



The North Carolina Department of Transportation (NCDOT) seeks \$800,000 from U.S. Department of Transportation's (USDOT's) Wildlife Crossings Pilot Program (WCPP) to enhance a proposed crossing location by building dual bridges over Rocky Creek East along NC Highway 24/27 (NC 24/27) in Montgomery County, NC. This proposed project, Uwharrie CONNECT, would provide wildlife crossing opportunities under the highway along the banks of Rocky Creek East. NCDOT proposes to provide \$200,000 in matching funds. Uwharrie CONNECT would be constructed as part of NCDOT State Transportation Improvement Program (STIP) Project R-2527, on which NCDOT has spent \$13.7 million in state funds to date. This federally-funded project is a planned widening through parts of Uwharrie National Forest.

STIP Project R-2527 proposes widening NC 24/27 from a two-lane to a four-lane divided facility through parts of the Uwharrie National Forest. As part of this widening, NCDOT will be replacing the existing triple-barrel 9-foot by 11-foot reinforced concrete box culvert (RCBC) at Rocky Creek East with a triple-barrel, 14- by 12-foot RCBC. However, both the U.S. Forest Service (USFS) and the N.C. Wildlife Resources Commission (NCWRC) support conversion of the culverts to dual bridges, since the highway corridor traverses Uwharrie National Forest (Forest) at this location. Additionally, Rocky Creek East is classified as having excellent water quality and just downstream is a designated NC Natural Heritage Area that is part of the Upper Little River Aquatic Habitat. The project area, once the bridges are constructed, may provide suitable habitat for several Federal Species of Concern (FSC) including Carolina darter (*Etheostoma collis*) and several mussel species.

Wildlife Vehicle Collisions (WVCs) in the project area are common. From January 1, 2000 to March 31, 2023, 122 WVCs were reported in the R-2527 project area. This total includes one non-fatal injury crash and 121 property damage only crashes. Most of the crashes (100) took place during nighttime hours.

Upgrading the proposed triple box culvert to dual single-span bridges (approximately 80-foot span) would cost an estimated additional \$1 million to the R-2527 project. Uwharrie CONNECT represents a cost-effective way to upgrade existing road infrastructure while also providing a safe and USFS- and NCWRC-recommended method for wildlife to cross NC 24/27.

The Forest contains a unique set of microclimates, supporting a wide range of aquatic and wildlife species. It also supports many small communities in the area, which cater to the many outdoor recreational opportunities enjoyed by area tourists. The Forest is visited by 2 million people each year and is a short drive from the major metropolitan regions of Raleigh, Charlotte, and Greensboro.

The construction of the Rocky Creek East bridges will take place in Montgomery County in U.S. 2019 Census Tract 9602, which is listed as an Historically Disadvantaged Community (HDC). The tract is listed in the top 96th percentile for expected agricultural land loss, which will place an increasing strain on area wildlife. The Census Tract is in the top 74th percentile for low income and 15 percent of the population 25 years of age or higher, have an education that is less than a high school diploma.



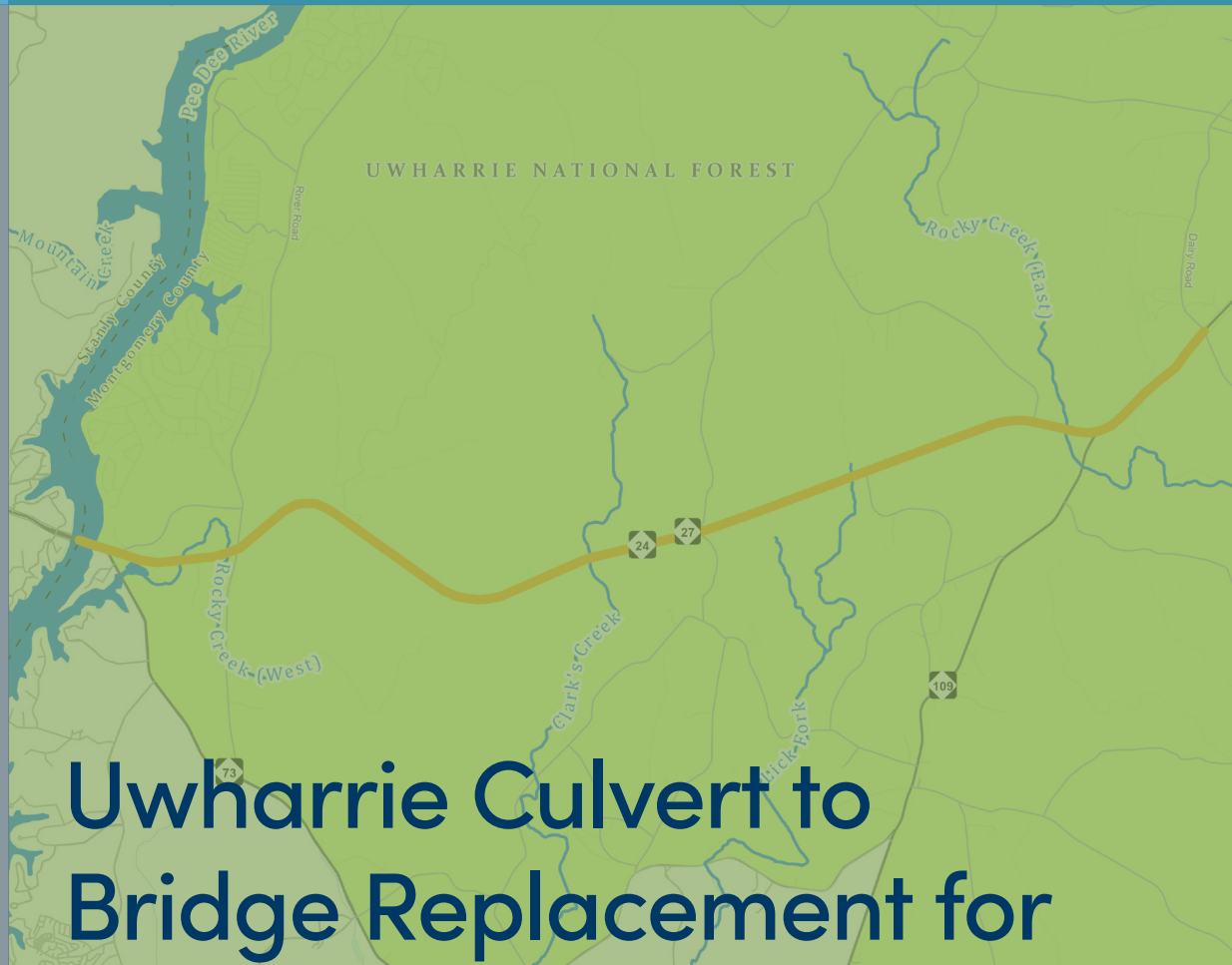
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FOX



# Uwharrie Culvert to Bridge Replacement for Wildlife Connectivity

NC 24/27, MONTGOMERY  
COUNTY  
(UWHARRIE CONNECT)



TABLE OF CONTENTS

**A. PROJECT DESCRIPTION ..... 1**

1. Project Information ..... 2

2. Eligibility Criteria ..... 2

3. Location Information ..... 2

4. Project Costs ..... 2

**B. PROJECT MERIT CRITERIA..... 4**

Criterion 1.1: Wildlife Vehicle Collisions ..... 4

Criterion 1.2: Terrestrial & Aquatic Habitat Connectivity ..... 5

Criterion 2.1: Leveraging Investments ..... 6

Criterion 2.2: Economic Development & Visitation Opportunities ..... 7

Criterion 2.3: Innovation ..... 7

Criterion 2.4: Education & Outreach ..... 8

Criterion 2.5: Monitoring & Research ..... 8

Criterion 2.6: Survival of Species ..... 8

**C. PROJECT READINESS ..... 9**

1. Technical Assessment ..... 9

2. Environmental Review & Permitting Risk ..... 10

**D. ADMINISTRATIVE PRIORITIES..... 11**

**APPENDIX - SUPPLEMENTAL MATERIALS**

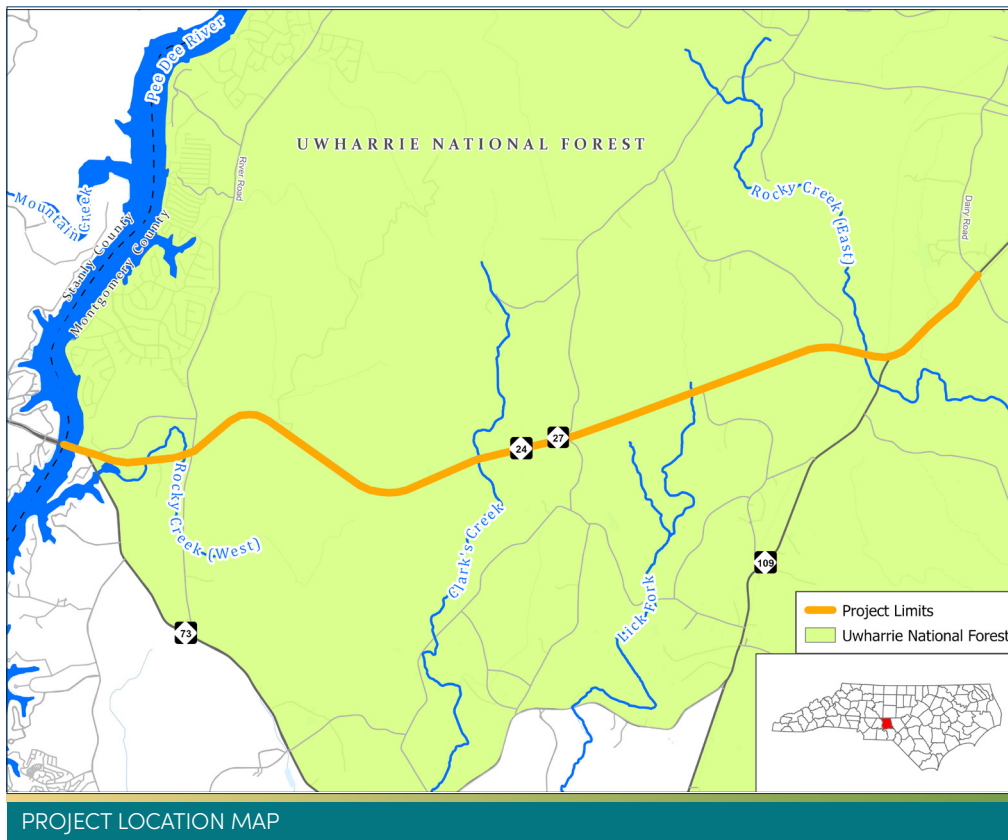
Contact:	Marissa Cox Western Regional Team Lead NCDOT Environmental Policy Unit
Email:	mrcox@ncdot.gov
Tel:	919.707.6153 (o) 919.818.5901 (m)
UEI:	XSN8A4TT1DY5



# PROJECT DESCRIPTION

The North Carolina Department of Transportation (NCDOT) seeks \$800,000 from U.S. Department of Transportation’s (USDOT’s) Wildlife Crossings Pilot Program (WCPP) to build dual bridges over Rocky Creek East along NC 24/27 in Montgomery County, NC. This proposed project, Uwharrie CONNECT, would enable wildlife to cross under the highway along the banks of Rocky Creek East. NCDOT proposes to provide \$200,000 in matching funds. The project would be constructed as part of NCDOT State Transportation Improvement Program (STIP) Project R-2527. This state-funded project is a planned widening of NC 24/27 through parts of Uwharrie National Forest (Forest).

STIP Project R-2527 proposes widening NC 24/27 from a two-lane to a four-lane divided facility through parts of the Forest. As part of this widening, NCDOT will replace the existing drainage structure at Rocky Creek East with a triple-barrel, 14- by 12-foot reinforced concrete box culvert (RCBC). However, both the U.S. Forest Service (USFS) and the N.C. Wildlife Resources Commission (NCWRC) support conversion of the current structure to bridges since the project crosses through the Forest. Additionally, Rocky Creek East is classified as having excellent water quality and just downstream is a designated Natural Heritage Area as part of Upper Little River Aquatic Habitat.





Upgrading the proposed triple box culvert to a set of dual single-span bridges (approximately 80-foot span) would cost an estimated additional \$1 million. Uwharrie CONNECT represents a cost-effective way to upgrade existing road infrastructure while also providing a safe, USFS- and NCWRC-recommended method for wildlife to cross NC 24/27.

The construction of the Rocky Creek East bridges will take place in Montgomery County U.S. Census Tract (2019) 9602. Census Tract 9602 is listed as an Historically Disadvantaged Community (HDC). The tract is listed in the top 96th percentile for expected agricultural land loss, which will place an increasing strain on area wildlife. In addition, the tract is in the top 74th percentile for low income and 15 percent of the population, 25 years of age or higher, have an education that is less than a high school diploma.



**PROJECT INFORMATION**

PROJECT NAME	Uwharrie Culvert to Bridge Replacement for Wildlife Connectivity (Uwharrie CONNECT)
WCPP REQUESTED AMOUNT	\$800,000 (YOE)
TOTAL PROJECT COST	\$1,000,000 (YOE)

**ELIGIBILITY CRITERIA**

Who is the Eligible Applicant?	NC Department of Transportation (NCDOT)
Is there an Eligible Partner?	No
Indicate the amount, type, and source(s) of the standard 20% non-Federal match under 23 U.S.C. 120(b).	NCDOT Highway Trust Fund \$200,000
Eligible Project Type	Construction project, including all activities that lead to a built project.
Consultation with the State DOT	No consultation because we are the State DOT
State(s) and/or Tribal land in which the project is located	NC
Lead Applicant	NCDOT

**LOCATION INFORMATION**

Location of project area	NC 24/27 over Rocky Creek East, in Montgomery County, NC
US Census FIPS Code (2019)	Census Tract 9602
Geographic Coordinates	35.322150, -79.951923 35.322077, -79.951755
Is the project located in an urban area or rural area?	Rural
Is the project located (entirely or partially) in federally designated community development zone?	No. For all federally designated community development zones.
Is the project area located on a federally recognized Indian Tribe land?	No.
Congressional district(s)	NC US District 8

**PROJECT COSTS**

WCPP Requested Amount	\$800,000 (YOE)
Estimated Total of Other Federal Funding	\$0
Estimated Non-Federal Funding	NCDOT Highway Trust Fund \$200,000
Future Eligible Project Cost	\$1,000,000 (YOE)
Previously Incurred Project Costs	\$13,700,000 (STIP Project R-2527). to date
Total Project Cost	\$1,000,000 (YOE)

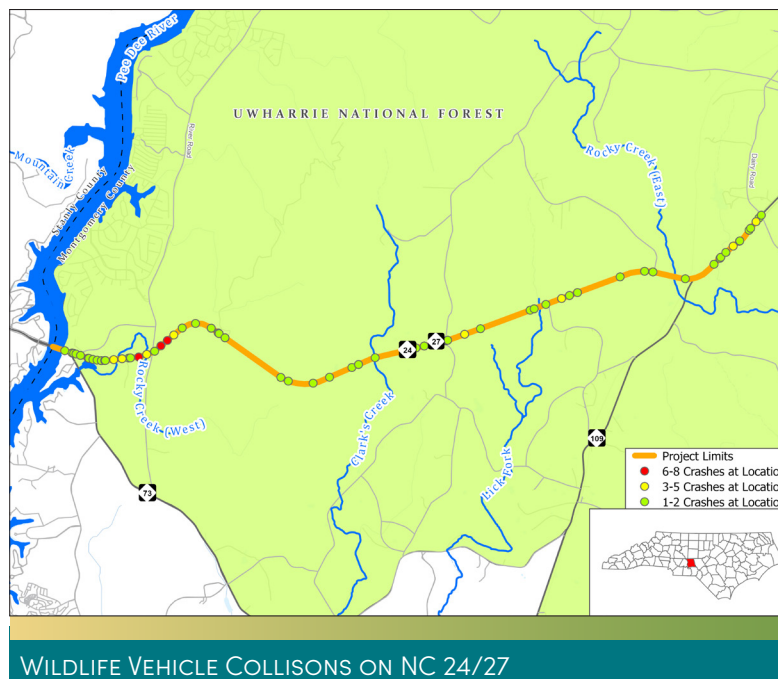
## PROJECT MERIT CRITERIA

### CRITERION 1.1: WILDLIFE VEHICLE COLLISIONS

The project contributes to the Wildlife Vehicle Collisions (WVCs) criterion by replacing the three existing 14-foot by 12-foot RCBCs with dual 80-foot span bridges. This will substantially improve the crossing's attractiveness to wildlife as a crossing structure. Currently, NC 24/27 is an elevated two-lane roadway on fill, and the culvert passes through the fill-created ridge. Wildlife must go over the roadway ridge or pass through the wet culvert to access habitat on the other side of the road. With the construction of a wider four-lane corridor with an increased road grade and habitat that is more visible under bridges, wildlife will be encouraged to use this lower, more open crossing instead of climbing the steeper ridge to cross the road. White-tailed deer (*Odocoileus virginianus*) are the largest mammal in this area for WVC. Although many mammals will frequently utilize culverts and the planned 14'x12' culverts could improve passage, structure monitoring by North Carolina researchers has shown culvert use by white-tailed deer may not be as effective, particularly in rural settings.

As shown in the map, WVCs in the project area are common. From January 1, 2000 to March 31, 2023, 122 WVCs were reported in the R-2527 project area. This total includes one non-fatal injury crash and 121 property damage only crashes. Most of the crashes (100) took place during nighttime hours.

It should be noted that most WVCs are not reported. Data from the Virginia Department of Transportation (VDOT) found that a correction factor of 8.5 was needed to correctly estimate the number of WVCs in a given area (VDOT, 2017). Using this factor, over 1,000 crashes are estimated to have taken place along the corridor from 2018 through 2021.



## CRITERION 1.2: TERRESTRIAL & AQUATIC HABITAT CONNECTIVITY

The project contributes to the Terrestrial and Aquatic Habitat Connectivity criterion by providing wildlife crossing opportunities to maintain connectivity within Uwharrie National Forest. The Forest includes over 50,000 acres of maintained habitat. NC 24/27 is the largest facility that crosses the Forest, which is home to an estimated 60 mammal species in addition to 60 amphibian and reptile species.

One factor in the high wildlife diversity of the Forest is the availability of hard mast, such as acorns. Species that depend on mast, and those that feed on mast-eating species, generally are more mobile species that are at risk of WVCs. Another factor that supports area wildlife are 220 acres of wildlife food plots maintained by the North Carolina Wildlife Resources Commission. The individual plots range from 2 to 5 acres in size and supply grasses, legumes, and berries.



EASTERN BOX TURTLE

Replacement of culverts with the dual bridges would also improve aquatic habitat connectivity by providing a continuous stream bed. The Forest has a relatively high fish species diversity, which is typical of Piedmont ecosystems. Fish species known to occur in area streams include suckers, bass, sunfish, catfish, darters, perch, madtoms, shiners, dace, and chubs. There is also a substantial aquatic invertebrate population with pockets of high-quality mussel habitat. The aquatic invertebrate community includes substantial populations of caddisflies, mayflies, stoneflies, and beetles, which are indicative of a good to excellent bioclassification of overall stream health. There are known populations of several mussel species in the watershed including Triangle floater (*Alasmidonta undulata*), Roanoke slabshell (*Elliptio roanokensis*), Atlantic pigtoe (*Fusconaia masoni*), Carolina creekshell (*Villosa vaughaniana*), and Savannah lilliput (*Toxoplasma pullus*).

The Forest has a unique set of small ecosystems, caused by a combination of vegetative and geologic conditions. Geologically, the Uwharrie Mountains were shaped by volcanic activity in a sea over 500 million years ago. This resulted in deposits of rhyolite, basalt, and metamorphosed sedimentary rock. These vastly different rocks shaped the soil chemistry and topography of the region. The region has steep ridges and variable soil depths, which account for the plant diversity in the area, including white pine (*Pinus strobus*), which is typically found in cooler, moister climates. Other unique natural communities in the Uwharries include Roberdo Bog,





a largely treeless depression that contains a deep central isolated pool that supports the aquatic, carnivorous plant called the humped bladderwort (*Utricularia gibba*). Roberdo Bog is “one of only three or four well-developed examples of piedmont bogs limited to the Carolina Slate Belt” per the USFS and is located just west and upstream of this crossing location; the USFS recognizes the bog as one of seven Special Interest Areas within the Forest.

## CRITERION 2.1: LEVERAGING INVESTMENTS

The project contributes to the Leveraging Investments criterion by combining state transportation funds with the proposed improvements. NCDOT only seeks the cost difference between the proposed triple box culverts and the proposed dual bridges. This small funding request would provide invaluable benefits to area wildlife and is likely one of the most cost-effective applications for this grant.

NCDOT and NCWRC signed a Memorandum of Understanding (MOU) in April 2023 to cooperatively and collaboratively work together on project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; impacts to wildlife due to vehicles; and information and education.

Both agencies agreed to work together on several efforts including the following:

- to cooperatively seek to make highways less hazardous for wildlife and lessen the impact highways have on important habitats and ensure maximum benefit and consideration for mitigation efforts that promote wildlife habitat conservation and connectivity.
- to further develop methods for evaluating the success of wildlife mitigation measures, including monitoring crossing structures and fences to determine their effectiveness in facilitating wildlife passage.
- to create a wildlife vehicle collision data collection tool to be developed and implemented that will be made jointly available for encouraged use and contribution by both Parties (and possibly others) for traffic safety and conservation project evaluations.
- to develop effective and efficient passage structures and associated barriers for various species of wildlife to make highways less hazardous for motorists and wildlife while minimizing effects of habitat fragmentation.
- to jointly develop a “Wildlife Passage Guidance” document that will aid in the familiarity and incorporation of standard prescriptions for highway projects.
- to work together to investigate avenues to minimize highway impacts to federally listed and other sensitive species, and their habitats.
- to cooperate during transportation long-range planning, project development, and operations for NCWRC to provide substantive wildlife resource recommendations to NCDOT.
- to utilize our mutual understanding of each other’s missions, goals, and objectives



to seek opportunities and funding for cooperative projects and activities dealing with highway/wildlife issues.

Uwharrie CONNECT represents both agencies commitment and investment in accomplishing several goals established by the MOU.

## **CRITERION 2.2: ECONOMIC DEVELOPMENT & VISITATION OPPORTUNITIES**

The project contributes to the Economic Development and Visitation Opportunities by supporting continued sustainable use of Uwharrie National Forest lands. The Forest is within a 2-hour drive of the largest population centers in the state (Raleigh, Charlotte, and Greensboro). Unlike many national forest lands, the Forest is interspersed with private lands, including small communities and the Town of Troy, that rely on tourism income. According to Tracy Lamonds, Director of the Discover Uwharrie Welcome Center in Troy, there were approximately 2 million visitors to Uwharrie National Forest in 2020.

The Forest provides a wide variety of outdoor recreational opportunities. Visitors can visit for a day or rent cabins in the Forest. Activities include public fishing areas, 50 miles of hiking trails, and 40 miles of horse trails along Badin Lake. Hunting is also allowed, with a range of species including white-tailed deer, wild turkey (*Meleagris gallopavo*), squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), and quail (*Coturnix coturnix*). For years people mined and panned for gold in the area, and tourists still visit the Uwharries in search of treasure.

The proposed dual bridges could provide a future opportunity for the Forest to enhance their recreation opportunities as well, by creating a hiking trail or other visitor resources in the vicinity of the wildlife crossing. Without this dual bridge crossing, the Forest would need to rely on an at-grade crossing of the NC 24/27 roadway for visitors to cross the highway.

As part of the proposed improvements associated with R-2527, NCDOT will improve the Uwharrie Walking Trail parking lot (a few miles west of the proposed crossing location discussed herein). Construction of the parking lot will require a portion of the Uwharrie Recreational Walking Trail to be realigned. Impacts to the walking trail are expected to be minimal and will not adversely affect the activities, features and attributes that qualify the soil trail's protection under the U.S. Department of Transportation Act of 1966, Section 4(f) (codified as 49 U.S.C. §303 and 23 U.S.C. §138).

## **CRITERION 2.3: INNOVATION**

The project contributes to the Innovation criterion by providing comprehensive data showing the effectiveness of converting culverts to bridges with regards to wildlife passage.



## CRITERION 2.4: EDUCATION & OUTREACH

The project contributes to the Education and Outreach criterion through the project's utility by the USFS. Education and outreach are a critical part of the USFS's mission. Per their Mission Statement:

*The phrase, "Caring for the Land and Serving People," captures the Forest Service mission. As set forth in law, the mission is to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people: It includes:*

- *Advocating a conservation ethic in promoting the health, productivity, diversity, and beauty of forests and associated lands.*
- *Listening to people and responding to their diverse needs in making decisions.*
- *Protecting and managing the National Forests and Grasslands so they best demonstrate the sustainable multiple-use management concept.*
- *Providing technical and financial assistance to State and private forest landowners, encouraging them to practice good stewardship and quality land management in meeting their specific objectives.*
- *Providing technical and financial assistance to cities and communities to improve their natural environment by planting trees and caring for their forests.*
- *Providing international technical assistance and scientific exchanges to sustain and enhance global resources and to encourage quality land management.*
- *Helping States and communities to wisely use the forests to promote rural economic development and a quality rural environment.*
- *Developing and providing scientific and technical knowledge aimed at improving our capability to protect, manage, and use forests and rangelands.*

*Providing work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged in pursuit of our mission.*

Data gathered for the project, including photographs illustrating wildlife use of the new structure, will be shared with USFS. USFS can use this information as part of their educational efforts for Forest visitors.

## CRITERION 2.5: MONITORING & RESEARCH

The project contributes to the Monitoring and Research criterion by building on existing data to provide an in-depth analysis of pre- and post-conversion conditions. This includes not only crash data but water quality data for Rocky Creek East.

## CRITERION 2.6: SURVIVAL OF SPECIES

The project contributes to the Survival of Species criterion by maintaining connections



between rare ecosystems that support several sensitive species. The Biological Evaluation (NCDOT March 2019) documents the following state listed species of concern observations: Mole Salamander (*Ambystoma talpoideum*), Four-toed Salamander (*Hemidactylium scutatum*), and the Timber Rattlesnake (*Crotalus horridus*). Federal Species of Concern (FSC) that may have expanded



TIMBER RATTLESNAKE (NCWRC)

potential habitat once the bridges have been constructed include the Carolina darter (*Etheostoma collis*) and Carolina redhorse (*Moxostoma sp. 3*) as well as several mussel species including triangle floater (*Alasmidonta undulata*), Roanoke slabshell (*Elliptio roanokensis*), Atlantic pigtoe (*Fusconaia masoni*), Carolina creekshell (*Villosa vaughaniana*), and Savannah lilliput (*Toxoplasma pullus*).

## PROJECT READINESS

### Technical Assessment

#### ADMINISTRATION

NCDOT will administer the grant.

#### PROJECT PROGRAMMING

Uwharrie CONNECT as part of R-2527 is programmed in the State Transportation Improvement Program and is supported by the Piedmont-Triad RPO.

#### PROJECT PUBLIC INVOLVEMENT

NCDOT acknowledges the importance of its obligation to provide robust public involvement throughout the decision-making process and project implementation across the state. These efforts, as directed by NCDOT, are critical to the success our projects. Following our [Statewide Public Involvement Plan](#) and in coordination with our Public Involvement Team and Communications Office, a comprehensive Public Involvement Plan (PIP) was developed for STIP Project R-2527. The PIP included multi-lingual public outreach, an informational workshop, and public hearing. These activities took place throughout the development of the Environmental Assessment (EA) and Finding of No Significant Impacts (FONSI). Stakeholder comments were critical in the decision to convert the existing culverts to dual bridges. A Public Input website was developed to obtain further public comment on the proposed improvements to the Uwharrie Walking Trail parking lot. Public involvement will occur throughout construction. Additional public engagement opportunities may include meetings, stand-alone kiosks, and participation at area events.



## PROJECT SCHEDULE

Upon funding award for the Uwharrie CONNECT project, NCDOT is prepared to move quickly toward implementation. While no additional right of way acquisition is anticipated for Uwharrie CONNECT, some easement from the USFS may be required. Designs for the bridge structures are anticipated to take 6 months to complete. Because right of way acquisition for R-2527 is already under way (began in 2019) it is not anticipated to be a barrier to proceeding with construction. Construction for R-2527 is anticipated to begin in 2025. Construction is anticipated to begin within 6 months of funding authorization and would be complete within 2 years.

### AWARD RECEIVED



Uwharrie CONNECT is not anticipated to have jurisdictional impacts and every effort will be made to continue to avoid and minimize impacts. If stream or wetland impacts are identified, NCDOT will acquire the necessary permits from the appropriate regulatory agencies. Further, the potential federal listing of tricolor bat (*Perimyotis subflavus*) under the Endangered Species Act, which is anticipated to occur in late 2023, will not affect the project schedule. NCDOT is developing a programmatic consultation for that species in coordination with the FHWA, the US Army Corps of Engineers, and the US Fish and Wildlife Service.

## ENVIRONMENTAL REVIEW & PERMITTING RISK

FHWA and NCDOT issued a Finding of No Significant Impacts (FONSI) for R-2527 in April 2017. We have continued consultation with FHWA to ensure our NEPA documentation is up-to-date, and upon award of this grant NCDOT will document any design and impact changes under our typical consultation processes with FHWA. NCDOT has already begun environmental review and regulatory coordination for Uwharrie CONNECT as part of this application process and will be completed within 2 months of funding award.

The NCDOT has designated liaisons within all necessary regulatory agencies who are assigned to work specifically on NCDOT projects. The project will take place entirely within existing NCDOT right of way. It is unlikely that there are utility conflicts in the project area, however, coordination can begin as soon as funding is announced if any are found to exist. Potential regulatory and permitting concerns have been addressed through early coordination in the site selection process and designated liaisons within the regulatory agencies will ensure streamlined coordination and timely issuance of permits.



## ADMINISTRATIVE PRIORITIES

### *Safety*

Our proposed construction of wildlife fencing on NC 24/27 is completely aligned with the National Roadway Safety Strategy, given the strong emphasis in our project for reducing the number of dangerous, potentially lethal crashes between vehicles and large-bodied wildlife. See Criteria 1.1 above. Replacing the proposed culvert with a bridge can be expected to reduce wildlife vehicle collisions. As NCDOT is only seeking the cost difference between a culvert and a bridge, this project would provide an extremely cost-effective highway safety intervention.

### *Climate Change and Sustainability*

The construction of wildlife fencing on NC 24/27 would promote the climate resilience of the entire Uwharrie Mountains area. Improving habitat connectivity will increase the ability of species to seek shifting microclimates that are suitable as the climate changes. See Criteria 1.2 for more information on how the project reduces barriers between high quality habitat areas. Also, by reducing major crashes involving large mammals, the project will also serve to reduce WVC related traffic congestion and increased greenhouse gas emissions.

### *Equity*

The proposed work on the NC 24/27 corridor will promote urban-rural equity by marking a substantial investment in highway safety in rural Montgomery County NC, in census tract 9602, which is listed as an Historically Disadvantaged Community (HDC), meeting USDOT's stated Justice40 goals. By reducing crashes, the crossing projects will promote the livelihood and prosperity of rural residents who can least afford the property damage and health care implications of a high-speed collision with deer and meso-mammals.

### *Workforce Development, Job Quality, and Wealth Creation*

Installation of a bridge will bring economic benefits to the area. The construction project will last at least six months, bringing opportunities to local workers and revenue to the restaurants, hotels, and other businesses that will benefit from the construction activities. This will promote wealth creation in the area. In addition, NCDOT has a legislatively mandated Disadvantaged Business Program to ensure disadvantaged businesses have the opportunity to do business with the Department. The N.C. Department of Administration administers the Historically Underutilized Business Program to promote economic opportunities for historically underutilized businesses in state government contracting and procurement.