

Project Development and Environmental Analysis Merger Screening Information Sheets

Date: 11/16/16

TIP No.: R-3603A	County: Catawba and Alexander Counties
Federal-aid No.: NA	WBS No.: 38870.1.1
NCDOT Division: 12	Scoping Meeting Date: 12/7/16

Project Description:

- **Length:** 3.7 miles
- **Termini (US Hwy / SR):** NC 127 from SR 1400 (Cloninger Mill Road) to SR 1156 (Richey Road)
- **MPO / RPO:** Greater Hickory Metropolitan Planning Organization
- **NEPA / 404 Merger Candidate?** Yes No Unknown

General Description of Project:

Upgrade existing NC 127 from SR 1400 (Cloninger Mill Road) to SR 1156 (Richey Road) in Catawba and Alexander counties. Upgrade the existing two-lanes and provide some multi-lane curb and gutter.

Design Data (Existing Conditions):

- **Functional Classification:** Minor Arterial¹
- **Strategic Highway Corridor:** No
- **CTP Designation (Facility Type):** Arterial²
- **Type of Access Control:** Uncontrolled
- **Typical Sections:** (See Below)

Road Segments:

- NC 127 – 450 feet north of SR 1351 (1st Street NW)/ SR 1400 (Cloninger Mill Road) to 1,100 feet north of SR 1400. Two 11-foot lanes NB and SB tapering to one NB and SB lane in each direction with an 8-foot striped median and 2-foot paved and 4-foot grassed shoulders in each direction.
- NC 127 approximately 1,100 feet north of SR 1351 (1st Street NW)/ SR 1400 (Cloninger Mill Rd) to Bridge No. 91 over Lake Hickory. One 11-foot lane and 2-foot paved and 4-foot grassed shoulders in each direction.

¹ NC Map of Functional Classifications.

² NCDOT Prioritization 3.0 Project Summary, 9/23/14.

- NC 127 Bridge 91 - Reinforced concrete deck with steel girders, 941 feet long with a clear deck width of 36.5 feet.
- NC 127 from Bridge No. 91 to SR 1181 (S&K Road), one 12-foot lane in each direction with 4-foot or 5-foot grassed shoulders.
- NC 127 from SR 1181 (S&K Road) to SR 1156 (Richey Road), one 10-foot lane in each direction with a 4-foot or 5-foot SB grassed shoulder and a 4-foot NB grassed shoulder.

Right of Way:

- 170 feet - SR 1400 (Cloninger Mill Road) to Catawba County/ Alexander County line.
- 60 feet – Alexander County/ Catawba County line to SR 1181 (S&K Road).
- 100 feet – SR 1181 (S&K Road) to SR 1156 (Richey Road).

Structure Inventory (bridges, RCBC, Walls, etc):

Bridge No. 91 carrying NC 127 over Lake Hickory is a reinforced concrete deck with steel girders, is 941 feet long, and has a clear deck width of 36.5 feet (Feasibility Report, 1997). Built in 1968, this bridge has a sufficiency rating of 73.8.

Other TIP Projects in the Area:

- **STIP No. B-5549** – Replace Bridge No. 327 on Falling Creek Road over Falling Creek. Approximately 0.5 miles to the southwest. Construction Year 2016.
- **STIP No. B-5150** – Replace Bridge No. 34 over Falling Creek on 29th Ave NE (SR 1404). Approximately 1.5 miles to the southwest. Under construction, revised completion date: 12/25/16.

Railroad Involvement:

None

Long Range Plan History:

The 2040 Greater Hickory Urban Area Long Range Transportation Plan (Greater Hickory MPO, 2014) classifies NC 127 as a major north-south radial serving the Hickory-Brookford-Mountain View area. NC 127 is one of only two major crossings over Lake Hickory from Alexander County, making it a critical link for the travel between the counties. The Plan recommends widening NC 127 to a 4-lane divided boulevard with a grass median within the project limits. Improvements/widening of NC 127 within the project limits is also included in the following documents:

- FY 2016-2025 MTIP for the Greater Hickory Urban Area
- 2008 Alexander County Comprehensive Plan
- 1995 Alexander County Thoroughfare Plan

Cost Estimates: STIP 2016-2025:

	Construction	Right-of-Way	Total
TIP Estimate	\$27,300,000	\$3,400,000	\$30,700,000

Project Schedule:

Environmental Document	FY2018
Right-of-Way	FY2021
Let	FY2023

Discussion Topics from Scope of Services Meeting (11/3/15):

- NCDOT TPB has provided information from local plans, and ongoing coordination will occur during the planning process.
- The project study area contains commercial property, a marina, churches, and an elementary school.
- Bethlehem Elementary School generates a lot of traffic on NC 127.
- Boating access at Lake Hickory should be considered.
- The presence of lower-income persons in the project study area raises the potential for Environmental Justice concerns.
- End bents on both sides of Bridge No. 91 have shifted; therefore, a near-term (2016) repair project is planned. The bridge’s structural rating is 73%; thus, there is no good argument for full replacement.
- Substantial right of way width is present on the west side of the southbound bridge approach.
- According to the Duke Energy Hickory Lake Service Representative (6/10/16), because Lake Hickory is a Federal Energy Regulatory Commission (FERC) licensed lake, the project will require a conveyance application with Duke Energy that may have to be reviewed by FERC for bridge widening or construction of a parallel bridge over Lake Hickory.

Internal Scoping Meeting and Start of Study Comments:

Division 12

- The 2016-2025 STIP divides R-3603 into two sections: Section A (R-3603A) from SR 1400 (Cloninger Mill Road) to SR 1156 (Richey Road); Section B (R-3603B) from SR 1156 (Richey Road) to US NC 64/ NC 90.
- Division 12 has had some discussion with Greater Hickory MPO (GHMPO) regarding roadway typical sections. The Division sees R-3603A as requiring a 4-lane divided facility within the project limits. Section B would have varying typical sections with part multi-lane and part 4-lane.
- GHMPO envisions a 4-lane divided roadway to Richey Road, and 2-lane improvements from Richey Road north to US 64/ NC 90.
- Traffic forecasts will help determine which design is appropriate.

Utilities Unit

- Transmission lines are present along the project alignment.
- Water and sewer are available intermittently along the alignment. A water pump station is located near the intersection of NC 127/ SR 1208 Shiloh Church Road (north end).

Greater Hickory MPO

- Many bicycles travel between Catawba and Alexander counties so any bicycle accommodations would be welcomed by GHMPO.

Division of Bicycle and Pedestrian Transportation

- The section of the project corridor north of Lake Hickory to the end of the project corridor is part of an existing bicycle route.
- The segment south of Bridge No. 91 to SR 1435 (16th Ave. NE) in Hickory is designated as part of the Carolina Thread Trail.
- The Western Piedmont Bicycle Plan (page 46) shows NC 127 as a high-priority part of the bicycle network between SR 1400 (Cloninger Mill Road) south to SR 2227 (21st Ave. NE). The Plan recommends 4-foot shoulders for bicycle use as well as NCDOT approved bicycle warning or regulatory signs.
- NCDOT Department of Bicycle and Pedestrian Transportation (DBPT) recommends 4-foot paved striped shoulders along the entire corridor to accommodate bicycles and maintain a consistent facility type instead of changing the facility type at the county line. NCDOT approved bicycle warning signs should also be installed, as appropriate.

Internal Scoping Meeting and Start of Study Comments:

- The Project Team should work with Greater Hickory MPO and the Catawba Lands Conservancy (lead agency for the Carolina Thread Trail) to ensure pedestrian and bike accommodations are in accordance with local needs.

Transportation Planning Branch

- The need for bicycle facilities should be added to the project's purpose.
- Currently the TPB and Greater Hickory MPO are currently reviewing and revising a draft Comprehensive Transportation Plan. The draft is scheduled to be forwarded to local municipalities review in January 2017.
- No fixed transit routes are located in the study area. All transit is demand-response.
- It is important to note the extended distances to the nearest crossings of Lake Hickory. It is important to determine if these roadways are functioning and not over capacity.
- Detour routes would be lengthy if Bridge No. 91 is closed.
- The GHMPO has expanded to encompass the entire area of Alexander, Burke, Caldwell and Catawba counties.
- The project area lies within the Hickory-Lenoir-Morganton MSA.

Roadway Design Unit

- In a project of this magnitude with varying levels of development, the design should not be restricted to one typical section. In more developed areas the design should include 23-foot medians with berms, curb and gutter, and 4-foot bicycle lanes. The design speed limit in the curb and gutter sections is typically restricted to 50 mph, and 55 mph is recommended for the shoulder sections with partial control of access.
- This design is in line with the TIP description by providing curb and gutter in certain sections. Design engineers will look at appropriate design typical sections as the process moves forward.

Structures Management Unit

- Bridge No. 91 will not be replaced based on its condition. The sufficiency rating for the bridge is relatively high (73).
- The bridge has 4-foot offsets with 12-foot through lanes.
- Lane configurations on the bridge will be subject to additional discussion as the project moves forward. Traffic forecasts will help determine the appropriate lane configurations on the bridge.

Internal Scoping Meeting and Start of Study Comments:

Hydraulics Unit

- Lake Hickory is FEMA-regulated.
- Bridge No. 91 lies in a hazardous spill basin boundary.
- Additions to the bridge need to be subject to hydraulics modeling, and a no-rise certificate would be needed.
- On the west side of NC 127, a Limited Detailed Flood Study would be required. East of NC 127, a flood hazard re-delineation would be required.

Natural Environment Section

- No programmatic USFWS Biological Opinion exists for the Northern long-eared bat (NLEB) for Divisions 9-14. NCDOT must assess potential impacts to the NLEB on a project-by-project basis.
- Following the submittal of the Natural Resources Technical Report (NRTR), NES Biological Surveys Group will confirm the location of Dwarf-flowered Heartleaf populations in terms of distance from NC 127.

Human Environment Section

- Lake Hickory is a prominent recreational destination for boats.
- Access for boats on trailers must be accommodated in the project design and for detour routes.
- Lakeside Marina and lake access could result in community impacts due to a detour.
- Potential impacts to Title 6 populations should be considered in terms of detour and commuter costs. These potential impacts can be addressed through public involvement rather than a data-driven analysis.
- The State Environmental Policy Act (SEPA) does not require an Indirect and Cumulative Effects (ICE) study; but an ICE may be needed depending on Federal involvement.

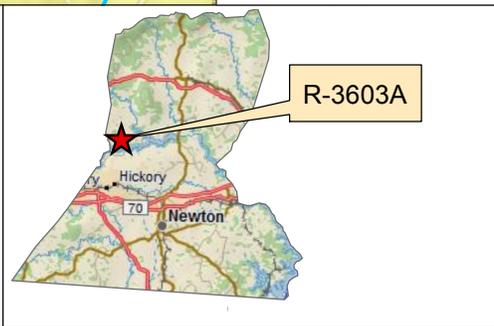
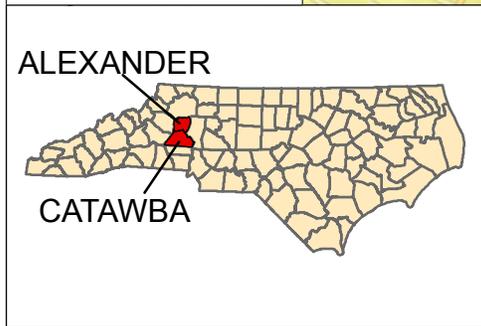
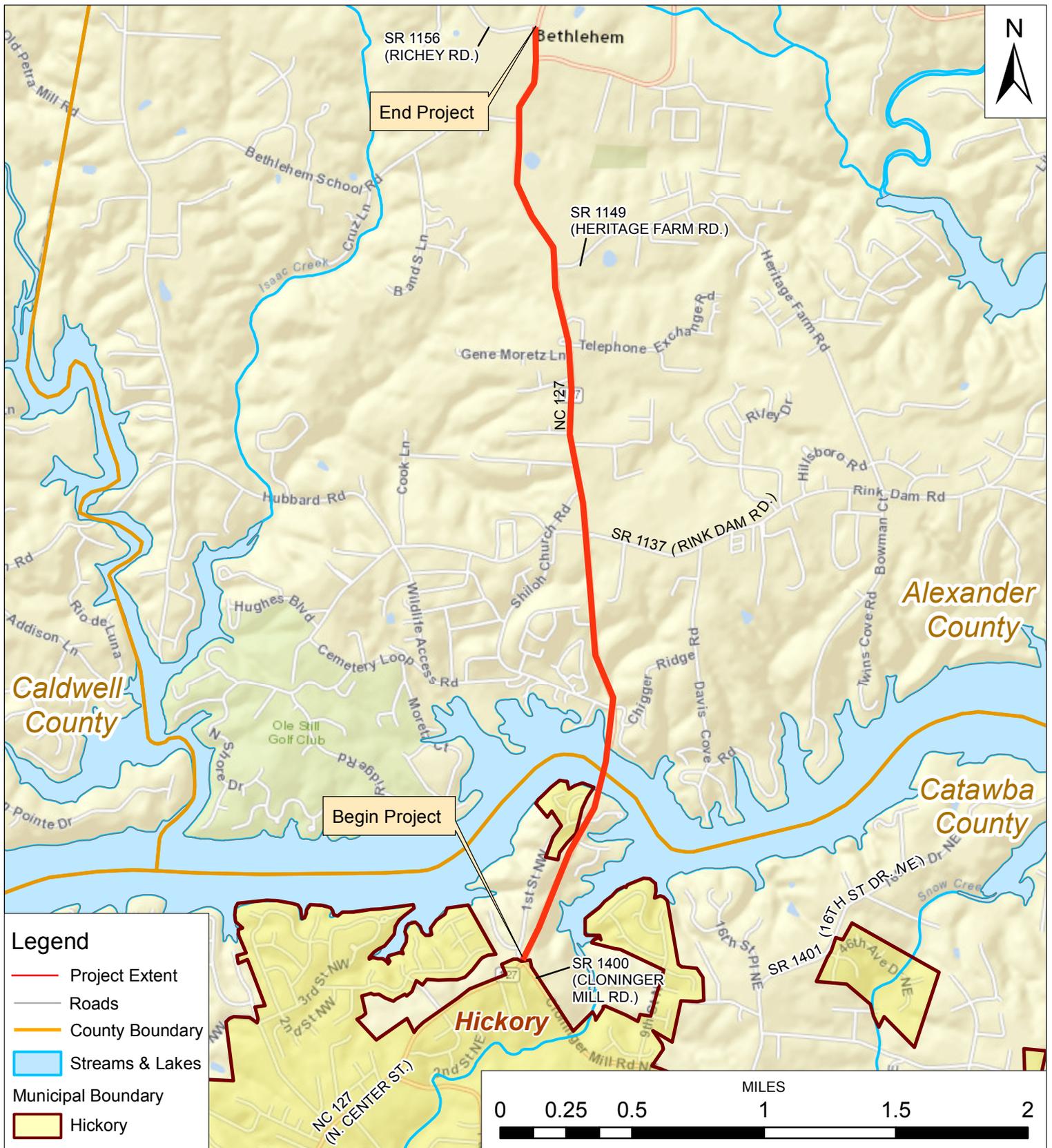
U.S. Environmental Protection Agency

- EPA's primary concern is safeguarding the Catawba River and the ability to design the project to treat stormwater before it reaches the river and its tributaries.
- Public involvement should include outreach to senior citizens west of the alignment between Lake Hickory and SR 1146 (Bethlehem School Road.)

Additional Data Collected:

- Dwarf-flowered Heartleaf has been identified in two locations; 1) Northeast of the NC 127/ SR 1400 intersection, and 2) East of the SR 1208/ NC 127 intersection.
- The project study area is within the Catawba River Basin.
- Lake Hickory is part of the Upper Catawba Watershed.
- Lake Hickory is part of the Catawba-Wataree Hydroelectric Project, owned by Duke Energy, and regulated by the Federal Energy Regulatory Commission (FERC). Oxford Dam is located 6.5 miles east near NC 16 between I-40 and Taylorsville.
- Lake Hickory west of NC 127 is classified as WS IV, B, CA. Water Supply IV (water supply in a highly developed area); Critical Area (development restrictions in place); designated uses include recreational (wading, boating, fishing, and fish consumption).
- Lake Hickory east of NC 127 is classified as in a WS-V, B. Water Supply V (Protected water supply upstream or draining to Class-IV waters); designated uses include recreational (wading, boating, swimming, fishing, and fish consumption).
- West of NC 127 on Lake Hickory are two Watershed Protection Districts. A Critical Area District extends approximately 1/2-half mile from the Lake or to the ridgeline of the watershed. A Protection Area district extends five miles upstream of the critical area, draining to the portions of Lake Hickory west of the NC 127 bridge or to the ridgeline of the watershed.³
- Lakeside Marina is located near the northwest side of Bridge No. 91. It is one of five public access areas that Duke Energy provides in cooperation with the NC Wildlife Resources Commission.
- A Natural Heritage Area (20.84) is present at the northeast corner of SR 1400 (Cloninger Mill Road) and NC 127. This parcel is owned by the City of Hickory and is classified by the Natural Heritage Program as a Managed Area. The City of Hickory has approved a conceptual site plan for a park on the parcel. The park is currently unfunded.
- The City of Hickory Northeast Wastewater Treatment Plant is located at the southeast corner of SR 1400 (Cloninger Mill Road) and NC 127. The plant is designed to treat 6.0 MGD (million gallons per day) of municipal and industrial wastewater flows from Northern Hickory and Southern Alexander County.
- The project study area contains portions of a Block Group that has a population of “Near Poor” (32.6%) that meets the NCDOT criteria for an Environmental Justice population.
- An Alexander County Emergency Management Service (EMS) station is midway along the project alignment.
- A Bethlehem Community Fire and Rescue Station is located 1,000 feet east of NC 127 on (SR 1150) Teague Town Road.
- A second Bethlehem Community Fire and Rescue Station is located northeast of the NC 127/ SR 5600 (Richey Road) intersection.
- Scattered parcels of actively farmed land lie within 500-feet of existing alignment.
- Catawba County is considered by the Eastern Band of Cherokee Indians to be Aboriginal Territory and coordination is required.

³ Catawba County Zoning Overlay District, 2008.





NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

NC 127 FROM SR 1400 (CLONINGER MILL RD.) TO SR 1156 (RICHEY RD.)
CATAWBA/ALEXANDER COUNTY STIP PROJECT R-3603A

VICINITY MAP

Background Data for Purpose and Need

Information from Greater Hickory MPO 2040 LRTP

The two-lane arterial has substandard pavement width over much of its length. Currently, traffic volumes are reaching capacity at the 2 lanes section north of Cloninger Mill Road. The problem will increase in the future as traffic volumes increase. It is recommended that NC 127 be widened to a 4-lane divided boulevard with grass median from Cloninger Mill Road (SR 1400) to SR 1156 (Richey Road).

Information from NCDOT 1997 Feasibility Study

The purpose of this project is to reduce congestion during peak hours to accommodate development trends in the area.

Draft Project Need:

The two-lane arterial has substandard pavement width over much of its length. Currently, traffic volumes are reaching capacity at the 2-lane section north of Cloninger Mill Road. The problem will increase in the future as traffic volumes increase (Greater Hickory MPO 2040 LRTP, 2014).

Draft Project Purpose:

To reduce congestion during peak hours to accommodate development trends in the area (NCDOT Feasibility Study, 1997). To provide bicycle facilities along the project alignment.

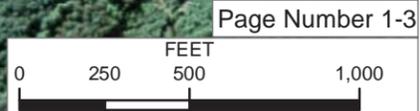
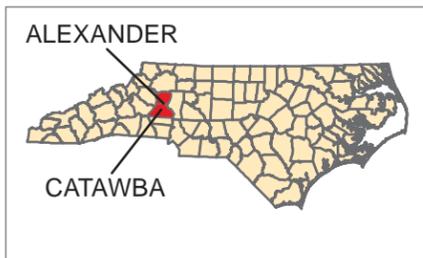
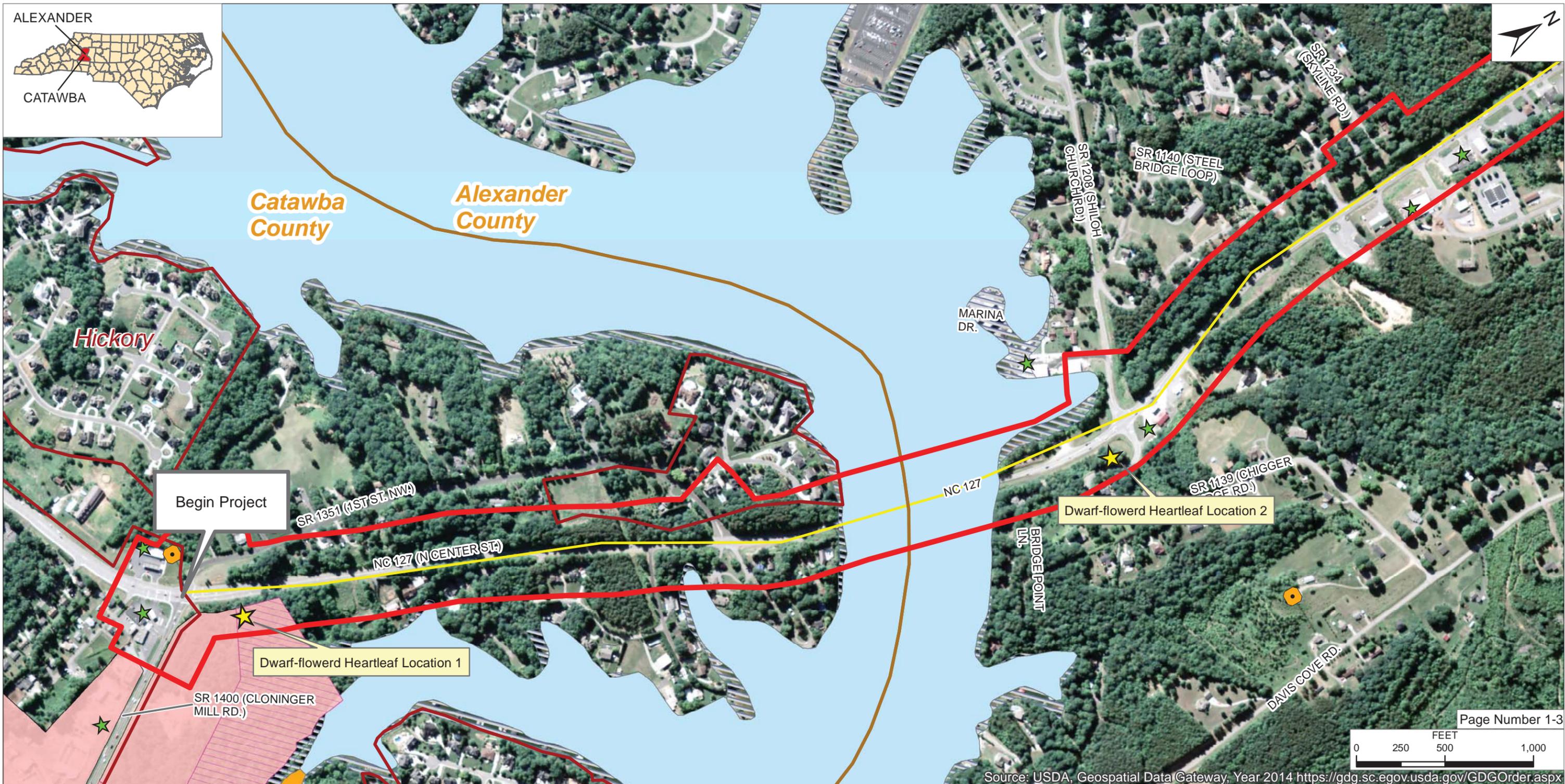
Crash Data for Purpose and Need:

Corridor crash data as of 7/13/16 for the period covering 2011 to 2016:

0 – Fatal Injury Crashes
80 – Total Injury Crashes
122 – Property Damage Only Crashes
202 - Total Crashes

Traffic Forecast Data:

Year	Range of Traffic	%Dual Axle Trucks	% Tractor Trailer/ Semi-Trucks	% Design Hourly Volume
NC 127 - South of SR 1400 (Cloninger Mill Road)				
Current Year 2016	15,200	2%	1%	9%
Design Year 2040 (No Build)	15,500			
Design Year 2040 (Build)	18,600			
NC 127 - SR 1400 (Cloninger Mill Road) to Lake Hickory				
Current Year 2016	18,700	2%	1%	9%
Design Year 2040 (No Build)	20,000			
Design Year 2040 (Build)	24,000			
NC 127 – Lake Hickory to SR 1143 (Hubbard Road)/ SR 1137 (Rink Dam Road)				
Current Year 2016	14,800	2%	1%	9%
Design Year 2040 (No Build)	16,400			
Design Year 2040 (Build)	20,500			
NC 127 – SR 1143 (Hubbard Road)/ SR 1137 (Rink Dam Road) to SR 1146 Bethlehem School Road				
Current Year 2016	9,500	2%	1%	9%
Design Year 2040 (No Build)	10,200			
Design Year 2040 (Build)	14,000			
NC 127 – SR 1146 Bethlehem School Road to SR 1156 (Richey Road)				
Current Year 2016	7,800	2%	1%	9%
Design Year 2040 (No Build)	8,900			
Design Year 2040 (Build)	11,100			
NC 127 – North of SR 1156 (Richey Road)				
Current Year 2016	5,000	2%	1%	9%
Design Year 2040 (No Build)	6,000			
Design Year 2040 (Build)	7,500			
Source: NCDOT Transportation Planning Branch Traffic Forecast – November 8, 2016				



Source: USDA, Geospatial Data Gateway, Year 2014 <https://gdg.sc.egov.usda.gov/GDGOrder.aspx>

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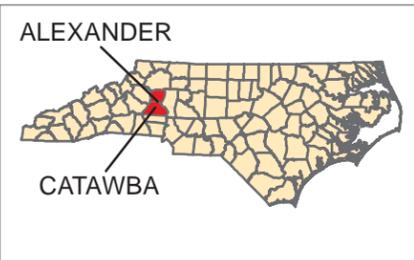
Project Extent	Schools	Post Office	City-Owned Property
Project Study Area	Cell Towers	Potential Hazardous Material	Rivers/Streams
Potential Environmental Justice Area	Library	Emergency Services	Lakes/Ponds
County Boundary	Utilities	Fire Station	Parks
Hickory Municipal Boundary	Cemetery	Dwarf-flowered Heartleaf Locations	100-Yr Floodplain
	Church		Managed Area



NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

NC 127 FROM SR 1400 (COLNINGER MILL RD.) TO SR 1156 (RICHEY RD.)
CATAWBA/ALEXANDER COUNTIES
STIP PROJECT R-3603A

ENVIRONMENTAL FEATURES MAP



Source: USDA, Geospatial Data Gateway, Year 2014 <https://gdg.sc.egov.usda.gov/GDGOrder.aspx>

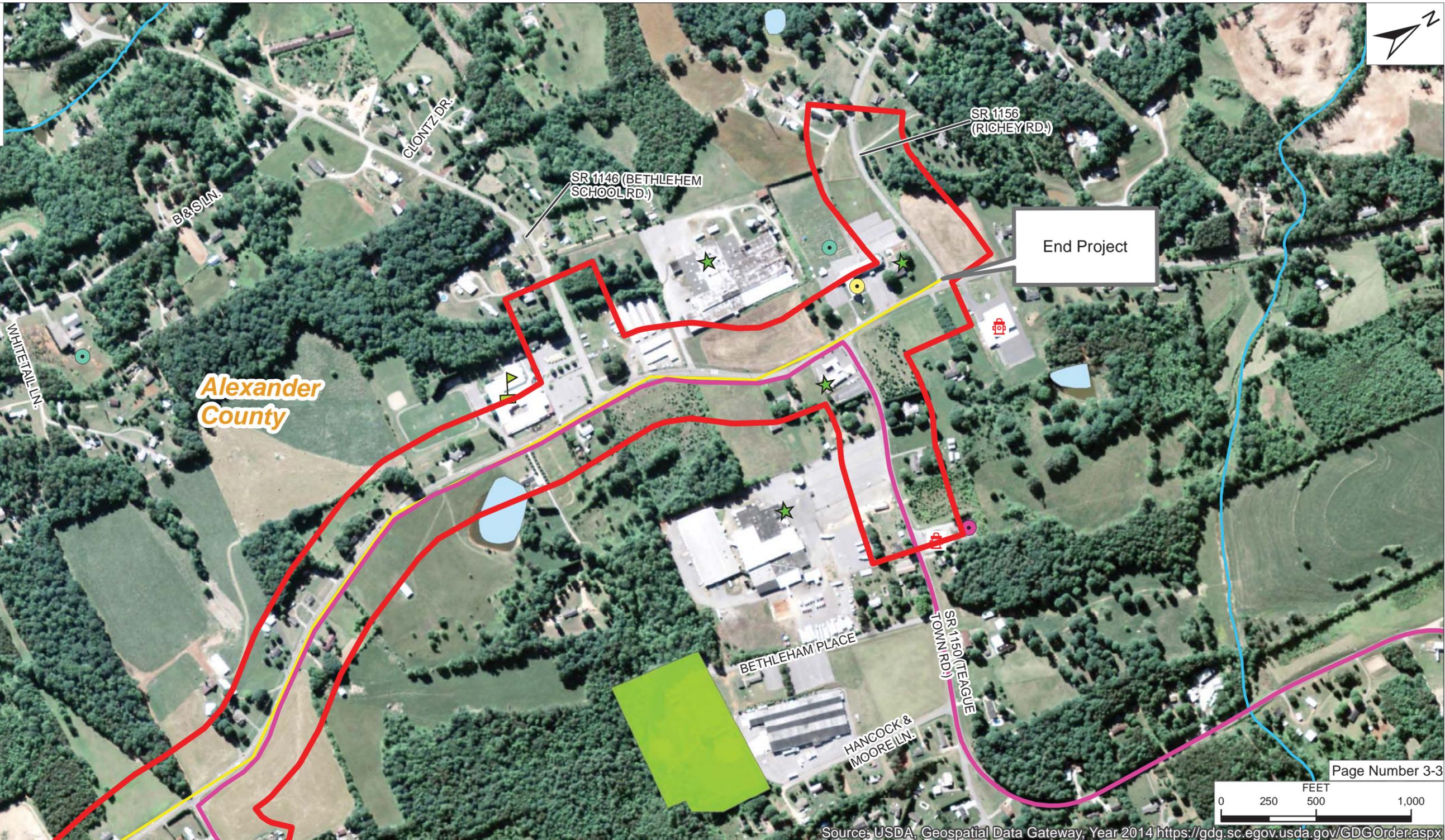
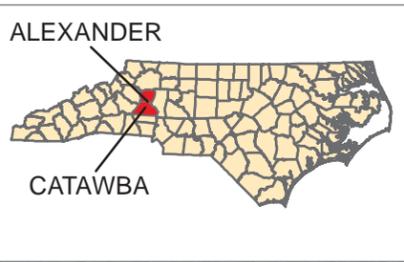
Project Extent	Schools	Post Office	City-Owned Property
Project Study Area	Cell Towers	Potential Hazardous Material	Rivers/Streams
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PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS UNIT

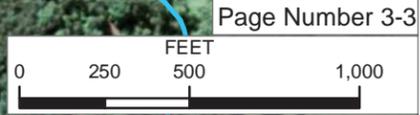
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MILL RD.) TO SR 1156 (RICHEY RD.)
CATAWBA/ALEXANDER COUNTIES
STIP PROJECT R-3603A

ENVIRONMENTAL FEATURES MAP



Alexander County

End Project



Source: USDA, Geospatial Data Gateway, Year 2014 <https://gdg.sc.egov.usda.gov/GDGOrder.aspx>

	Project Extent		Schools		Post Office		City-Owned Property
	Project Study Area		Cell Towers		Potential Hazardous Material		Rivers/Streams
	Potential Environmental Justice Area		Library		Emergency Services		Lakes/Ponds
	County Boundary		Utilities		Fire Station		Parks
	Hickory Municipal Boundary		Cemetery		Dwarf-flowered Heartleaf Locations		100-Yr Floodplain
			Church				Managed Area

	<p>NC DEPARTMENT OF TRANSPORTATION PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT</p>
	<p>NC 127 FROM SR 1400 (COLNINGER MILL RD.) TO SR 1156 (RICHEY RD.) CATAWBA/ALEXANDER COUNTIES STIP PROJECT R-3603A</p>
	<p>ENVIRONMENTAL FEATURES MAP</p>

Background Data for Alternatives Development

Design Data (Proposed Conditions):

- **CTP Designation (Facility Type):** Boulevard (Greater Hickory MPO 2040 LRTP)
- **Type of Access Control:** Partial
- **Typical Section:** 4-lane divided facility with grassed median (Greater Hickory MPO 2040 LRTP)
- **Right of Way:** 100 feet
- **Posted Speed:** 45 mph

Information from NCDOT 1997 Feasibility Study

A 1997 Feasibility Study examined widening and other improvements to NC 127 from south of the Catawba River (Lake Hickory) to US 64/NC 90, a distance of 10.3 miles. The study recommended one alternative within the project limits with the following elements:

- Widening NC 127 within the project limits to a five-lane curb and gutter section.
- Asymmetrical widening to the west side between SR 1400 (Cloninger Mill Road)/ SR 1351 (1st Street NW) to SR 1208 (Shiloh Church Road) to minimize right-of-way impacts.
- Construction of a new two-lane structure over Lake Hickory to parallel the existing bridge.
- Asymmetrical widening to the east side of the roadway between SR 1208 (Shiloh Church Road, north end) to SR 1156 (Richey Road).
- Upgrades to traffic signals at SR 1400 (Cloninger Mill Road), SR 1137 (Rink Dam Road), SR 1150 (Teague Town Road).

Initial Alternatives Developed by NCDOT:

TBD

Preliminary Corridor Resources Inventory Table:

Resource/Measure	500-ft Study Corridor
Length of project (to tenth of miles)	3.7
Crashes	202
Potential for Interchanges or RR crossings (#)	0
Other Infrastructure (# of Wastewater treatment plants, transmission pipelines, etc.)	1
Suspected/known Hazardous Material sites (#)	10
National Register or eligible sites, districts, or other historic properties (#)	0
Community facilities such and hospitals, nursing homes, churches, schools, cemeteries, etc.) (#)	3 Churches, 2 Cemeteries Post Office, School 2 Fire Stations, 1 EMS
Potentially Affected Residential Properties	Approximately 64
Potentially Affected Business Properties	Approximately 43
Wetlands (est. acres rounded to whole acre)	1 ac*
Streams (# of streams and number of linear feet)	12 / 2,958 lf*
Open Water (est. acres rounded to whole acre)	13 ac*
Critical Water Supply Watersheds (rounded to nearest acre)	7 ac* On the west side of Bridge No. 91 only.
Riparian Buffer rules apply (yes/no/part) ¹	Yes (Catawba River Basin Rules)
Area in active agriculture (nearest acre)	TBD
Parks, Greenways, Game Lands, Land and Water Conservation Fund Properties, etc.) (#)	0
Identified Critical habitat/species under ESA (yes/no/part)	Habitat Present: Catawba (Schweinitz's sunflower) Alexander (Dwarf-flowered heartleaf; Bog turtle) Endangered Species Identified: Catawba (Dwarf-flowered Heartleaf)
FEMA Buyout Properties	0
Other known/suspected resources or issues: (identify; e.g. Low-income or minority community) (#)	Low-Income BG That Meets NCDOT EJ Criteria

¹Buffer impacts assumed to be proportional to the stream impacts.

*Calculated from field data collected by Michael Baker Engineering.