

NATURAL RESOURCES TECHNICAL REPORT

**Replace Bridge No. 63 on NC Highway 150 over Kerr Creek
Rowan County, North Carolina**

**TIP B-5767
WBS Element No. 45723.1.1**



**THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Project Development and Environmental Analysis Unit
Natural Environment Section**

September 2016

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge No. 63 on NC Highway 150 over Kerr Creek (TIP B-5767) in Rowan County, North Carolina (Figure 1). The following Natural Resources Technical Report (NRTR) has been prepared to assist in the preparation of a Categorical Exclusion (CE) for the project.

2.0 METHODOLOGY AND QUALIFICATIONS

All work was conducted in accordance with the NCDOT Natural Environment Section standard operating procedures and July 2012 NRTR template. Field work was conducted on April 4, and September 8, 2016.

Jurisdictional areas identified in the study area do not require verification by the United States Army Corps of Engineers (USACE) or the North Carolina Division of Water Resources (NCDWR) at this time, as the only resources within the study area are perennial streams.

The principal personnel contributing to this document were:

Principal

Investigator:	Paul Gerlach
Education:	M.S. Environmental Management 2013 B.S. Biological Sciences, 2011
Experience:	Environmental Scientist, AECOM, 2014–Present
Responsibilities:	Stream delineations and assessments, natural communities assessment, Schweinitz’s sunflower surveys, and T/E species assessment.

Investigator:	Chris Inscore
Education:	B.S. Fisheries, Wildlife and Conservation Biology, 2015
Experience:	Environmental Scientist, AECOM, 2016–Present
Responsibilities:	Stream delineations and assessments, GPS data collection, natural communities assessment, T/E species assessment, GIS analysis, and Schweinitz’s sunflower surveys.

Additional personnel who contributed to portions of the field work and/or documentation for this project were Charles Benton, Peyton Daly, Ron Johnson, and Paul Masten. Appendix C lists the qualifications of these contributors.

3.0 PHYSICAL RESOURCES

The study area is geographically situated in the Piedmont physiographic province in Rowan County, North Carolina (Figure 2). The Piedmont Ecoregion is characterized by irregular plains and some rolling hills. Elevations in the study area range from approximately 696 feet above mean sea level (MSL) to 714 feet above MSL. Land use in the project vicinity consists primarily of agricultural land with some scattered residences.

3.1 Soils

The Rowan County soil survey identifies three soil series within the study area (Table 1).

Table 1. Soils in the study area

Soil Series	Mapping Unit	Drainage Class	Hydric Status
Chewacla loam, 0 to 2 percent slopes, frequently flooded	ChA	Somewhat poorly drained	Hydric*
Pacolet sandy clay loam, 8 to 15 percent slopes, moderately eroded	PcC2	Well drained	Non-hydric
Poindexter-Rowan complex, 8 to 15 percent slopes	PxC	Well drained	Non-hydric

* Soils which are primarily non-hydric, but which may contain hydric inclusions.

3.2 Water Resources

Water resources in the study area are part of the Yadkin-Pee Dee River Basin (U.S. Geological Survey Hydrologic Unit 03040102). Two streams were identified in the study area, Kerr Creek and an Unnamed Tributary (UT) to Kerr Creek (Table 2). The location of each water resource is shown on Figure 3. The physical characteristics of these resources are provided in Table 3.

Table 2. Water resources in the study area

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification ^a
Kerr Creek	Kerr Creek	12-108-21-2-1	WS-II, HQW
UT to Kerr Creek	SB	12-108-21-2-1	WS-II, HQW

Table 3. Physical characteristics of water resources in the study area

Map ID	Bank Height (ft)	Bank Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
Kerr Creek	5	35-55	12	Gravel, Sand, Silt	Moderate	Clear
SB	1	4	3-4	Sand, Silt	Moderate	Slightly Turbid

No ponds are located in the study area.

There are no designated trout waters, anadromous fish waters, or primary nursery areas present in the study area. The entire portions of Kerr Creek and UT to Kerr Creek within the study area, which drain to Second Creek, are classified as high quality waters (HQW) and WS-II water supply watersheds. There are no outstanding resource waters within the study area or within 1.0

mile downstream. No streams within the study area or within 1.0 mile downstream are included in the *North Carolina 2014 Final 303(d) List of Impaired Waters* due to sedimentation or turbidity.

No fish or benthic monitoring data are available within or within 1.0 mile downstream of the study area.

4.0 BIOTIC RESOURCES

4.1 Terrestrial Communities

Two terrestrial communities were identified in the study area: maintained/disturbed and Piedmont bottomland forest. Figure 4 shows the location and extent of these terrestrial communities in the study area. A brief description of each community type follows. Scientific names of all species identified are included in Appendix B.

4.1.1 Maintained/Disturbed

This community incorporates two land-cover types, agriculture and cleared/maintained transportation corridors. The majority of the study area is designated as maintained/disturbed land, which includes the Mooresville Road transportation corridor, a winter wheat field, and pasture. Plant communities in these areas often contain relict species, usually canopy trees, that reflect their historic assemblages. Typically, introduced species predominate in maintained areas and weedy species are opportunistic in recently disturbed areas. There were no trees present within the canopy layer in this community. Shrubs were limited to patches of blackberry. The herb layer included various species of upland grasses, goldenrod, creeping buttercup, muscadine, Japanese honeysuckle, catchweed bedstraw, and poison ivy.

4.1.2 Piedmont Bottomland Forest

This community occurs on floodplain ridges and terraces other than active levees adjacent to river channels and was observed within the areas of undisturbed woods along both banks of Kerr Creek. Dominant canopy species included sweetgum, boxelder, black walnut, and river birch. Understory species observed included boxelder, ironwood, sweetgum, flowering dogwood, and river birch. The herbaceous layer consisted of mayapple, catchweed bedstraw, Christmas fern, Japanese honeysuckle, and blackberry.

4.1.3 Terrestrial Community Impacts

Terrestrial communities in the study area may be impacted by project construction as a result of grading and paving of portions of the study area. At this time, decisions regarding the final location and design of the project have not been made. Therefore, community data are presented in the context of total coverage of each type within the study area (Table 4). Once a final alignment and preliminary design have been determined, probable impacts to each community type will be calculated.

Table 4. Coverage of terrestrial communities in the study area

Community	Coverage (ac)
Maintained/Disturbed	1.2
Piedmont Bottomland Forest	1.1
Total	2.3

4.2 Terrestrial Wildlife

Terrestrial communities in the study area are comprised of both natural and disturbed habitats that may support a diversity of wildlife species (those species actually observed are indicated with *). Scientific names of all species identified are included in Appendix B. Mammal species that commonly exploit forested habitats and stream corridors found within the study area include species such as beaver, coyote, eastern chipmunk, eastern cottontail, gray fox, red fox, gray squirrel, groundhog, raccoon*, Virginia opossum, white-footed mouse, and white-tailed deer*. Birds that commonly use forest and forest edge habitats include the American crow, American robin*, barn swallow, blue jay, brown thrasher, Carolina chickadee, Carolina wren*, common grackle, Cooper's hawk, downy woodpecker, eastern meadowlark, European starling, mourning dove*, northern cardinal*, northern mockingbird*, red-bellied woodpecker, red-winged blackbird, red-tailed hawk, song sparrow, tufted titmouse and turkey vulture. Reptile and amphibian species that may use terrestrial communities located in the study area include the American toad, copperhead, eastern box turtle, eastern fence lizard, five-lined skink, marbled salamander, rat snake, spotted salamander, and wood frog.

4.3 Aquatic Communities

Aquatic communities in the study area consist of two perennial streams, Kerr Creek and a UT to Kerr Creek. Aquatic species expected to occur in Kerr Creek include rosyside dace, striped jumprock, highback chub, eastern mosquitofish, Carolina fantail darter and other darter species, flat bullhead, and fathead minnow. Fish community species are based on samples taken from Second Creek (approximately three miles downstream of the study area) by the North Carolina Museum of Natural Sciences from 2001 to 2011. Common snapping turtle could also occur in Kerr Creek.

4.4 Invasive Species

One species from the NCDOT Invasive Exotic Plant List for North Carolina was found to occur in the study area, Japanese honeysuckle (moderate threat). NCDOT will manage invasive plant species associated with the project as appropriate.

5.0 JURISDICTIONAL ISSUES

5.1 Clean Water Act Waters of the U.S

Two jurisdictional streams were identified in the study area (Table 5). The locations of these streams are shown on Figure 3. All of the jurisdictional streams in the study area have been designated as warm water streams for the purposes of stream mitigation.

Table 5. Jurisdictional characteristics of water resources in the study area

Map ID	Length (ft)	Classification	Compensatory Mitigation Required ¹	River Basin Buffer
Kerr Creek	245	Perennial	Yes	Not subject
SB	350	Perennial	Yes	Not subject
Total	595			

Note: ¹ Assumes permanent impacts to jurisdictional features

No jurisdictional wetlands were identified within the study area.

5.2 Clean Water Act Permits

The proposed project has been designated as a CE for the purposes of National Environmental Policy Act documentation. As a result, a Nationwide Permit (NWP) 23 will likely be applicable. A NWP No. 33 may also apply for temporary construction activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction or rehabilitation. The USACE holds the final discretion as to what permit will be required to authorize project construction. If a Section 404 permit is required then a Section 401 Water Quality Certification from the NCDWR will be needed.

5.3 Coastal Area Management Act Areas of Environmental Concern

There are no areas of environmental concern in the study area that fall under the jurisdiction of the Coastal Area Management Act.

5.4 Construction Moratoria

Rowan County is not a designated trout county; therefore, no trout moratoria will apply to any streams or waters in the study area.

5.5 N.C. River Basin Buffer Rules

Riparian buffer rules administered by NCDWR do not apply to the project.

5.6 Rivers and Harbors Act Section 10 Navigable Waters

No surface waters have been designated as Section 10 navigable waters within the study area.

5.7 Wetlands and Stream Mitigation

5.7.1 Avoidance and Minimization of Impacts

Kerr Creek and the UT to Kerr Creek (SB) are classified as WS-II; HQW, therefore *Design Standards in Sensitive Watersheds* (15A NCAC 4B .0124) shall be implemented. The NCDOT will attempt to avoid and minimize impacts to streams to the greatest extent practicable in choosing a preferred alternative and during project design. At this time, no final decisions have been made with regard to the location or design of the preferred alternative.

5.7.2 Compensatory Mitigation of Impacts

The NCDOT will investigate potential on-site stream and wetland mitigation opportunities once a final decision has been rendered on the location of the preferred alternative. If on-site mitigation is not feasible, mitigation will be provided by North Carolina Department of Environmental Quality, Division of Mitigation Services (DMS).

5.8 Endangered Species Act Protected Species

As of April 2, 2015, the U.S. Fish and Wildlife Service (USFWS) lists two federally protected species for Rowan County (Table 6). A brief description of each species' habitat requirements follows, along with the Biological Conclusion rendered based on survey results in the study area. Habitat requirements for each species are based on the current best available information as per referenced literature and USFWS correspondence.

Table 6. Federally protected species listed for Rowan County

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Helianthus schweinitzii</i>	Schweinitz's sunflower	E	Y	No Effect
<i>Myotis septentrionalis</i>	Northern long-eared bat	T	Unknown	Unresolved

E - Endangered

T - Threatened

Schweinitz's sunflower

USFWS optimal survey window: late August through October

Habitat description: Schweinitz's sunflower is endemic to the Piedmont of North and South Carolina. The few sites where this rhizomatous perennial herb occurs in relatively natural vegetation are found in Xeric Hardpan Forests. The species is also found along roadside rights-of-way, maintained power lines and other utility rights-of-way, edges of thickets and old pastures, clearings and edges of upland oak-pine-hickory woods and Piedmont longleaf pine forests, and other sunny or semi-sunny habitats where disturbances (e.g., mowing, clearing, grazing, blow downs, storms, frequent fire) help create open or partially open areas for sunlight. It is intolerant of full shade and excessive competition from other vegetation. Schweinitz's sunflower occurs in a variety of soil series, including Badin, Cecil, Cid, Enon, Gaston, Georgeville, Iredell, Mecklenburg, Misenheimer, Secrest, Tatum, Uwharrie, and Zion, among others. It is generally found

growing on shallow sandy soils with high gravel content; shallow, poor, clayey hardpans; or shallow rocky soils, especially those derived from mafic rocks.

Biological Conclusion: No Effect

The roadside and agricultural edges of the upland areas may provide suitable habitat for Schweinitz's sunflower. A pedestrian survey by AECOM biologists for Schweinitz's sunflowers on September 8, 2016, did not find any Schweinitz's sunflower plants. A review of North Carolina Natural Heritage Program (NCNHP) records, accessed on May 2, 2016, found no known occurrences of Schweinitz's sunflower within 1.0 mile of the study area.

Northern long-eared bat

USFWS optimal survey window: May 15 through August 15

Habitat description: In North Carolina, the Northern long-eared bat (NLEB) occurs in the mountains, with scattered records in the Piedmont and coastal plain. In western North Carolina, NLEB spend winters hibernating in caves and mines. Since this species is not known to be a long-distance migrant, and caves and subterranean mines are extremely rare in eastern North Carolina, it is uncertain whether or where NLEB hibernate in eastern North Carolina. During the summer, NLEB roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees (typically ≥ 3 inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat also been found, rarely, roosting in structures like barns and sheds, under eaves of buildings, behind window shutters, in bridges, and in bat houses. Foraging occurs on forested hillsides and ridges, and occasionally over forest clearings, over water, and along tree-lined corridors. Mature forests may be an important habitat type for foraging.

Biological Conclusion: Unresolved

A search of the NCNHP database accessed on May 2, 2016, found no known occurrences of the northern long-eared bat within 1.0 miles of the project study area. A survey request has been submitted to NCDOT Biological Surveys Group for this species. Once a survey is complete, a Biological Conclusion will be rendered.

5.9 Bald Eagle and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large, dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-GIS assessment of the project study area, as well as the area within a 1.13 mile radius (1.0 mile plus 660 feet) of the project limits, was performed on March 30, 2016, using color aerials from the year 2014. No water bodies large enough or sufficiently open to be considered potential feeding sources were identified. Since there was no foraging habitat within the review area, a survey of the project study area and the area within 660 feet of the project limits was not conducted. In addition, a review of the NCNHP records, accessed on May 2, 2016, indicated no known bald eagle occurrences within 1.0 mile of the study area. Due to the lack of habitat, known occurrences, and minimal impact anticipated for this project, it has been determined that this project will not affect this species.

5.10 Endangered Species Act Candidate Species

As of April 2, 2015, the USFWS lists one candidate species for Rowan County. A review of NCNHP records, accessed on May 2, 2016, found no known occurrences of Georgia aster within 1.0 mile of the study area.

Table 7. Candidate species listed for Rowan County

Scientific Name	Common Name	Habitat Present
<i>Symphyotrichum georgianum</i>	Georgia aster	Yes

The roadside and agricultural edges of the upland areas may provide suitable habitat for Georgia aster.

5.11 Essential Fish Habitat

No essential fish habitat has been designated by the National Marine Fisheries Service in the study area.

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Appendix A

Figures

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NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS UNIT

PROJECT STUDY AREA MAP
Replace Bridge No. 63 on NC 150 over
Kerr Creek in Rowan County
TIP Project B-5767

Legend

 B-5767 Study Area

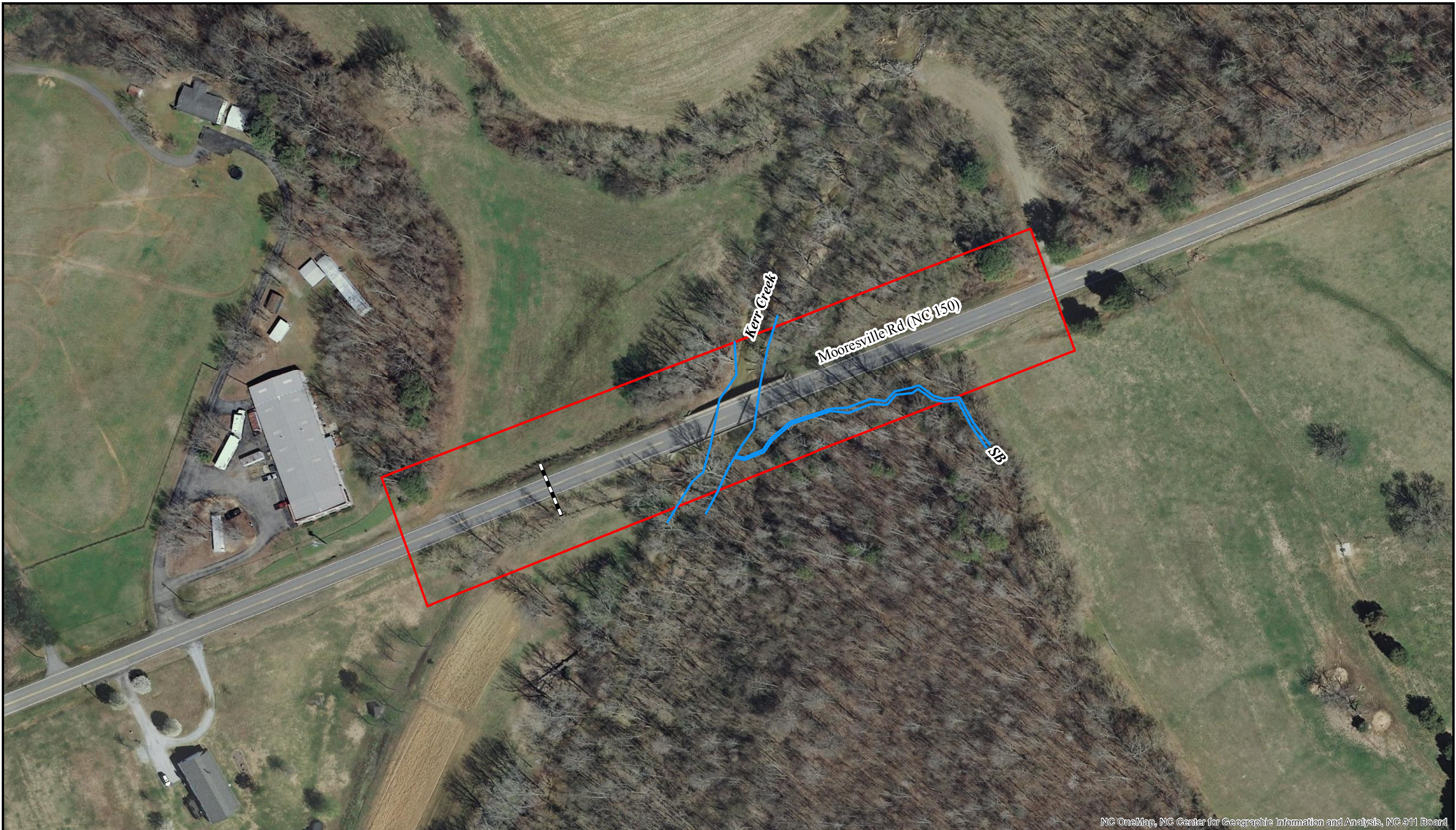
Source: USGS Historical Topographic Map Collection
Cleveland, NC 1970

Yadkin River
HUC 03040102

 Feet
0 100 200

Div: 9	TIP# B-5767
Date: September 2016	

Figure
2



NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board



NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS UNIT

JURISDICTIONAL FEATURES MAP

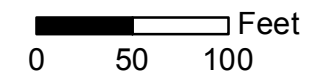
Replace Bridge No. 63 on NC 150 over Kerr Creek in Rowan County

TIP Project B-5767

Legend

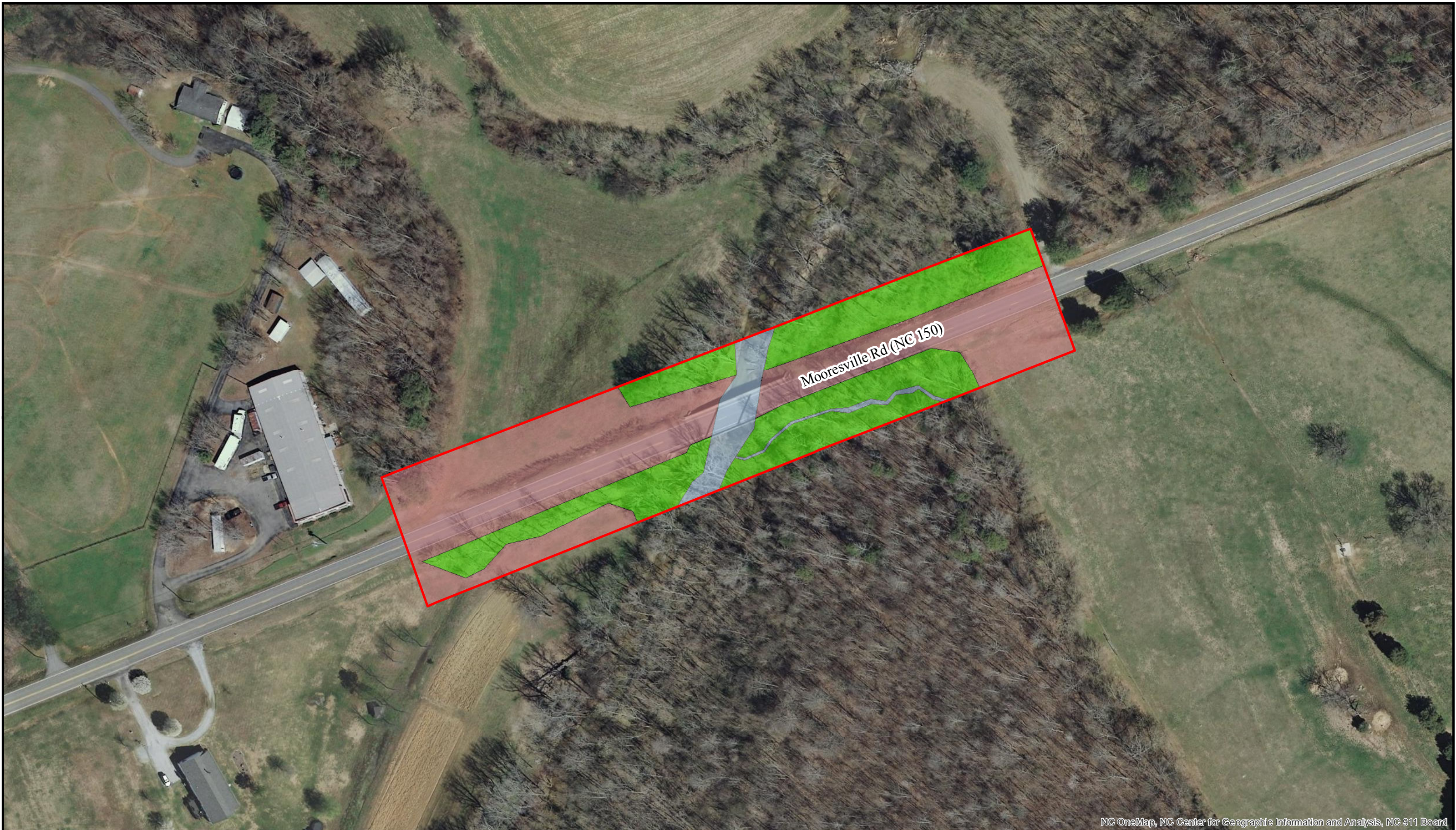
- B-5767 Study Area
- Perennial Stream
- Culvert

Yadkin-Pee Dee
HUC 03040102



Div: 9	TIP# B-5767
Date: September 2016	

Figure
3



NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board

Appendix B

Scientific Names of Species Identified in Report

Plants

<u>Common Name</u>	<u>Scientific Name</u>
--------------------	------------------------

Blackberry	<i>Rubus</i> sp.
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Black walnut	<i>Juglans nigra</i>
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Boxelder	<i>Acer negundo</i>
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Catchweed bedstraw	<i>Galium aparine</i>
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Christmas fern	<i>Polystichum acrostichoides</i>
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Creeping buttercup	<i>Ranunculus</i> sp.
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Flowering dogwood	<i>Cornus florida</i>
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Goldenrod	<i>Solidago</i> sp.
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Grasses	<i>Gramineae</i> spp.
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Ironwood	<i>Carpinus caroliniana</i>
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Japanese honeysuckle	<i>Lonicera japonica</i>
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Mayapple	<i>Podophyllum peltatum</i>
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Muscadine	<i>Vitis rotundifolia</i>
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Poison ivy	<i>Toxicodendron radicans</i>
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River birch	<i>Betula nigra</i>
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Sweetgum	<i>Liquidambar styraciflua</i>
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Animals

<u>Common Name</u>	<u>Scientific Name</u>
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American crow	<i>Corvus brachyrhynchos</i>
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American robin	<i>Turdus migratorius</i>
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American toad	<i>Anaxyrus americanus</i>
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Barn swallow	<i>Hirundo rustica</i>
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Beaver	<i>Castor canadensis</i>
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Blue jay	<i>Cyanocitta cristata</i>
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Brown thrasher	<i>Toxostoma rufum</i>
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Carolina chickadee	<i>Poecile carolinensis</i>
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Carolina fantail darter	<i>Etheostoma brevispinum</i>
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Carolina wren	<i>Thryothorus ludovicianus</i>
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Common grackle	<i>Quiscalus quiscula</i>
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Common snapping turtle	<i>Chelydra serpentina</i>
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Copperhead	<i>Agkistrodon contortrix</i>
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Cooper's hawk	<i>Accipiter cooperii</i>
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Coyote	<i>Canis latrans</i>
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Darter	<i>Etheostoma</i> sp.
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Downy woodpecker	<i>Dryobates pubescens</i>
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Eastern box turtle	<i>Terrapene carolina carolina</i>
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Eastern chipmunk	<i>Tamias striatus</i>
------------------	------------------------

Eastern cottontail	<i>Sylvilagus floridanus</i>
--------------------	------------------------------

Common Name

Eastern fence lizard
Eastern meadowlark
Eastern mosquitofish
European starling
Fathead minnow
Five-lined skink
Flat bullhead
Gray fox
Gray squirrel
Groundhog
Highback chub
Marbled salamander
Mourning dove
Northern cardinal
Northern mockingbird
Raccoon
Rat snake
Red-bellied woodpecker
Red-tailed hawk
Red-winged blackbird
Red fox
Rosyside dace
Song sparrow
Spotted salamander
Striped jumprock
Tufted titmouse
Turkey vulture
Virginia opossum
White-footed mouse
White-tailed deer
Wood frog

Scientific Name

Sceloporus undulatus
Sturnella magna
Gambusia holbrooki
Sturnus vulgaris
Pimephales promelas
Plestiodon fasciatus
Ameiurus platycephalus
Urocyon cinereoargenteus
Sciurus carolinensis
Marmota monax
Hybopsis hypinotus
Ambystoma opacum
Zenaida macroura
Cardinalis cardinalis
Mimus polyglottos
Procyon lotor
Pantherophis alleghaniensis
Melanerpes carolinus
Buteo jamaicensis
Agelaius phoeniceus
Vulpes vulpes
Clinostomus funduloides
Melospiza melodia
Ambystoma maculatum
Moxostoma rupiscartes
Baeolophus bicolor
Cathartes aura
Didelphis virginiana
Peromyscus leucopus
Odocoileus virginianus
Lithobates sylvaticus

Appendix C

Qualifications of Contributors

Contributor:	Charles Benton, PWS
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