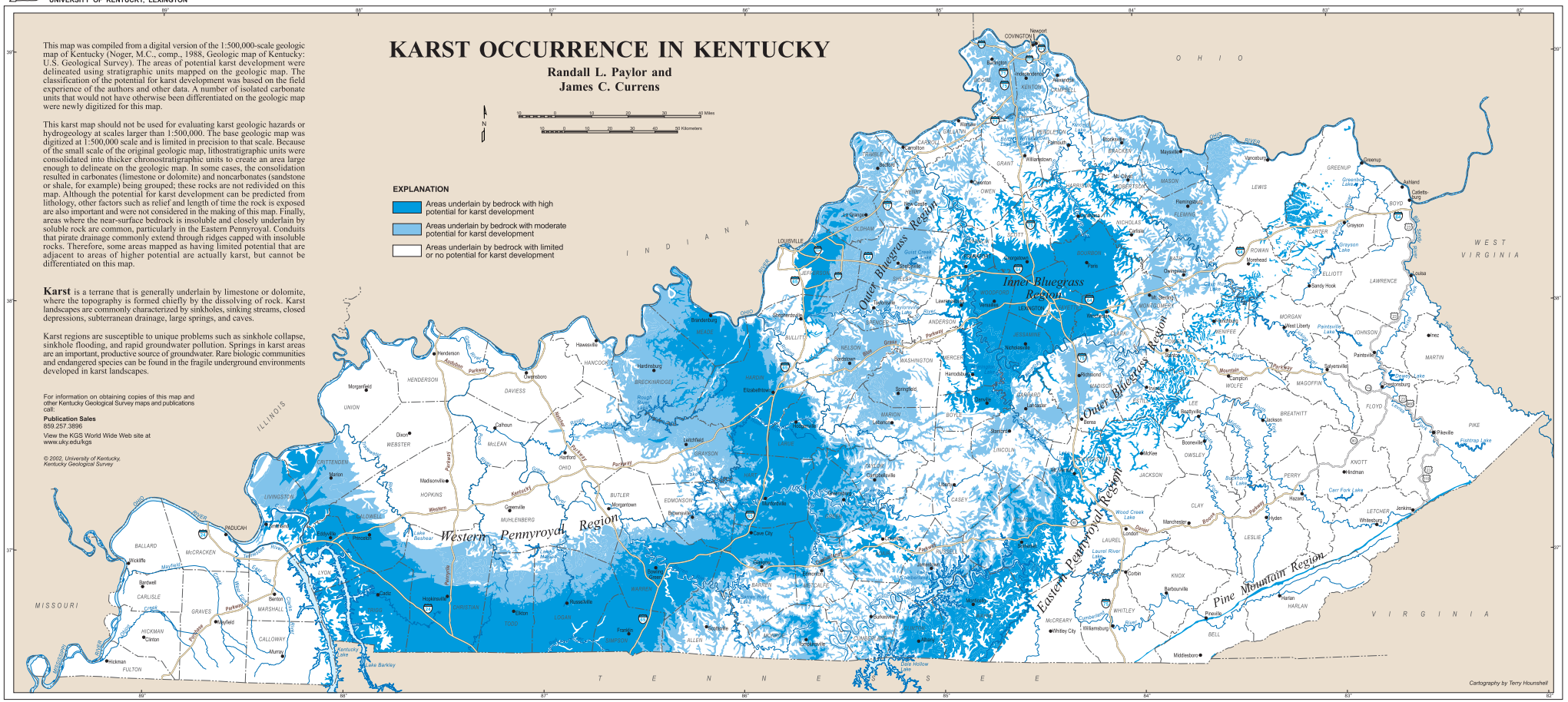
Karst is a terrane that is generally underlain by limestone or dolomite, where the topography is formed chiefly by the dissolving of rock. Karst landscapes are commonly characterized by sinkholes, sinking streams, closed depressions, subterranean drainage, large springs, and caves.

Karst regions are susceptible to unique problems such as sinkhole collapse, sinkhole flooding, and rapid groundwater pollution. Springs in karst areas are an important, productive source of groundwater. Rare biologic communities and endangered species can be found in the fragile underground environments developed in karst landscapes.

For information on obtaining copies of this map and other Kentucky Geological Survey maps and publications call:

Publication Sales
859.257.3896

View the KGS World Wide Web site at
www.uky.edu/kgs



ATTACHMENT 4

Historic and Archaeological Cultural Resources
(Contains sensitive information. For internal use only.)

a. Kentucky Heritage Council Database Report
b. Kentucky Office of State Archaeology Database Report

Kentucky Heritage Council

State Historic Preservation Office

INVOICE

410 High Street
Frankfort, KY 40601
Email: khc-sitedata@ky.gov

MAY 15, 2023

Requested By:
Heather Doerge
heather.doerge@stantec.com
Stantec

Full Site Check

PROJECT REGISTRATION NO.	PRINCIPAL INVESTIGATOR
FY23-5396	Rachel Kennedy

PROJECT TITLE	KY-716 Environmental Overview Report

DESCRIPTION	DATE	AMOUNT
PDF Report	5/15/2023	$75.00
Notes: Boyd		
Paid Online	5/3/2023	-$75.00
		$0.00

If you have any questions about this invoice, please contact
khc-sitedata@ky.gov

Kentucky Heritage Council

Site Identification Program
410 High Street, Frankfort, KY 40601

Confidential Information Not for Public Release

Please note that those resources for which National Register status is listed as 'undetermined' may include those that have been previously determined eligible for listing in the National Register of Historic Places as part of a consensus determination between the SHPO and a Federal agency, but for which the determination field has not yet been updated.

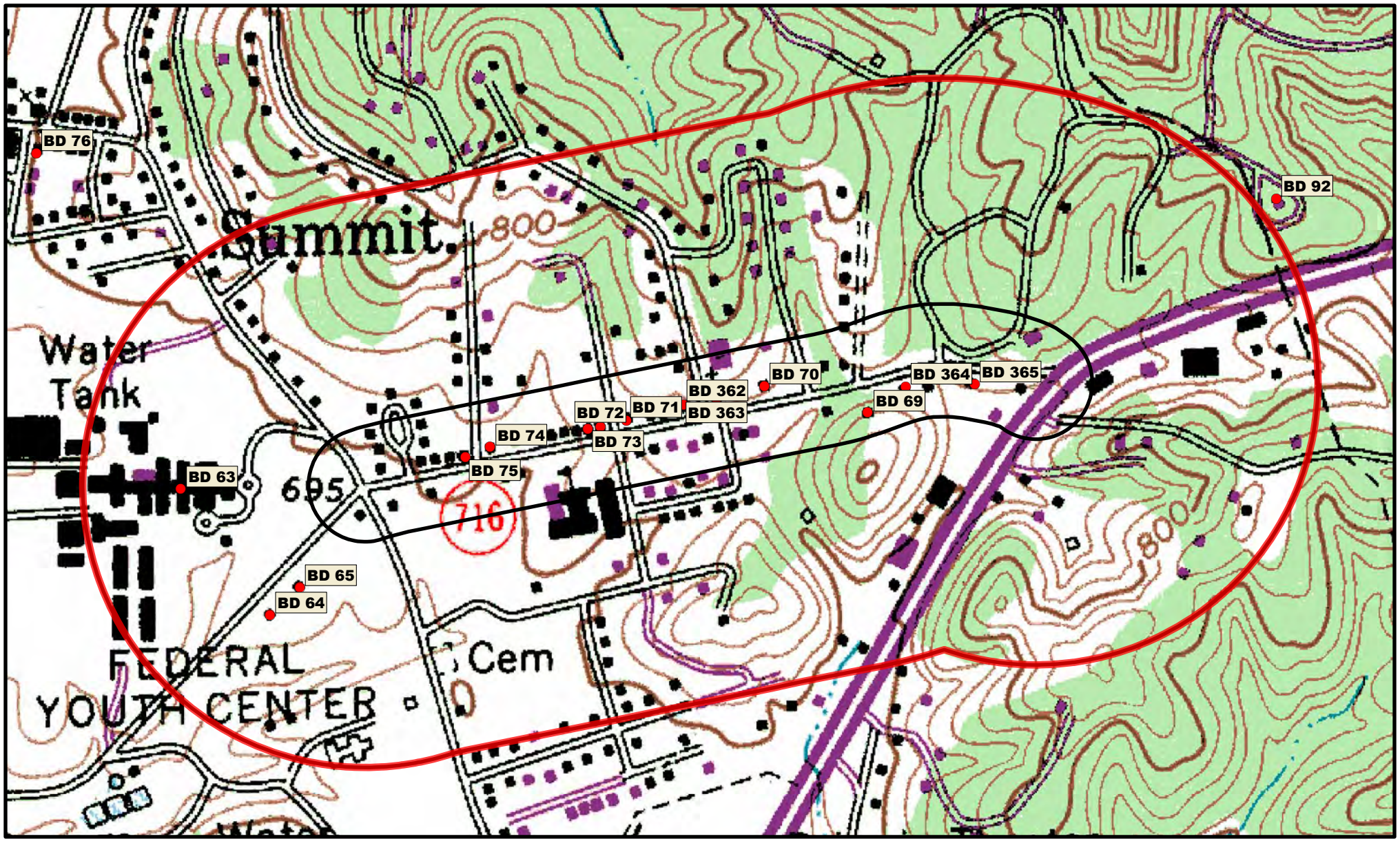
Project Registration: FY23-5396
Date of check: 5/15/2023

HISTORIC RESOURCES

Site #	Sub #	Historic Name	Location	Est. Year	Style	Status
BD 362		HOUSE	W CORNER OF BYBEE RD AND HWY 716			UNDETERMINED
BD 363		SUMMIT MISSIONARY BAPTIST CHURCH	EAST CORNER BYBEE RD AND KY 716	1925-1949		UNDETERMINED
BD 364		HOUSE	BYBEE RD 1/4 MILE WEST OF JCT WITH KY 716	1925-1949		UNDETERMINED
BD 365		HOUSE	CORNER OF KY 716 AND US 60	1925-1949		UNDETERMINED
BD 63		FEDERAL CORRECTIONS INSTITUTE: ASHLAND	ROUTE 716 JUST WEST OF INTERSECTION WITH US 60 IN SUMMIT	1925-1949		DET. ELIG. BY N/R KEEPER

HISTORIC RESOURCES

Site #	Sub #	Historic Name	Location	Est. Year	Style	Status
BD 64		HOUSE	600 LITTLE GARNER ROAD	1925-1949	CRAFTSMAN	UNDETERMINED
BD 65		WARDEN'S HOUSE	S SIDE LITTLE GARNER RD WEST OF INTERSECTION WITH ROUTE 716	1925-1949	AMERICAN FOURSQUARE	UNDETERMINED
BD 69		HOUSE	SOUTH SIDE RT 716 SUMMIT RD WEST OF INTERSECTION WITH US 60	1925-1949	CRAFTSMAN	UNDETERMINED
BD 70		HOUSE	1039 SUMMIT ROAD	1925-1949		UNDETERMINED
BD 71		HOUSE	923 ROUTE 716 (SUMMIT ROAD)	1925-1949	CRAFTSMAN	UNDETERMINED
BD 72		HOUSE	839 ROUTE 716 (SUMMIT ROAD)	1925-1949	TUDOR REVIVAL	UNDETERMINED
BD 73		HOUSE	835 ROUTE 716 (SUMMIT ROAD)	1925-1949	TUDOR REVIVAL	UNDETERMINED
BD 74		HOUSE	823 ROUTE 716 (SUMMIT ROAD)	1925-1949	AMERICAN FOURSQUARE	UNDETERMINED
BD 75		HOUSE	737 ROUTE 716 (SUMMIT ROAD)	1925-1949	TUDOR REVIVAL	UNDETERMINED



Coded Historic Properties
KHC Historic Resources
KHC Resource Entry
KHC Linear Resources

Group Boundaries
National Register Districts
Large National Register Property Boundaries

Easements
Submitted Project Boundaries
Research Area

Kentucky Heritage Council
Site Identification Program
410 High Street, Frankfort, KY 40601

Confidential Information Not for Public Release

Note: this information report does not constitute Section 106 consultation or "clearance" from the KHC/SHPO

0.00 0.10 0.20 Miles

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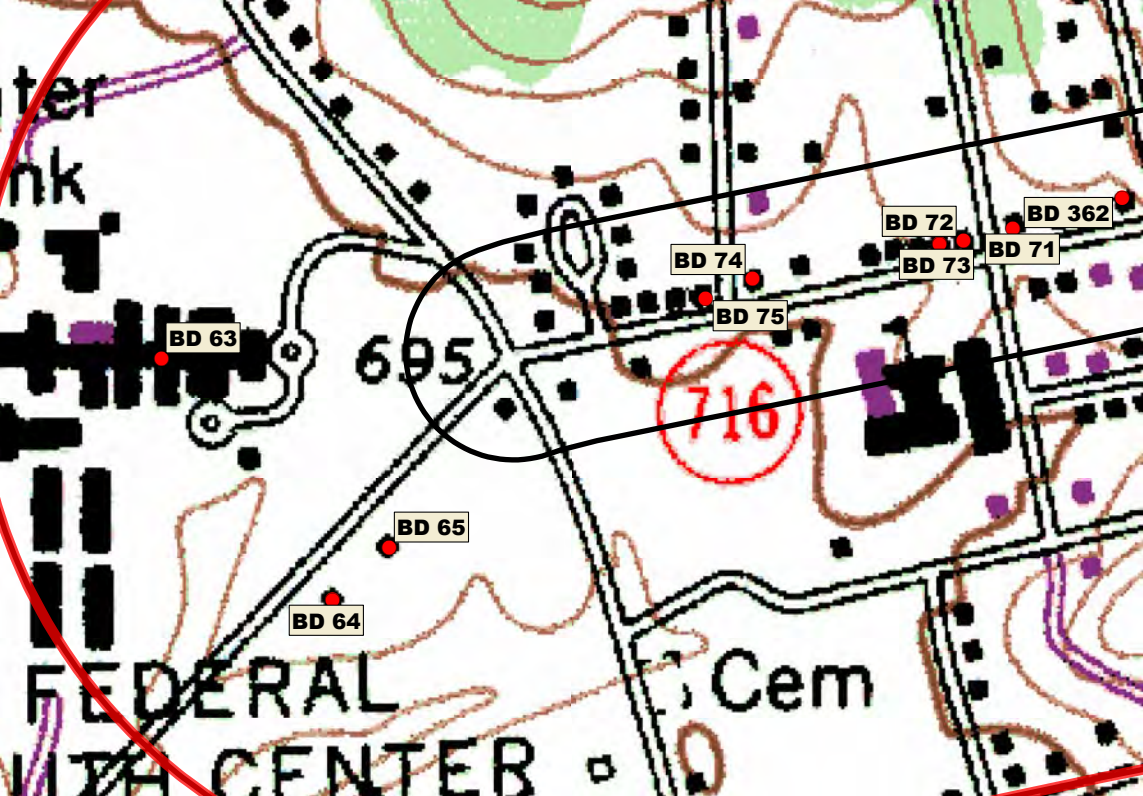
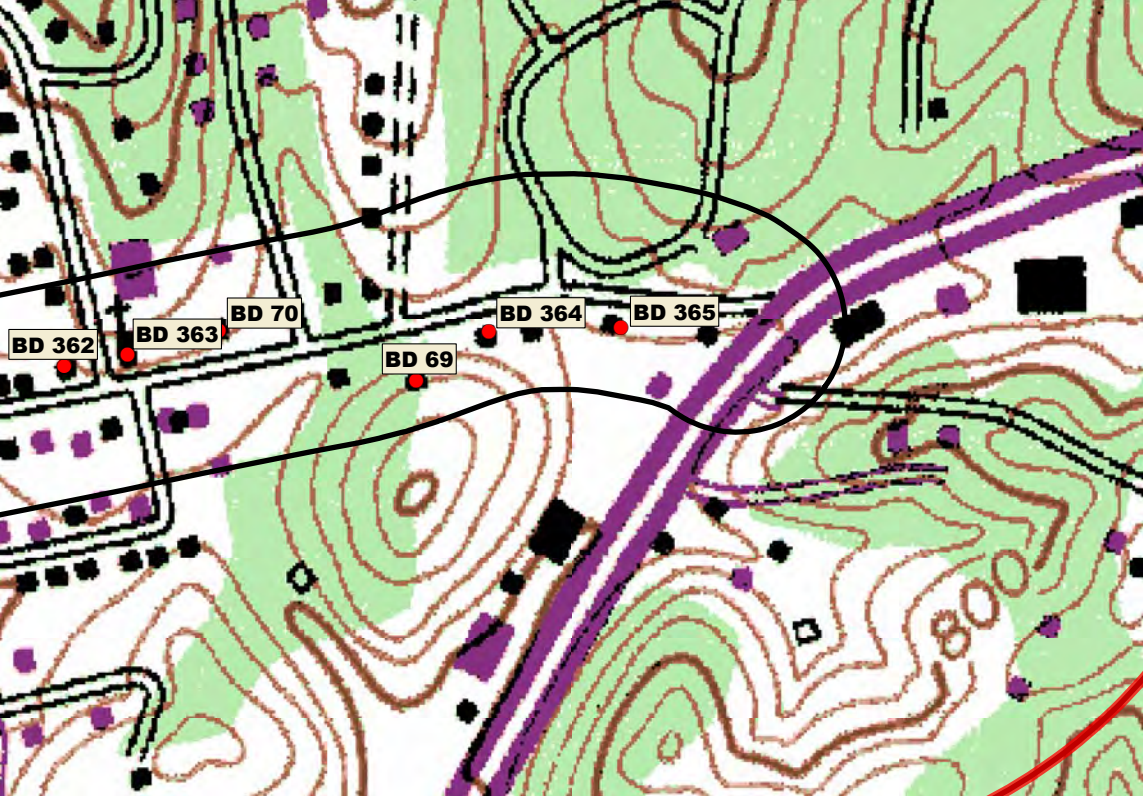

BD 63
BD 65
BD 64
BD 74
BD 75
BD 72
BD 73
BD 71
BD 362
695
716
FEDERAL
Cem


BD 362
BD 363
BD 70
BD 69
BD 364
BD 365
800

Kentucky Office of State Archaeology
University of Kentucky, 1020A Export Street, Lexington, KY 40506
Phone:859-257-1944 Fax:859-323-1698 email:ky-osa@lsv.uky.edu
Confidential Information
Not for Public Release

Preliminary Records Review Coversheet

Date Request Processed: 05/06/2023

Preliminary Review Number: P126107

Paid via: ☐ Check (Check No.:)

☒ Credit Card (Transaction ID: 1992619612)

If you have any questions, please contact KyOSA at (859)257-1944 or ky-osa@lsv.uky.edu.

Kentucky Office of State Archaeology

University of Kentucky, 1020A Export Street, Lexington, KY 40506
Phone:859-257-1944 Fax:859-323-1698 email:ky-osa@lsv.uky.edu

Confidential Information
Not for Public Release

P126107
KY-716 Environmental Overview

Review Performed On: 05/06/2023

This report includes only previously recorded archaeological resources within your project area and its immediate vicinity and may not be exhaustive of all archaeological resources actually present. **This information does not constitute Section 106 consultation or 'clearance' from the KHC/SHPO**.

Review Results

There are no previously recorded archaeological sites within your project area or an additional 30 m buffer.

ATTACHMENT 5

USDA Soil Resource Report

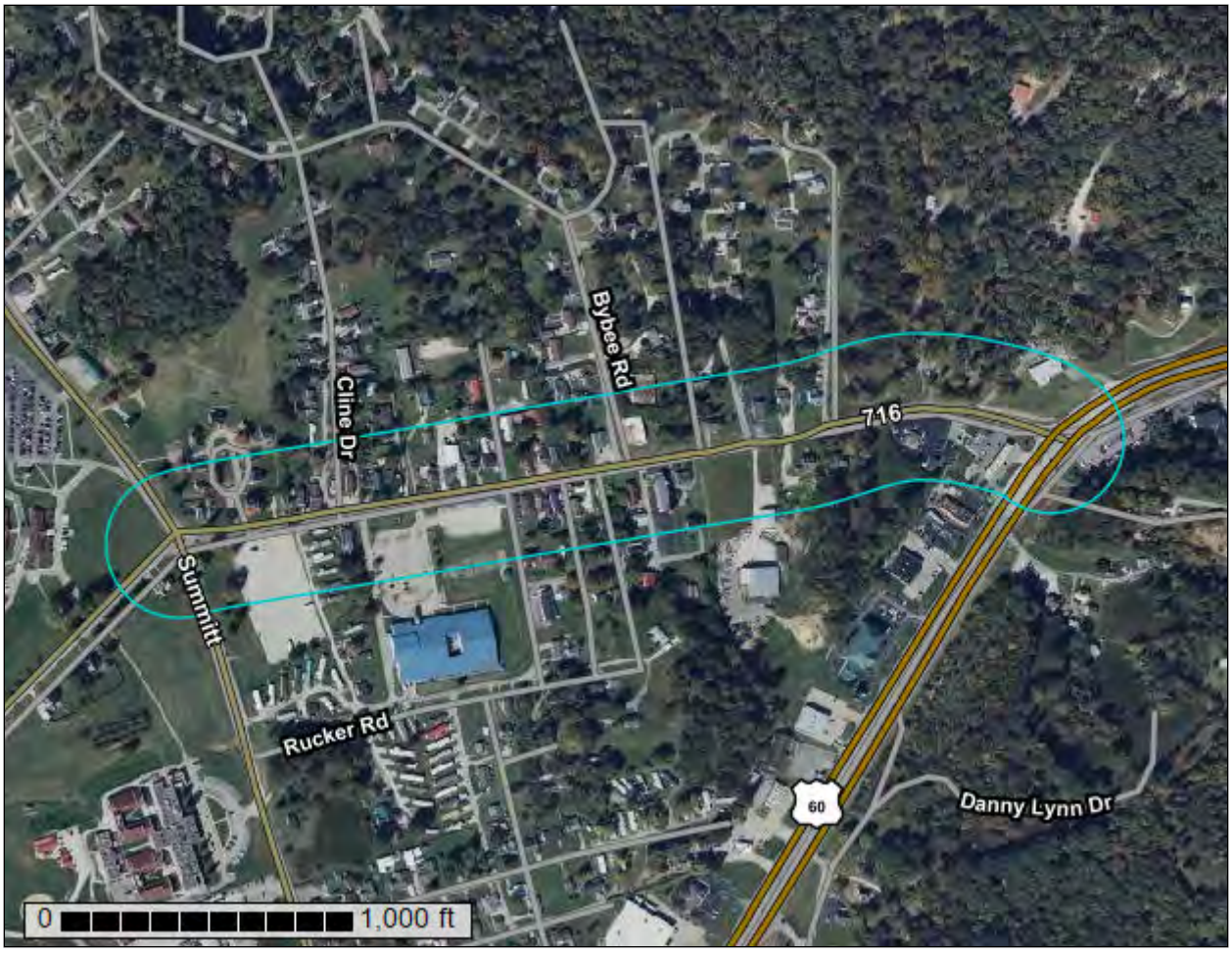
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boyd and Greenup Counties, Kentucky



May 8, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boyd and Greenup Counties, Kentucky
Survey Area Data: Version 22, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 8, 2020—Dec 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LmD	Latham-Steinsburg complex, 12 to 20 percent slopes	0.0	0.1%
LsE	Latham-Shelocta silt loams, 20 to 30 percent slopes	4.8	12.2%
LsF	Latham-Shelocta silt loams, 30 to 50 percent slopes	2.9	7.3%
Mo	Morehead silt loam	4.7	11.9%
TlB	Tilsit silt loam, 2 to 6 percent slopes - residual & alluvial landforms	24.3	61.6%
TlC	Tilsit silt loam, 6 to 12 percent slopes - residual & alluvial landforms	2.8	7.0%
Totals for Area of Interest		**39.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Boyd and Greenup Counties, Kentucky

LmD—Latham-Steinsburg complex, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: lgqw
Elevation: 570 to 1,050 feet
Mean annual precipitation: 36 to 47 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Latham and similar soils: 50 percent
Steinsburg and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Latham

Setting

Landform: Ridges
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from acid shale

Typical profile

A - 0 to 11 inches: silt loam
Bt - 11 to 38 inches: silty clay
Cr - 38 to 48 inches: weathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 21 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F124XY002OH - Acid Mixed Sedimentary Upland
Hydric soil rating: No

Description of Steinsburg

Setting

Landform: Ridges
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Sandy residuum weathered from sandstone

Typical profile

A - 0 to 4 inches: sandy loam
Bw - 4 to 20 inches: sandy loam
C - 20 to 32 inches: channery sandy loam
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 21 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F124XY002OH - Acid Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Blairton

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

LsE—Latham-Shelocta silt loams, 20 to 30 percent slopes

Map Unit Setting

National map unit symbol: lgqx
Elevation: 500 to 1,170 feet
Mean annual precipitation: 36 to 47 inches
Mean annual air temperature: 40 to 67 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Latham and similar soils: 45 percent
Shelocta and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Latham

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey colluvium derived from acid shale

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 38 inches: silty clay
Cr - 38 to 48 inches: weathered bedrock

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F124XY002OH - Acid Mixed Sedimentary Upland
Hydric soil rating: No

Description of Shelocta

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-loamy colluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 53 inches: channery silty clay loam
H3 - 53 to 74 inches: channery silt loam

Properties and qualities

Slope: 20 to 30 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F124XY004OH - Acid Mixed Sedimentary Toeslope
Hydric soil rating: No

Minor Components

Gilpin

Percent of map unit: 8 percent
Hydric soil rating: No

Berks

Percent of map unit: 7 percent
Hydric soil rating: No

Cranston

Percent of map unit: 5 percent
Hydric soil rating: No

LsF—Latham-Shelocta silt loams, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: lgqy
Elevation: 480 to 1,180 feet
Mean annual precipitation: 36 to 47 inches
Mean annual air temperature: 40 to 67 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Latham and similar soils: 45 percent
Shelocta and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Latham

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey colluvium derived from acid shale

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 38 inches: silty clay
Cr - 38 to 48 inches: weathered bedrock

Properties and qualities

Slope: 30 to 40 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F124XY002OH - Acid Mixed Sedimentary Upland
Hydric soil rating: No

Description of Shelocta

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy colluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 53 inches: silty clay loam
H3 - 53 to 74 inches: channery silt loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F124XY004OH - Acid Mixed Sedimentary Toeslope
Hydric soil rating: No

Minor Components

Berks

Percent of map unit: 9 percent
Hydric soil rating: No

Gilpin

Percent of map unit: 9 percent
Hydric soil rating: No

Cranston

Percent of map unit: 7 percent
Hydric soil rating: No

Mo—Morehead silt loam

Map Unit Setting

National map unit symbol: lgr7
Elevation: 490 to 1,100 feet
Mean annual precipitation: 36 to 47 inches
Mean annual air temperature: 40 to 67 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Morehead and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morehead

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Typical profile

H1 - 0 to 14 inches: silt loam

H2 - 14 to 50 inches: silt loam
H3 - 50 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F124XY010OH - Fine Terrace and Plain
Hydric soil rating: No

Minor Components

Stendal

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: No

Cotaco

Percent of map unit: 5 percent
Landform: Stream terraces
Hydric soil rating: No

TIB—Tilsit silt loam, 2 to 6 percent slopes - residual & alluvial landforms

Map Unit Setting

National map unit symbol: 2t1m1
Elevation: 490 to 1,310 feet
Mean annual precipitation: 41 to 49 inches
Mean annual air temperature: 53 to 55 degrees F
Frost-free period: 141 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tilsit and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tilsit

Setting

Landform: Terraces, ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Fine-silty residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 7 inches: silt loam
BA - 7 to 11 inches: silt loam
Bt - 11 to 24 inches: silt loam
Btx - 24 to 44 inches: loam
C - 44 to 60 inches: channery silty clay loam
R - 60 to 70 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 14 to 34 inches to fragipan; 48 to 80 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 8 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: F124XY002OH - Acid Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Monongahela

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Acid Loams (AL3)
Hydric soil rating: No

Whitley

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wernock

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

TIC—Tilsit silt loam, 6 to 12 percent slopes - residual & alluvial landforms

Map Unit Setting

National map unit symbol: 2t1m2
Elevation: 490 to 1,340 feet
Mean annual precipitation: 40 to 49 inches
Mean annual air temperature: 54 to 56 degrees F
Frost-free period: 141 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tilsit and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tilsit

Setting

Landform: Terraces, ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Fine-silty residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 7 inches: silt loam
BA - 7 to 11 inches: silt loam
Bt - 11 to 24 inches: silt loam
Btx - 24 to 44 inches: loam
C - 44 to 60 inches: channery silty clay loam
R - 60 to 70 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 14 to 34 inches to fragipan; 48 to 80 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 8 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F124XY002OH - Acid Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Monongahela

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Acid Loams (AL3)
Hydric soil rating: No

Latham

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wernock

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

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ATTACHMENT 6

USGS Topographic Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

ASHLAND QUADRANGLE
KENTUCKY - OHIO
7.5-MINUTE SERIES

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 17S
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery....NAIP, June 2017 - June 2020
Roads....U.S. Census Bureau, 2016 - 2016
Names....GNIS, 1979 - 2022
Hydrography....National Hydrography Dataset, 2000 - 2020
Contours....National Elevation Dataset, 2022
Boundaries....Multiple sources; see metadata file 2019 - 2021
Public Land Survey System....BLM, 2017
Wetlands....FWS National Wetlands Inventory 1983 - 2007

MN
GN
7°2´
125 MILS
1°3´
19 MILS

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
LC
Grid Zone Designation
17S

SCALE 1:24 000

KILOMETERS 1 0.5 0 1 2
METERS 1000 500 0 1000 2000
MILES 1 0.5 0 1
FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard.

KENTUCKY
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Greenup
2 Ironton
3 Kitts Hill
4 Argillite
5 Catlettsburg
6 Rush
7 Boltsfork
8 Burnaugh

ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

ASHLAND, KY, OH
2022

NSN. 7643016368004
NGA REF NO. USGSX24K1650

ATTACHMENT 7

EDR Report

(Provided in separate digital format due to size)