

US 158  
From the I-95 / NC 46 Interchange West of Garysburg  
To the Murfreesboro Bypass  
Northampton County

WBS No. 34472.1.1  
T.I.P. Project No. R-2582 & R-2584

ADMINISTRATIVE ACTION  
STATE FINAL ENVIRONMENTAL IMPACT STATEMENT

In Compliance with the North Carolina  
State Environmental Policy Act

N. C. DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS



APPROVED:

3/31/11  
Date for Gregory J. Thorpe, Ph.D., Manager  
Project Development and Environmental Analysis Branch, NCDOT

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North Carolina Department of Transportation

March, 2011

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## **PROJECT COMMITMENTS**

**US 158  
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T.I.P. Project No. R-2582 & R-2584**

### Roadway Design:

- Roadway Design Unit will coordinate with the NCDOT Rail Division in order to preserve space for a future connector track west of Garysburg.

### Project Development & Environmental Analysis Branch:

- Detailed archeological surveys are currently underway. The survey's findings will be reported to the State Historic Preservation Office. Any required data recovery will be coordinated with the State Historic Preservation Office and documented in the State Record of Decision (ROD) for this project.
- A Memorandum of Agreement between the Historic Preservation Office, US Army Corps of Engineers, and other consulting parties will be completed to address adverse effects to historic resources.
- Given the high rate of minority and low income populations in several of the communities along the project alternatives, enhanced outreach measures at the time of the public hearing(s) will be utilized.

### Roadway Design/ Project Development & Environmental Analysis Branch:

- A roadside picnic area, which overlooks a former millpond (that served Boone's Mill), is accessed by a dead-end section of roadway that parallels US 158. The picnic area is within the existing US 158 right of way. Impacts to the site will be minimized as much as possible.

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Northampton County  
WBS No. 34472.1.1  
T.I.P. Project Nos. R-2582 & R-2584

**EXECUTIVE SUMMARY**

**S.1. NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

Administrative Action State Environmental Impact Statement  
( ) Draft (X) Final

**S.2. CONTACTS**

The following individual may be contacted for additional information concerning this State Final Environmental Impact Statement:

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**S.3. PROPOSED ACTION**

**S.3.1. Description of Proposed Action**

The NCDOT proposes to widen US 158 in Northampton County from the I-95/NC 46 Interchange to the Murfreesboro Bypass (see Figure 1). The proposed action involves a combination of widening, new location segments, and other improvements to existing US 158. Based on the need to avoid disruption to the area towns along existing US 158, there will be bypasses and/ or other alternative routings around Weldon, Garysburg, Jackson, Faison's Old Tavern, and Conway. The widening will convert the highway from its current configuration as a two-lane facility to a four-lane, median-divided facility. The proposed facility will have 12-foot lanes, paved shoulders, and a 46-foot grass median. Widening portions will have partial control of access, while new location segments will have full control of access. The total length of the project is approximately 34.6 miles.

These projects are included in the approved 2009-2015 State Transportation Improvement Program (STIP) and the Draft 2011-2020 STIP. R-2582 and R-2584 are being addressed in one environmental planning document to more appropriately address logical termini. The total cost in the Draft 2011-2020 STIP is \$249,498,000, which includes \$18,925,000 for right of way and \$224,000,000 for construction. Right of way acquisition is scheduled to begin in State Fiscal Year (FY) 2014 and

construction in FY 2016; however, R-2582A is the only section currently funded for construction, all other sections are in an “unfunded” status.

S.3.2. Purpose of Proposed Action

The purpose of the proposed action is to:

- Improve traffic flow and Level of Service (LOS) on this section of US 158
- Improve safety along this section of US 158
- Improve access to existing and future industry

**S.4. DETAILED STUDY ALTERNATIVES**

The alternatives considered for this project were established as a result of many preliminary studies and extensive public input. For planning purposes, the study alternatives were first designed as 500 to 1000 foot corridors which allowed flexibility during design for the avoidance of important manmade and natural features.

**Construction Alternatives**

The construction Alternative would consist of improvement of US 158 through a combination of widening and new location segments. In developing alternatives, the project was divided to correspond with the four main populated segments of the project: Garysburg, Jackson, Faison’s Old Tavern, and Conway. The project was divided into segments for planning and construction purposes. Some portions of the project included only one alternative, while in other areas there were several alternative routings. In order to effectively analyze these alternatives and ultimately provide information necessary for the selection of the Preferred Alternative, the segments were consolidated into 17 alternatives created from 29 segments (A1-H1). Figure 1A-1D (Appendix A) shows the location and relationship of these alternatives and segments.

Part of the construction Alternative was the consideration of three widening options for the portions of the project where widening is to be used: widening to the north of the existing roadway, widening to the south of the existing roadway, and a combination of northern and southern widening sections to minimize natural and/or social impacts (Best Fit widening). Best Fit widening was determined to be the only viable option available for the widening segments.

**No-Build Alternative**

The No-Build alternative was the baseline against which the other alternatives would be measured. It assumed that in the year 2030, the existing transportation system would evolve as currently planned, but without improvement of existing US 158. The No-Build alternative was eventually eliminated from consideration due to its inability to meet the purpose and need of this project.

**Alternatives Considered But Eliminated**

Widening of existing US 158 through Weldon, Garysburg, Jackson, and Conway were not considered viable due to excessive impacts to the Historic District of each town, and were eliminated from consideration.

The Mass Transit and Transportation System Management (TSM) alternatives were also eliminated from further consideration due to their inability to solve the traffic problems identified in the study area.

**S.5. PREFERRED ALTERNATIVE**

The Preferred Alternative for each of the four main segments is as follows (see Figure 1):

- Garysburg Southern Bypass 1 (Segments A1, B2, B3)
- Northern Jackson Bypass (Segments C1, E2, E3)
- Faison's Old Tavern Northern Bypass 2 (Segments F2, F6, F10)
- Conway Northern Bypass 2 (Segments G1, G6, G7, H1)

This alternative was determined to be the Least Environmentally Damaging Practicable Alternative (LEDPA) by the Section 404/NEPA Merger Process Team.

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**S.6. SUMMARY OF IMPACTS**

The following is a summary of impacts for the Preferred Alternative. Anticipated impacts of all 17 detailed study alternatives can be found in Appendix E.

**Table S-1: Summary of Impacts for the Preferred Alternative**

<b>Impacted Resource</b>	<b>Preferred Alternative</b>
Segments Included	A1 B2 B3 C1 E2 E3 F2 F6 F10 G1 G6 G7 H1
Length (miles)	34.6
Interchanges (proposed)	5
Railroad Crossings (grade separated)	3
Schools	1
Recreational Areas and Parks	1
Churches	1
Cemeteries	1
Major Utility Crossings	2
Historic Properties (Adverse Effect/No Adverse)	4/4
Archaeological Sites <sup>(1)</sup>	Unknown
Federally Listed Species	0
NRCS-Potential Farmland Conversion	Below Threshold
Residential Relocations	38
Business Relocations	4
Noise Receptors Impacted	73
Wetland Impacts (acres)	56.8
Stream Impacts (feet)	9142
Water Supply Watershed Protected Areas	0
Wildlife Refuges and Game Lands	0
Minority/ Low Income Populations (Adverse & Disproportionate Impacts)	No
Hazardous Material / Landfill Sites	0
Underground Storage Tank Sites	6
Construction Cost	\$240,901,257
Right of Way Cost	\$34,329,750
Mitigation	\$4,480,028
Utilities Cost	\$3,849,956
Total Cost	\$283,560,991

Note 1: Archaeological surveys are currently underway.

**S.7. ACTIONS REQUIRED BY OTHER FEDERAL AND STATE AGENCIES**

An Individual Permit will be required based on the cumulative loss of stream channel and wetlands being greater than the current thresholds of a Nationwide Permit. An Individual 401 Water quality Certification will be necessary for impacts before an Individual 404 Permit can be obtained. The United States Army Corps of Engineers (USACE) does not have jurisdiction over isolated wetlands. Therefore, an Isolated Wetland Permit will be required from North Carolina Department of Water Quality (NCDWQ). NCDOT will coordinate with the USACE and NCDWQ after the completion of the final design to obtain the necessary permits required by Sections 404 and 401 of the Clean Water Act (CWA).

**S.8. COORDINATION**

The following federal, state, and local agencies were consulted during the preparation of this State Final Environmental Impact Statement. Written comments were received from agencies noted with an asterisk (\*).

- \*United States Army Corps of Engineers (USACE)
- \*United States Environmental Protection Agency (USEPA)
- \*United States Fish and Wildlife Service (USFWS)
- \*National Marine Fisheries Service (NMFS)
- \*North Carolina Department of Cultural Resources (DCR)
- \*North Carolina Wildlife Resources Commission (WRC)
- \*North Carolina Division of Soil and Water Conservation (DSWC)
- \*North Carolina Division of Forest Resources
- \*North Carolina Division of Water Quality (DWQ)
- \*North Carolina Division of Environmental Health
- North Carolina Division of Coastal Management (DCM)
- North Carolina Division of Marine Fisheries (DMF)
- Upper Coastal Plains Council of Governments
- \*Town of Garysburg
- Town of Conway
- \*Town of Jackson
- \*Town of Weldon
- Halifax County Commissioner
- Northampton County Commissioner
- \*Northampton County Schools



## **Chapter 1**

### **PURPOSE AND NEED FOR PROJECT**

#### **1.1 INTRODUCTION**

This State Final Environmental Impact Statement (SFEIS) was prepared in accordance with the requirements set forth in the North Carolina (State) Environmental Policy Act (SEPA). This SFEIS is an informational document for use by the general public as well as the decision makers. This document represents a disclosure of relevant social and environmental information concerning the recommended proposed action as well as all viable alternatives.

Chapter 1 of this report identifies the purpose and need for this project. Chapter 2 documents the selection of all transportation alternatives considered, the alternatives considered for closer review, and the Preferred Alternative selection. Chapter 3 details the current or existing social, economic and environmental conditions within the study area. Chapter 4 describes the human and natural environmental effects of the alternatives chosen for detail study, and specifically, the impacts of the Preferred Alternative. This section also outlines potential mitigation measures for any anticipated impacts. Chapter 5 lists the cooperating agencies on this study as well as the distribution list. Chapter 6 details the coordination and public involvement associated with this SFEIS.

The purpose and need discussion establishes the nature of surface transportation related problems and issues for the study area. This discussion led to the development of transportation improvement alternatives and the means by which they were evaluated, which in turn helped the decision-makers decide on the Preferred Alternative that meets the purpose and need within the US 158 study area.

#### **1.2 DESCRIPTION OF PROPOSED ACTION**

The NCDOT proposes to widen US 158 in Northampton County from the I-95/NC 46 Interchange to the Murfreesboro Bypass (see Figure 1). The proposed improvements utilize both the existing facility and some segments located along new location. The widening will convert the highway from its current configuration as a two-lane facility to a four-lane, median-divided facility.

The proposed facility will have 12-foot lanes, paved shoulders, and a 46-foot grass median. The total length of the project is approximately 34.6 miles.

Projects R-2582 and R-2584 are included in the approved 2009-2015 State Transportation Improvement Program (STIP), and the 2011-2020 Draft STIP. R-2582 and R-2584 are being addressed in one environmental planning document to more appropriately address logical termini. The total cost in the 2011-2020 Draft STIP is \$249,498,000, which includes \$18,925,000 for right of way and \$224,000,000 for construction. The current project cost estimate is listed in Table 1-1. Right of way acquisition is scheduled to begin in State Fiscal Year (FY) 2014 and construction in FY 2016; however, R-2582A is the only section currently funded for construction, all other sections are in an “unfunded” status.

**Table 1-1: Current Project Cost Estimate**

TIP Number	Project Section	Right of Way Cost	Construction Cost
R-2582	A	\$13,550,000	\$53,100,000
	B	\$6,230,000	\$71,300,000
R-2584	A	\$5,990,000	\$49,100,000
	B	\$6,080,000	\$55,300,000
	C	\$2,500,000	\$ 8,700,000
		\$34,350,000	\$237,500,000
Total Cost - \$271,850,000			

### 1.3 PROJECT NEED (NEED FOR ACTION)

An improved US 158 facility would serve several functions:

- **Traffic Flow-** It would provide an efficient link as an East-West route in northeastern North Carolina. US 158 is a major intrastate highway traversing from west of Winston-Salem to the Outer Banks of North Carolina. US 158 is the principal east-west route connecting both I-85 and I-95 to the northern coast of North Carolina. Consequently, it would play an important role in local and state transportation mobility.
- **Safety-** An improved US 158 facility could permit separation of through and local traffic in the vicinity of the study area municipalities, to the benefit of both groups of users. The resulting anticipated reduction in traffic accidents would reduce medical and property damage costs.
- **Access-** An improved US 158 highway would sustain and possibly promote social and economic development in the project area.

### 1.4 PURPOSE OF PROJECT

It is the basic purpose of this project to provide a safe, efficient, environmentally sound, and economical transportation facility that responds to the needs of the people who live in and travel through the US 158 study area. During the initial stages of this study, the following goals and objectives were established for the purpose of achieving a reasonable transportation solution to the existing problems on US 158, based on public, state, and local agency involvement:

- **Improve traffic flow and level of service (LOS) on this section of US 158.**

In a “no-build” scenario, the projected traffic along several segments of US 158 would exceed capacity, thus creating deficient levels of service along those segments. With the proposed improvements, traffic flow would be improved to an efficient level of service A (LOS A). Travel conditions would remain at LOS A through the design year.

- **Fulfill US 158’s role as a Strategic Highway Corridor, Intrastate Route and meet Federal Highway Administration’s Strategic Plan objectives.**

Widening this facility to four lanes will meet the objectives of these designations, designed to improve safety, decrease travel time, and foster economic prosperity through the quick and efficient movement of people and goods.

- **Improve safety along this section of US 158.**

Reduce collision frequency and severity as feasible within realistic parameters for improvements.

- **Improve access to existing and future industry.**

Create a transportation system that enhances the economic base of Northampton County and surrounding counties served by the US 158 corridor.

## 1.5 SYSTEM LINKAGE

### 1.5.1 Existing Road Network

Interstates and US Routes. The project’s western terminus is bounded by Interstate 95 (I-95). On a national scale, I-95 serves as a conveyance for north-south traffic for the entire eastern seaboard of the United States.

Three US Routes traverse Northampton County. US 301, which travels through Garysburg, closely parallels Interstate 95 throughout North Carolina and provides northbound and southbound traffic service through the study area. US 258, which travels north-south along the eastern part of Northampton County, connects Jacksonville, North Carolina to Fort Monroe, Virginia. US 258 junctions with US 158 just east of the projects eastern terminus.

US Route 158. US 158 is a major intrastate highway traversing from west of Winston-Salem to the Outer Banks of North Carolina. US 158 is the principal east-west route from I-85 and I-95 to the coast in the northern part of North Carolina. It is currently a two-lane road for much of the route, and passes through numerous small towns.

For most of the project length, the highway has a speed limit of 55 mph. The speed limit is lower as US 158 passes through the towns of Garysburg, Jackson, and Conway. Various developed areas lining the highway also limit the permissible areas that vehicles can safely pass. Because of numerous slow moving vehicles, farm machinery, the sections of US 158 passing

through towns, and the limited opportunities to pass, average operating speeds are generally lower than 55 mph.

Other NC Routes and Secondary Roads. Other NC highway routes in or near the study area include:

NC 46 – This facility is a north-south state highway in eastern North Carolina; it is entirely in Northampton County. The route primarily connects the communities on the north side of Roanoke Rapids Lake and Lake Gaston, as well as the north side of the Roanoke River in the county.

NC 305 – This highway travels from NC 186 north of the study area to US 13, north of Windsor. Within the study area, NC 305 traverses the town of Jackson, where it junctions with US 158. The facility is oriented in an approximate north-south direction.

NC 35 – This route is a north-south highway with a southern terminus near the Tri-County Airport in western Hertford County, and a northern terminus at the Virginia state line in Northampton County. Within the study area, NC 35 traverses the town of Conway, where it junctions with US 158.

There are numerous secondary routes, both paved and unpaved, in the study area, many of which junction with US 158. These secondary facilities generally provide localized land access for area residents and do not typically carry high volumes of traffic.

### 1.5.2 Modal Interrelationships

Rail Services – There are three railroad crossings within this project area (see Figures 2a-2t). The CSX A-line runs from Weldon, NC to Emporia, VA and is a route being considered as part of the Southeast High Speed Rail Corridor (SEHSR) from Washington DC through Raleigh to Charlotte, NC. The second crossing is the CSX SA-line that runs from Weldon, NC to Portsmouth, VA. The third railroad in the project area is in Conway. The North Carolina & Virginia Railroad (NCVA) is a short line railroad which was once a part of the CSX SAB-line that ran from Boykins, VA through Conway to Lewiston, NC.

Airports – There is one main airport within the project vicinity, the Tri-County Airport, approximately 13 miles south of Conway on NC 561. The proposed project could bring about increased usage of this facility through encouragement of industrial and commercial growth near Conway.

Transit – The Chowan Public Transportation Authority (CPTA) provides subscription and demand-responsive transportation in Northampton, Halifax, Bertie, and Hertford counties. Hours of operation are 6 a.m. to 6:30 p.m., Monday through Friday. Riders can schedule transportation a day in advance to any location within this four-county area. Some fees are either subsidized or paid through county social service departments. CPTA also provides 14 drivers to transport children to Head Start programs. In Northampton County, these programs are located in Woodland and Seaboard. The operations center is located in Rich Square in southern Northampton County.

## 1.6 PLANNING AND OTHER TRANSPORTATION DOCUMENTS

### 1.6.1 State Planning Documents

Strategic Highway Corridor Plan. The Strategic Highway Corridors (SHC) initiative is an effort to preserve and maximize the mobility and connectivity on a core set of highway corridors, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods. The initiative offers NCDOT and its stakeholders an opportunity to consider a long-term vision when making land use decisions and design and operational decisions on the highway system. The subject section on US 158 is a portion of Corridor 37 identified in this initiative. The Strategic Highway Corridor Plan Vision for this section of US 158 is an expressway for widening on existing and a freeway for new location bypasses.

Intrastate Corridor Plan. The US 158 project is a part of the State's Intrastate System. The Intrastate System was established to provide high-speed, safe travel service throughout the state. It connects major population centers both inside and outside the State and provides safe, convenient, through-travel for motorists. The Intrastate System supports statewide growth and development objectives and connects to major highways of adjoining states.

National Highway System. US 158 is on the Federal Highway Administration's (FHWA) National Highway System (NHS). In 1998, the FHWA published a National Strategic Plan, which sought to preserve and enhance the infrastructure of Federal-aid highways with emphasis on the NHS. Objectives of the plan include: reducing delay by 20 percent in 10 years, reducing the number of highway related fatalities and serious injuries by 20 percent in 10 years, enhancing community and social benefits of highway transportation, increasing public satisfaction with highway systems and highway projects as a beneficial part of their community, and reducing on-road mobile source emissions by 20 percent in 10 years.

### 1.6.2 Land Use Plans and Zoning

Land use plans do not exist for most of the study area; however, all jurisdictions have adopted or are preparing zoning ordinances. In addition, thoroughfare plans have been adopted for the entire study area. Plans are summarized by jurisdiction in the following sections.

Northampton County - Northampton County enforces a zoning ordinance outside municipal planning jurisdictions. According to the county's planning director, the zoning ordinance serves as the county's land use plan. Most of the US 158 corridor, as well as proposed corridors, is zoned Agricultural Residential. According to the county's zoning ordinance, "this district is established to promote a compatible mixture of agricultural, forestry, conservation, and very low-density residential uses where few public services will be available. Protection of the environment, preservation of prime farm land, and the continuation of rural lifestyles are goals this district seeks to attain." Residential uses in this district are intended to be those incidental to farming operations. The zoning map also designates a highway industrial district on the north side of US 158 just west of Garysburg with a small highway business area on the south side. The crossroads at Faison's Old Tavern is zoned highway business as well.

The Northampton County Thoroughfare Plan was developed concurrently with the Garysburg Thoroughfare Plan and adopted by the Northampton County Board of Commissioners and the NCDOT in 1995. The primary concern of the Board of Commissioners was the US 158 corridor, as it is the primary east-west route through the county. It was also noted that several other facilities needed study, including a connector between US 158 and I-95 and bypasses of Faison's Old Tavern, Jackson, and Conway, in order to relieve congestion and truck traffic.

The plan recommends improving US 158 to a four-lane divided highway on mostly new location throughout the county. Due to development along existing US 158, widening the road would be very disruptive and expensive, according to the plan. The plan endorses the realignment of US 158 south of Garysburg as proposed in the Garysburg Thoroughfare Plan. The improved roadway east of Garysburg is described in the plan as follows: "It should then run near or on SR 1311 (on new or existing locations) and rejoin existing US 158 where SR 1311 terminates. The corridor will then bypass Faison's Old Tavern and Conway to the south. An interchange is recommended for the proposed US 158/NC 35 intersection. Proposed US 158 will connect to the Murfreesboro Bypass near Hertford County." According to the county's Economic Development Director, the Northampton County Board of Commissioners supports a full grade-separated interchange at all intersections of NC and/or US highways.

Garysburg - Garysburg's zoning ordinance essentially serves as the land use plan for the town. In order to provide for orderly and consistent development as well as restrict some types of undesirable development, the town's zoning regulations are also applied in an area extending one mile outside the corporate limits. The zoning ordinance allows primarily residential and agricultural uses along the existing US 158 and NC 46 corridors with a commercial concentration at the NC 46/US 301 intersection.

The Garysburg Town Council and the NCDOT adopted the Garysburg Thoroughfare Plan in 1994 as an update to a 1984 plan. Primary concerns addressed by the plan include the traffic on US 158, US 301, NC 46, and NC 186. Economic development issues were also a concern.

The plan recommends widening US 158 to a four-lane divided section and relocating the roadway to run south of Garysburg from Jackson By pass Road (SR 1311) to the Roanoke River. In explaining the proposed improvements to US 158 the plan states, "Two options were considered for improvements of US 158: widening the existing US 158 or locating a four-lane section on new location. Due to the development along the existing US 158, the widening of the existing section would be very disruptive and expensive, so this option was eliminated. It is recommended that the four-lane controlled access facility be moved south of Garysburg on new location. It should connect at US 301 just south of Washington Avenue (SR 1651) in Halifax County, cross the Roanoke River at a new location east of the existing US 158 bridge, and run south of Garysburg. The proposed US 158 should connect to the existing US 158 just south of Jackson Bypass Road (SR 1311)/US 158 intersection with an interchange. The general effect of the proposed US 158 corridor would be to free existing US 158 for local traffic. The proposed US 158 would increase speed and safety for through traffic."

The plan also recommends extending NC 46, which connects Garysburg to I-95, east to a proposed realignment of US 301. Existing NC 46 ends at US 301, trucks and other traffic must turn south on US 301 to reach US 158. The thoroughfare plan recommends that NC 46 be extended to alleviate congestion and accidents at this intersection. It was also suggested that NC 46 be widened to a standard 24-foot pavement section to improve safety and capacity, in accordance with the Roanoke Rapids-Weldon-Gaston plan.

Jackson - Jackson's zoning map indicates that properties fronting on US 158 are zoned for either residential or commercial uses. The Jackson zoning office indicated that there is no land use plan for the town of Jackson. The town is included in the Northampton County Thoroughfare Plan.

Conway - The town of Conway is currently considering the adoption of a zoning ordinance. The proposed ordinance indicates primarily residential and commercial zoning districts along US 158. There is no current land use plan for the town. The Northampton County Thoroughfare Plan includes Conway.

### 1.6.3 Economic Development Plan

An Economic Development Plan was developed for the town of Garysburg in 1996. The plan recognizes the substandard housing conditions and limited economic activity in the town and is intended to serve as an information resource and guide for future development efforts. In developing the plan, a community needs survey identified housing repairs, storm drainage problems, and streets and sidewalks as major needs. The survey also revealed a need for additional retail and commercial businesses in Garysburg. To address this issue, the Economic Development Plan recommends a retail/commercial development strategy with a priority on strengthening existing businesses. The strategy also identifies businesses to be recruited, incentives for recruiting new businesses, and funding resources for community and economic development. The plan notes that sufficient undeveloped properties are available to accommodate the growth and development of the town. A preliminary analysis of undeveloped properties indicates that there are 251 sites of less than one acre for residential development, ten sites of 1 to 10 acres for commercial development, two sites of 10 to 50 acres for commercial or industrial use, and one site of more than 50 acres suitable for residential or industrial use. There are also a number of large tracts of land in the town's planning jurisdiction outside the corporate limits that are suitable for industrial or residential subdivision development. Industrial areas are designated along the NC 46 corridor and southwest of the US 158/US 301 intersection.

### 1.6.4 2011-2020 Draft NCDOT State Transportation Improvement Program (STIP)

The North Carolina Department of Transportation maintains and biannually updates a document known as the STIP. A Draft STIP is also developed one year prior to each STIP. The STIP contains funding information and schedules for various transportation divisions including: highways, aviation, enhancements, public transportation, rail, bicycle and pedestrians, and the Governor's Highway Safety Program. The subject US 158 project is designated as STIP Number R-2582 and R-2584 in this document. As described in 1.5.1, this is a portion of a larger Intrastate Corridor designed to connect Winston-Salem to the Outer Banks of North Carolina.

Table 1-2 shows other local US 158 Intrastate projects and other NCDOT STIP projects which are of importance to the US 158 project or are in or near the R-2582 and R-2584 study area.

**Table 1-2: Other US 158 & TIP Projects (2011-2020 Draft STIP)**

STIP #	County	Highway/ Project Name	Right of Way/ Let Schedule	Length (mi.)	Comments	US 158 Intrastate Project?
R-2581	Halifax	US 158-NC 903	Post Year/ Post Year	16	East of Littleton to I-95	Yes
R-2507A&B	Hertford/Gates	US 158- US 158 Bypass	2011 (Design Build)	16	Winton to US 158 Bypass in Tarheel	Yes
R-2578	Gates	US 158	Post Year/ Post Year	15	US 13 to NC 32 in Sunbury	Yes
R-2579	Gates/Pasquotank	US 158	2015/Post Year	16	NC 32 in Sunbury to US 17 at Morgan's Corner	Yes
R-2414	Camden	US 158-NC 34	In Progress/ 2011	5	Elizabeth City to Belcross	Yes
R-2574	Camden/Currituck	US 158	2020/Post Year	11	NC 34 in Belcross to NC 168.	Yes
R-2583	Hertford	US 158	2011 (Design Build)	8	Murfreesboro Bypass to US 13	Yes
I-4913	Northampton	I-95	In Progress	6	Pavement Rehabilitation	No

\* Post Year denotes the project is not currently funded

## 1.7 CHARACTERISTICS OF THE EXISTING FACILITY

### 1.7.1 Length

Existing US 158 from I-95 in Halifax County to the Murfreesboro Bypass in Northampton County is approximately 32.1 miles in length.

### 1.7.2 Typical Section

US 158 is currently a two-lane highway, having between 24 feet and 28 feet of pavement along most of the route in Northampton County. US 158 is a three-lane section through the Town of Conway.

### 1.7.3 Right-of-Way Widths

Right-of-Way widths for the majority of the existing US 158 ranges from 50 feet to 110 feet. The right of way is narrower within town limits and is usually 100 feet in rural areas.

### 1.7.4 Access Control

Existing US 158 and NC 46 have no control of access through the project corridor, with the exception of the I-95/NC 46 interchange, which has full control of access.

1.7.5 Speed Limit

The posted speed limit along the rural sections of the highway is 55 mph. Within the smaller towns (Garysburg, Jackson, and Conway), the speed limit reduces to as low as 20 mph.

1.7.6 Railroads

There are three railroad crossings within this project area (see Figures 2a-2t). The CSX A-line runs from Weldon, NC to Emporia, VA and is a route being considered as part of the Southeast High Speed Rail Corridor (SEHSR) from Washington DC through Raleigh to Charlotte, NC. The second crossing is the CSX SA-line that runs from Weldon, NC to Portsmouth, VA. The third railroad in the project area is in Conway. The North Carolina & Virginia Railroad (NCVA) is a short line railroad which was once a part of the CSX SAB-line that ran from Boykins, VA through Conway to Lewiston, NC.

1.7.7 Intersection and Type of Control

Most intersections along US 158 are managed by traffic signs. The following intersections on this section of US 158 and NC 46 are signalized:

- US 158 and NC 305 in Jackson
- US 158 and NC 35 in Conway

1.7.8 Bridge/Drainage Structures

The existing inventory of bridges and culverts is listed in Table 1-3.

**Table 1-3: Bridge/Drainage Structures**

<b>Structure</b>	<b>Segment</b>	<b>Location</b>	<b>Size</b>
Culvert #31	A1	NC 46, just over a mile east of I-95	Triple 9-ft x 9-ft RCBC
Culvert #5	B3	US 158, a mile east of US 301	Triple 8-ft x 6-ft RCBC
Culvert #8	C1	US 158, 0.2 miles east of US 301	Triple 8-ft x 6-ft RCBC
Non-Inventory Structure	E2	US 158, 0.6 miles west of SR 1137	Double 50-in x 31-in CSPA
Bridge #112	E2	US 158, 0.1 miles east of SR 1137	150-ft
Non-Inventory Structure	G7	US 158, 0.1 miles east of SR 1358	10-ft x 6-ft RCBC

\* RCBC – Reinforced Concrete Box Culvert  
 \* CSPA – Corrugated Steel Pipe Arch

### 1.7.9 Existing Land Use

The greatest degree of roadside development along the NC 46 and US 158 corridor is generally found within the municipalities. Municipal roadside development is mainly commercial or mixed commercial/residential, while the rural portions of the US 158 facility are predominately residential and agricultural land uses.

## 1.8 TRAFFIC OPERATIONS ANALYSIS

### 1.8.1 Traffic Analysis

Traffic Data Source. Traffic data for 2005 and forecast 2030 conditions were generated by the NCDOT. The data were evaluated for all major roadways within the study area and the region as a whole. Projected traffic volumes are based on population and employment forecasts, known traffic volumes and patterns, and planning assumptions regarding planned transportation improvements, land use, and operational deficiencies. It is these existing and projected volumes that will be used to evaluate existing and future conditions as well as identify deficiencies.

### 1.8.2 Existing No-Build Traffic Conditions

Average Annually Daily Traffic (AADT). Figure 5 shows existing and projected AADT data for US 158 in the study area. Year 2005 traffic volumes ranged from 2,300 vehicles per day (vpd), near Faison's Old Tavern to 10,000 vpd near Garysburg.

### 1.8.3 2030 No-Build Traffic Projections

Figure 5 shows existing and projected AADT data for US 158 in the study area. Project Year 2030 traffic volumes for No-Build conditions are estimated to range from 4,200 vpd near Faison's Old Tavern to 17,400 vpd near Garysburg.

### 1.8.4 Year 2030 No-Build Capacity Analysis

Level of Service. Level of Service (LOS) is a measure of traffic congestion on roadway segments or intersections. Level of service assigns a letter ranking from "A", representing the free flow of traffic, to "F", representing breakdown in the system. This ranking system also generally takes into consideration various physical roadway characteristics such as lane width, roadway topography, roadside obstructions, and other geometric factors. LOS forecasts include all known transportation improvements within the 20-year planning horizon.

Policy set by the American Association of State Highway and Transportation Officials (AASHTO) recommends that rural arterials be designed to LOS C, and urban arterials be designed to LOS D. Where possible, NCDOT strives to design highways to operate at a minimum LOS C in peak periods.

Capacity. Rural two-lane roads similar to existing rural portions of US 158 are designed to handle traffic volumes of 12,000 to 16,000 vpd. Four-lane divided highways under "ideal conditions" can accommodate 35,000 to 50,000 vpd.

1.8.4.1 Year 2030 No-Build Intersection Capacity Analysis

A capacity analysis was performed for the no-build alternative. The following major intersections have LOS E or F in the design year, and the method used to improve the failing LOS is also indicated in Table 1-4.

**Table 1-4: No-Build Intersection Capacity Deficiencies (LOS E or F)**

Intersection	2030 No-Build
I-95/NC 46 E (2E)	LOS F
I-95/NC 46 W (2W)	LOS F
NC 46/US 301 (4)	LOS F
US 158/NC 305 (70)	LOS E

Note 1: Intersection numbers in parentheses refers to the numbering system in the Capacity Analysis.  
 Note 2: "US 158 Bypass" denotes the proposed new location sections versus "US 158" which denotes widening along existing US 158.

1.8.4.2 Year 2030 No-Build Arterial Analysis

The arterial analysis studies were completed and determined the LOS of the segment as a whole. Arterial LOS for the design year 2030 No-Build alternative is shown below in Table 1-5.

**Table 1-5: Arterial Analysis for No-Build Alternative**

Alternative	2030 No-Build Worst Segment Along Existing US 158
Jackson	LOS F
Faison's Old Tavern	LOS E
Conway	LOS E

**1.9 CRASH DATA AND ANALYSIS**

An overarching concern of transportation planning is to ensure that highway facilities are safe. While motor vehicle travel provides an unprecedented degree of mobility, motor vehicle crashes are the nation's leading cause of death for every age between 3 and 33 years of age (National Center for Statistics & Analysis, *Traffic Safety Facts 2005*). Nationally, traffic fatalities account for more than 95 percent of transportation related fatalities. In 2005, 39,189 people were killed in the estimated 6.2 million police-reported motor vehicle traffic crashes, 2.7 million people were injured, and 4.3 million crashes involved property damage only (*Traffic Safety Facts 2005*).

Collisions occur due to human error (driving while impaired, speeding, inattention), vehicle malfunction (break failure, worn tires) and environmental factors (bad weather, topography). Environmental factors also include roadway design. Highways can be made safer by providing

adequate horizontal and vertical curvature, adding left-turn lanes, widening travel lanes and shoulders, signaling intersections, and other measures.

### 1.9.1 US 158 Crash Analysis

Crash data analysis was performed along US 158 from US 301 in Halifax County to SR 1364 in Northampton County. The 2002 Annual Average Daily Traffic (AADT) for this section was estimated at 4,400 vehicles per day, which equates to a total vehicle exposure of 144.35 million vehicle miles (MVM) traveled.

A total of 134 crashes were reported on this 30-mile section for the three-year period of February 1, 2008 to January 31, 2011. For crash rate purposes, this location can be classified as a 2-lane undivided rural US Route. Table 1-6 shows the comparison of the crash rates for the analyzed section of US 158 versus the 2006-2008 statewide crash rates and the calculated critical rate with a 95% level of confidence for a comparable route type and configuration.

**Table 1-6: Crash Rates Along US 158**

<b>Rate</b>	<b>Crashes</b>	<b>Crashes per 100 MVM</b>	<b>Statewide Rate<sup>1</sup></b>	<b>Critical Rate<sup>2</sup></b>
Total	134	106.00	155.26	216.86
Fatal	3	2.37	1.95	12.37
Non-Fatal Injury	41	32.43	58.91	98.38
Night	65	51.42	51.17	88.22
Wet	28	22.15	26.34	54.04

<sup>1</sup>2006-2008 statewide crash rate for 2-Lane Undivided Rural US Route in North Carolina

<sup>2</sup>Based on the statewide crash rate (95% level of confidence)

Current crash rates exceed the statewide crash rates in the fatal and night categories and do not exceed the critical crash rates in any categories.

When the planning for this project began, US 158 had experienced a fatal accident rate twice the average for roads in North Carolina of similar type. The rate has since gone down and the overall collision rate for US 158 in Northampton County was 98.27 collisions/per million vehicle miles (coll/100mvm) from April 1, 2004 to March 31, 2007. This is lower than the statewide average of 193.9 coll/100mvm for rural U.S. routes. During this time period, there were no fatal crashes along this corridor. From July 1996 to July 1999, the fatal accident rate was 5.22 fatal coll/100mvm, which was twice the statewide average for similar US routes.

### 1.9.2 NC 46 Crash Analysis

Crash data analysis was performed along NC 46 from I-95 to the western city limits of Garysburg in Northampton County. The 2001 AADT for this section was 6,300 vehicles per day, which equates to a total vehicle exposure rate of 19.73 MVM traveled.

A total of 22 crashes were reported on this 2.86-mile section for the three-year period of February 1, 2008 through January 31, 2011. For crash rate purposes, this location can be

classified as a 2-lane undivided rural NC Route. The following table shows the comparison of the crash rates for the analyzed section of NC 46 versus the 2006-2008 statewide crash rates and the calculated critical rate with a 95% level of confidence for a comparable route type and configuration.

**Table 1-7: Crash Rates Along NC 46**

<b>Rate</b>	<b>Crashes</b>	<b>Crashes per 100 MVM</b>	<b>Statewide Rate<sup>1</sup></b>	<b>Critical Rate<sup>2</sup></b>
Total	14	78.36	173.02	227.00
Fatal	0	0	2.15	10.65
Non-Fatal Injury	8	44.78	64.81	98.94
Night	5	27.98	61.01	94.20
Wet	4	22.39	27.32	50.46

<sup>1</sup>2006-2008 statewide crash rate for 2-Lane Undivided Rural US Route in North Carolina

<sup>2</sup>Based on the statewide crash rate (95% level of confidence)

None of the crash rate categories for the analyzed section of NC 46 exceeded the statewide or critical crash rates.

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## Chapter 2

### ALTERNATIVES CONSIDERED

This chapter of the Final Environmental Impact Statement (SFEIS) describes the alternatives considered for the US 158 project. The range of alternatives includes the No Build, Transportation System Management (TSM), Multi-Modal, and Construction alternatives.

During the course of this project, numerous highway alternatives were considered to solve the transportation problems associated with US 158. Such alternatives have included various upgrades of existing US 158, and segments of new location highway. Due to the anticipated level of social and environmental impacts associated with several of these previous alternatives, they were eliminated. The purpose of this current US 158 study is to find the best alternative to solve the transportation problems while being responsive to the human and natural environmental impacts within the study area. This concept may encompass parts of previously-examined alternatives as well as new ones. For the purposes of this study, most study segments are 1,000-foot or 400-foot corridors. Actual right-of-way impacts within these corridors, based on preliminary design, were evaluated as appropriate for decision-making in alternative selection.

During the various stages of alternatives development, numerous alternatives were considered and evaluated through a multitier process. Mapping showing study area constraints such as land use, floodplains, potential wetlands, stream crossings, community facilities, and known archaeological and historic sites was compiled for use in developing corridors to avoid these features as much as possible without compromising the traffic service benefits of the project or unreasonably increasing cost. Based on the avoidance of impacts and public comment, the initial corridors were modified, added to or deleted to create the best possible alternatives. The detailed study alternatives were then analyzed to determine:

- The social, economic, cultural, and natural environmental impacts of each
- The estimated cost of each
- The traffic service provided
- The public opinion for each

#### 2.1 NO-BUILD ALTERNATIVE

The “No-Build” alternative assumes that in the year 2030, the existing transportation system would evolve as currently planned, but without major improvement to the portion of the US 158 highway within the study area. With the exception of routine maintenance, no other changes are assumed to take place to the existing US 158 roadway by the year 2030. The No-Build alternative will be the baseline against which all other alternatives will be considered.

This alternative was evaluated in the EIS process, and was utilized as the base line against all other detailed study alternatives. The “No-Build” alternative would avoid all adverse impacts, in that no wetlands, streams, historic properties, or other cultural and natural resources would be directly impacted. However, this alternative did not meet the purpose and need of this project and was thus eliminated from consideration.

## **2.2 TRANSPORTATION SYSTEM MANAGEMENT (TSM) ALTERNATIVE**

Transportation System Management (TSM) improvements involve increasing the available capacity of the facility within the existing right-of-way with minimum capital expenditures and without reconstructing the facility. Items such as the addition of turn lanes, striping, signing, signalization, and minor realignments are examples of TSM physical improvements. Traffic law enforcement, speed restrictions, control, and signal timing changes are examples of TSM operational improvements. These types of improvements were considered, and some elements, such as access control measures, will be incorporated into the recommendations. However, TSM improvements alone would not meet the purpose and need of the project. Therefore, the TSM alternatives were not considered a reasonable and feasible alternative and were eliminated from further consideration.

## **2.3 MASS TRANSIT ALTERNATIVE**

There is no existing mass transit in Northampton County due to lack of demand, low-density development, and low population density. The study area is primarily rural, with the exception of downtown areas in the communities of Garysburg, Jackson, and Conway. In addition, US 158 carries a large portion of through traffic with relatively high truck percentages, which is not conducive to local mass transit. Based on these factors, the Mass Transit Alternative was eliminated from consideration because it would not effectively address the purpose and need of the project.

## **2.4 CONSTRUCTION ALTERNATIVES**

### **2.4.1 Logical Termini**

To ensure a meaningful evaluation of alternatives and to avoid commitments to future transportation improvements before they are fully evaluated, the action evaluated in an Environmental Impact Statement shall:

- Connect Logical termini and be of sufficient length to address environmental matters on a broad scope
- Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made
- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements

The logical location for the western terminus of the US 158 project was determined by the following factors:

- Tying into Interstate 95 will provide Northampton County access to a major north-south route
- Re-designating NC 46 as US 158 alleviates the need for a new crossing of the Roanoke River

The logical eastern terminus location was determined by tying into previous improvements made to the US 158 Murfreesboro Bypass.

## 2.4.2 Design Criteria

### 2.4.2.1 Corridor Requirements

Conformity was maintained with the US 158 “Intrastate Corridor” concept. This concept is designed to provide high-speed and safe travel throughout the state by improving facilities to multilane roads and linkage with major highways, and dictates that the subject section of US 158 be a multilane facility. It also provides for a greater degree of access control. This project will limit access wherever practicable.

The Strategic Highway Corridor policies further refines access control issues on the project. The Strategic Highway Corridor vision for this section of US 158 is an expressway for widening sections and a freeway for new location sections.

### 2.4.2.2 Design Speed

The proposed design speed is 70 mph throughout the project. The posted speed is anticipated to be 60 mph or less.

### 2.4.2.3 Typical Section

The proposed cross section includes four 12-foot lanes, two in each direction, separated by a 46-foot grass median. Figure 4 shows detail of the proposed typical section. The median-divided typical section is consistent with the existing Murfreesboro Bypass at the eastern end of the project.

### 2.4.2.4 Access Control

Full control of access is proposed for all new location sections. Partial control of access is proposed for all widening sections to allow for existing driveway connection. Definitions are listed below:

Full Control Access – Connections to a facility provided only via ramps at interchanges. All cross-streets are grade-separated. No private driveway connections allowed. A control to access fence is placed along the entire length of the facility and at a minimum of 1000 feet beyond the ramp intersections on the Y lines (minor facility) at interchanges (if possible).

Partial Control of Access – Connections to a facility provided via ramps at interchanges, at-grade intersections, and private driveways. Private driveway connections are normally defined as a maximum of one connection per parcel. One connection is defined as one ingress and one egress point. The use of shared or consolidated connections is highly encouraged. Connections may be restricted or prohibited if alternate access is available through other adjacent public facilities. A control of access fence is placed along the entire length of the facility, except at

intersections and driveways, and at a minimum of 1000 feet beyond the ramp terminals on the minor facility at interchanges (if possible).

#### 2.4.2.5 Right-of-Way

The proposed right-of-way width along the corridor is 250 feet.

#### 2.4.2.6 Directional Crossovers with Median U-Turns

A “superstreet” type design will be utilized, which includes directional crossovers with median U-turns at at-grade intersections. Crossing road traffic approaching US 158 would have to make a right turn at such an intersection. Those crossing road vehicles desiring to turn left onto US 158 or continue along the crossing road would then make a left U-turn through a median opening on US 158 and would go straight through the intersection or turn right at the crossing road, respectively. US 158 traffic would still be able to go straight, left or right at the intersection. This Superstreet configuration would be applicable to all sections of the proposed project. Figure 3 provides a diagram of a typical Superstreet intersection.

#### 2.4.2.7 Railroad Crossings

NCDOT proposes grade-separated crossings at all railroads. See Figure 2b, 2q, and 2r for railroad crossing sites.

### 2.4.3 Evaluation of Preliminary Alternatives

The project originally began in Weldon east of the existing US 158 one-way pair. The section that ties to I-95/NC 46, the current western terminus, was added later. In developing alternatives, the project was divided to correspond with the four main populated communities of the project: Garysburg, Jackson, Faison’s Old Tavern, and Conway. Both widening and new location alternatives were developed. Detailed environmental studies were completed for 17 alternatives, created from 29 segments (A1-H1). Figures 1A-1D shows these alternatives and segments.

#### 2.4.3.1 Weldon

Weldon Widen on Existing: This alternative begins east of Weldon and west of the Roanoke River on US 158. This alternative would widen the existing section US 158 between Weldon and Garysburg. This was the original project western terminus.

#### 2.4.3.2 Garysburg

The current Garysburg alternatives all begin at the junction of NC 46 and I-95. This created a new western terminus, and involves re-designating US 158 onto existing NC 46 at its intersection with I-95, one exit north of the existing US 158 exit. Figure 1A shows the study corridors for each of the Garysburg alternatives.

Garysburg Northern Bypass (Segments A1, B1): This bypass begins at the NC 46/ I-95 intersection and extends along existing NC 46 within Garysburg until its intersection with US 301 north of town. The bypass proceeds on new location around Garysburg until it rejoins US 158 east of town. A grade separation is proposed over US 301, and an interchange is proposed at the reconnection of the bypass with existing US 158 east of town. This alternative involves two railroad crossings.

Garysburg Southern Bypass 1 (Segments A1, B2, B3): This bypass begins at the NC 46/ I-95 intersection and extends along existing NC 46 until just west of Garysburg. The bypass then proceeds on new location south of Garysburg, until it rejoins US 158 east of town (at the same location as the proposed Northern Bypass). An interchange is proposed at US 301. An intersection is proposed at the reconnection of the bypass with existing US 158 east of town. This alternative also involves two railroad crossings.

Garysburg Southern Bypass 2 (Segments A1, B2, B4): This bypass follows the same path as Southern Bypass 1 alternative, but extends farther south after it crosses existing US 158/US 301 south of town. This alternative reconnects with US 158 east of town at the intersection of US 158 and Old Jackson Bypass Road (SR 1311). An interchange is proposed at US 301. An intersection is proposed at the reconnection with existing US 158 east of town. This alternative also involves two railroad crossings.

#### 2.4.3.3 Jackson

The Jackson section of the project extends from east of Garysburg (at the intersection of US 158 and Old Jackson Bypass Road) to east of Jackson; the eastern end of this section corresponds to the split between projects R-2582 and R-2584. Figure 1B shows the study corridors for the Jackson alternatives.

Jackson Widen on Existing: This alternative involves widening of the existing roadway from east of Garysburg to west of Jackson.

Old Jackson Bypass (Segment D1): This alternative widens the existing Old Jackson Bypass Road (SR 1311). Two sections of the existing road would be straightened, thus creating some new location sections. No interchanges are included in this alternative.

Extended Northern Jackson Bypass (Segments C1, E1): This alternative follows US 158 on existing location, then proceeds on new location north of Jackson and reconnects with US 158 east of Mt. Carmel Road (SR 1333). The bypass would intersect NC 305 just south of Pleasant Grove Road (SR 1314). An interchange is proposed at NC 305 while the connections with existing US 158 will be at-grade intersections.

Northern Jackson Bypass (Segments C1, E2, E3): This alternative follows existing US 158 until just west of Jackson and extends north of town on new location. The bypass reconnects with US 158 east of Mt. Carmel Road (SR 1333). An interchange is proposed at NC 305 while the connections with existing US 158 will be at-grade intersections.

Southern Jackson Bypass (Segments C1, E2, E4): This alternative follows existing US 158 until just west of Jackson and extends south of town on new location. The bypass reconnects with US 158 east of NC 305 Mt. Carmel Road (SR 1333). An interchange is proposed at NC 305 while the connections with existing US 158 will be at-grade intersections.

#### 2.4.3.4 Faison's Old Tavern

The Faison's Old Tavern alternatives extend from east of Jackson through just west of the town of Conway. Figure 1C shows the study corridors for the Faison's Old Tavern alternatives.

Widen on Existing 1 (Segments F2, F5, F7) and 2 (Segments F4, F7): These alternatives widen US 158 on its existing location from east of Jackson to just west of Conway. No interchanges are proposed with this alternative. The connections with existing US 158 will be at-grade intersections. The alternatives differ where they tie to Jackson alternatives.

Faison's Old Tavern Northern Bypasses 1 (Segments F2, F6, F9) and 2 (Segments F2, F6, F10): These alternatives proceed on new location from just east of Old Jackson Bypass Road to west of Conway. An interchange is proposed at Galatia Road (SR 1344) while the connections with existing US 158 will be at-grade intersections.

Faison's Old Tavern Southern Bypasses 1 (Segments F1, F8) and 2 (Segments F3, F8): These alternatives extend on new location from west of the Old Jackson Bypass Road intersection to west of Conway. An interchange is proposed at NCHS East Road (SR 1505) while the connections with existing US 158 will be at-grade intersections.

#### 2.4.3.5 Conway

The Conway alternatives extend from west of town (just east of Zion Church) through to the east end of the project. Included in each of these alternatives is a segment of US 158 at the end of the project that will be widened on its existing location. Figure 1D shows the study corridors for the Conway alternatives.

Conway Widen on Existing: This alternative would widen along existing US 158 from west of Conway to the Murfreesboro Bypass, east of Conway.

Northern Conway Bypasses 1 (Segments G2, G6, G7, H1) and 2 (Segments G1, G6, G7, H1): This alternative begins on new location east of Zion Church Road (SR 1500) and reconnects with existing US 158 east of Gilmer Ricks Road (SR 1543). An interchange is proposed at NC 35 north of town while the connections with existing US 158 will be at-grade intersections. This alternative involves one railroad crossing.

Southern Conway Bypass 1 (Segments G3, G5, G7, H1): This alternative begins on new location east of Zion Church Road (SR 1500) and, after passing south of town, curves north to cross over the existing facility before reconnecting with US 158 east of Gilmer Ricks Road (SR 1543). An interchange is proposed at NC 35 and a grade separation is proposed over one section of existing US 158. The end connections with existing US 158 will be at-grade intersections. There is one railroad crossing associated with this alternative.

Southern Conway Bypass 2 (Segments G3, G4, H1): This bypass follows most of the same alignment as the other southern bypass alternative; however, it proceeds east to reconnect with existing US 158 at Ashley's Grove Road (SR 1536). An interchange is proposed at NC 35 while the connections with existing US 158 will be at-grade intersections. There is also one railroad crossing associated with this alternative.

#### 2.4.4 Preliminary Alternatives Eliminated from Further Study

Weldon Widen on Existing: This alternative begins east of Weldon and west of the Roanoke River on US 158. It was dropped from consideration by the merger team in August 2005 due to the impacts to the Weldon Historic District and the new crossing required over the Roanoke River.

Jackson Widen on Existing: This alternative involves only widening the existing roadway. It was dropped from consideration by the merger team in March 2005 due to anticipated impacts on the Jackson Historic District.

Conway Widen on Existing: This alternative was dropped from further consideration by the merger team in March 2005 due to impacts to the Conway Historic District.

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2.4.5 Corridors Carried Forward for Detailed Study

Table 2-1 lists the corridors and segments for each alternative carried forward for detailed study.

**Table 2-1: Corridors Carried Forward for Detailed Study**

<b>Community</b>	<b>Alternative Description</b>	<b>Alternative Segments</b>
<b>Garysburg</b>		
	Garysburg Northern Bypass	A1, B1
	Garysburg Southern Bypass 1	A1, B2, B3
	Garysburg Southern Bypass 2	A1, B2, B4
<b>Jackson</b>		
	Old Jackson Bypass	D1
	Extended Northern Jackson Bypass	C1, E1
	Northern Jackson Bypass	C1, E2, E3
	Southern Jackson Bypass	C1, E2, E4
<b>Faison's Old Tavern</b>		
	Faison's Widen on Existing 1	F2, F5, F7
	Faison's Widen on Existing 2	F4, F7
	Faison's Northern Bypass 1	F2, F6, F9
	Faison's Northern Bypass 2	F2, F6, F10
	Faison's Southern Bypass 1	F1, F8
	Faison's Southern Bypass 2	F3, F8
<b>Conway</b>		
	Conway Northern Bypass 1	G2, G6, G7, H1
	Conway Northern Bypass 2	G1, G6, G7, H1
	Conway Southern Bypass 1	G3, G5, G7, H1
	Conway Southern Bypass 2	G3, G4, H1

2.4.6 Comparison of Detailed Study Alternatives

The alternatives were compared based on human and natural environmental impacts, and cost. The comparison is shown in Tables 2-2 thru 2-5.

**Table 2-2: Comparison of Garysburg Alternatives Resources and Impacts**

<b>Impacted Resource</b>	<b>Garysburg Northern Bypass</b>	<b>Garysburg Southern Bypass 1</b>	<b>Garysburg Southern Bypass 2</b>
Segments Included	A1 B1	A1 B2 B3	A1 B2 B4
Length	5.0	5.4	5.5
Interchanges	1	2	2
Railroad Crossings (Bridges)	2	2	2
Schools	1	0	0
Recreational Areas and Parks	0	0	0
Churches	1	1	1
Cemeteries	0	0	0
Major Utility Crossings	1	1	1
Historic Properties Eligible or listed on the National Register (Adverse Effect/ No Adverse Effect)	(1/0)	(1/0)	(1/0)
Archaeological Sites	Unknown	Unknown	Unknown
Federally Listed Species within Corridors	0	0	0
NRCS-Potential Farmland Conversion	Below Threshold	Below Threshold	Below Threshold
Residential Relocations	32	11	11
Business Relocations	5	2	2
Noise Receptors Impacted	28	8	7
Wetland Impacts (acres)	5	11	10
Stream Impacts (feet)	1520	2041	3405
Water Supply Watershed Protected Areas	0	0	0
Wildlife Refuges and Game Lands	0	0	0
Minority/ Low Income Populations (Adverse & Disproportionate Impacts)	Yes	No	No
Hazardous Material / Landfill Sites	0	0	0
Underground Storage Tank Sites	4	3	3
Construction Cost	\$48,500,000	\$53,100,000	\$57,500,000
Right of Way Cost	\$10,648,250	\$13,548,750	\$13,713,250
Mitigation	\$736,820	\$1,277,263	\$1,616,515
Utilities Cost	\$1,188,686	\$1,015,868	\$953,060
Total Cost	\$61,073,756	\$68,941,881	\$73,782,825

Note 1: Archeological surveys are currently in progress.

**Table 2-3: Comparison of Jackson Alternatives Resources and Impacts**

<b>Impacted Resource</b>	<b>Old Jackson Bypass</b>	<b>Extended Northern Jackson Bypass</b>	<b>Northern Jackson Bypass</b>	<b>Southern Jackson Bypass</b>
Segments Included	D1	C1 E1	C1 E2 E3	C1 E2 E4
Length	8.8	11.9	13.1	10.5
Interchanges	0	1	1	0
Railroad Crossings (Bridges)	0	0	0	0
Schools	0	1	0	1
Recreational Areas and Parks	0	0	1	1
Churches	1	1	0	0
Cemeteries	0	1	0	0
Major Utility Crossings	1	1	1	1
Historic Properties Eligible or listed on the National Register (Adverse Effect/No Adverse Effect)	(1/0)	(1/2)	(1/4)	(1/2)
Archaeological Sites	Unknown	Unknown	Unknown	Unknown
Federally Listed Species within Corridors	0	0	0	0
NRCS-Potential Farmland Conversion	Below Threshold	Below Threshold	Below Threshold	Below Threshold
Residential Relocations	6	6	10	25
Business Relocations	0	1	0	0
Noise Receptors Impacted	11	0	52	4
Wetland Impacts (acres)	40	23.5	10.4	30
Stream Impacts (feet)	1620	856	1768	2107
Water Supply Watershed Protected Areas	0	0	0	0
Wildlife Refuges and Game Lands	0	0	0	0
Minority/ Low Income Populations (Adverse & Disproportionate Impacts)	No	No	No	No
Hazardous Material / Landfill Sites	0	0	0	0
Underground Storage Tank Sites	0	2	2	2
Construction Cost	\$40,200,000	\$59,180,490	\$74,701,257	\$68,000,000
Right of Way Cost	\$3,900,500	\$5,165,500	\$6,225,000	\$9,444,000
Mitigation	\$2,229,424	\$1,423,655	\$990,837	\$1,021,065
Utilities Cost	\$1,144,221	\$919,947	\$1,054,723	\$1,452,850
Total Cost	\$47,474,145	\$66,689,592	\$82,971,817	\$81,523,902

Note 1: Archeological surveys are currently in progress.

**Table 2-4: Comparison of Faison's Old Tavern Alternatives Resources and Impacts**

<b>Impacted Resources</b>	<b>Faison's Widen on Existing 1</b>	<b>Faison's Widen on Existing 2</b>	<b>Faison's Northern Bypass 1</b>	<b>Faison's Northern Bypass 2</b>	<b>Faison's Southern Bypass 1</b>	<b>Faison's Southern Bypass 2</b>
Segments Included	F2 F5 F7	F4 F7	F2 F6 F9	F2 F6 F10	F1 F8	F3 F8
Length	8.0	7.5	8.6	8.3	8.0	7.7
Interchanges	0	0	1	1	1	1
Railroad Crossings (Bridges)	0	0	0	0	0	0
Schools	0	0	0	0	1	1
Recreational Areas and Parks	0	0	0	0	0	0
Churches	0	0	0	0	0	0
Cemeteries	5	5	0	0	0	0
Major Utility Crossings	0	0	0	0	0	0
Historic Properties Eligible or listed on the National Register (Adverse Effect/No Adverse Effect)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
Archaeological Sites	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Federally Listed Species within Corridors	0	0	0	0	0	0
NRCS-Potential Farmland Conversion	Below Threshold	Below Threshold	Below Threshold	Below Threshold	Below Threshold	Below Threshold
Residential Relocations	36	39	2	2	5	5
Business Relocations	2	2	2	1	1	0
Noise Receptors Impacted	2	2	11	11	0	0
Wetland Impacts (acres)	4	1	23	21	10	9
Stream Impacts (feet)	396	0	3004	2769	491	546
Water Supply Watershed Protected Areas	0	0	0	0	0	0
Wildlife Refuges and Game Lands	0	0	0	0	0	0
Minority/ Low Income Populations (Adverse & Disproportionate Impacts)	Potential	Potential	No	No	No	No
Hazardous Material / Landfill Sites	0	0	0	0	0	0
Underground Storage Tank Sites	12	11	1	1	2	1
Construction Cost	\$33,400,000	\$31,200,000	\$51,200,000	\$49,100,000	\$43,300,000	\$44,400,000
Right of Way Cost	\$12,684,000	\$13,688,000	\$6,343,500	\$5,985,500	\$6,069,500	\$5,790,000
Mitigation	\$225,511	\$17,690	\$1,426,798	\$1,311,016	\$434,440	\$407,320
Utilities Cost	\$1,290,430	\$1,155,899	\$423,593	\$395,593	\$318,493	\$267,539
Total Cost	\$47,599,941	\$46,061,589	\$59,393,891	\$56,792,109	\$51,122,433	\$50,864,859

Note 1: Archeological surveys are currently in progress.

**Table 2-5: Comparison of Conway Alternatives Resources and Impacts**

<b>Impacted Resource</b>	<b>Conway Northern Bypass 1</b>	<b>Conway Northern Bypass 2</b>	<b>Conway Southern Bypass 1</b>	<b>Conway Southern Bypass 2</b>
Segments Included	G2 G6 G7 H1	G1 G6 G7 H1	G3 G5 G7 H1	G3 G4 H1
Length	7.8	7.8	8.8	8.0
Interchanges	1	1	1	1
Railroad Crossings (Bridges)	1	1	1	1
Schools	1	1	0	0
Recreational Areas and Parks	0	0	0	0
Churches	1	0	0	0
Cemeteries	0	1	0	0
Major Utility Crossings	0	0	0	0
Historic Properties Eligible or listed on the National Register (Adverse Effect/No Adverse Effect)	(3/0)	(2/0)	(2/0)	(1/0)
Archaeological Sites	Unknown	Unknown	Unknown	Unknown
Federally Listed Species within Corridors	0	0	0	0
NRCS-Potential Farmland Conversion	Below Threshold	Below Threshold	Below Threshold	Below Threshold
Residential Relocations	19	15	22	15
Business Relocations	1	1	0	1
Noise Receptors Impacted	2	2	0	0
Wetland Impacts (acres)	14	14	35	42
Stream Impacts (feet)	2279	2023	2072	2840
Water Supply Watershed Protected Areas	0	0	0	0
Wildlife Refuges and Game Lands	0	0	0	0
Minority/ Low Income Populations (Adverse & Disproportionate Impacts)	No	No	No	No
Hazardous Material / Landfill Sites	0	0	0	0
Underground Storage Tank Sites	1	0	0	0
Construction Cost	\$72,600,000	\$64,000,000	\$60,600,000	\$66,200,000
Right of Way Cost	\$8,832,500	\$8,570,500	\$8,916,500	\$7,177,500
Mitigation	\$960,007	\$900,912	\$1,398,238	\$1,769,379
Utilities Cost	\$1,477,696	\$1,383,772	\$1,296,080	\$638,257
<b>Total Cost</b>	<b>\$84,119,083</b>	<b>\$74,855,184</b>	<b>\$72,210,818</b>	<b>\$75,785,136</b>

Note 1: Archeological sites will be evaluated once a recommended alternative is selected.

**2.5 TRAFFIC OPERATION ANALYSES**

**2.5.1 Year 2030 Build Traffic Projections**

Average Annual Daily Traffic (AADT). Figure 5 shows existing and projected AADT data for US 158 and NC 46, in the study area. Project Year 2030 traffic volumes for Build conditions are estimated to range from 5,600 vpd near Jackson to 15,800 vpd near Garysburg.

**2.5.2 Year 2030 Build Capacity Analysis**

**2.5.2.1 Roadway Sections**

The arterial analysis studies were completed and determined the LOS of the segment as a whole. When compared to the no-build alternative, the 2030 construction alternatives all improve the level of service along the segment as shown in Table 2-6.

**Table 2-6: Arterial Analysis for Build Alternatives (2030)**

<b>Alternative</b>	<b>2030 No-Build Worst Segment LOS Along Existing US 158</b>	<b>2030 Build Segment LOS Along New US 158</b>
Garysburg Northern Bypass	Not Available	A
Garysburg Southern Bypasses	Not Available	A
Old Jackson Bypass	F	A
Jackson Extended Northern Bypass	F	A
Jackson Northern Bypass	F	A
Jackson Southern Bypass	F	A
Faison’s Old Tavern Widen Existing	E	A
Faison’s Old Tavern Northern Bypasses	E	A
Faison’s Old Tavern Southern Bypasses	E	A
Conway Northern Bypass	E	A
Conway Southern Bypass	E	A

2.5.2.2 Intersection Analysis

Capacity analysis was performed for northern bypass and southern bypass alternatives in the Garysburg area. The following major intersections have LOS F in the design year, and the method used to improve the failing LOS is also indicated in Table 2-7.

**Table 2-7: Intersection Capacity Deficiencies (LOS E or F) Garysburg (2030)**

<b>Intersection</b>	<b>Northern Bypass</b>	<b>Southern Bypass</b>	<b>Proposed Improvement</b>
I-95/ NC 46 E (2E)	F	F	Signalize intersection, widen bridge over I-95 from 2 to 5 lanes, add separate left turn lanes on NC 46
I-95/NC 46 W (2W)	F	F	Signalize intersection, widen bridge over I-95 from 2 to 5 lanes, add separate left turn lanes on NC 46
NC 46/US 301 (4)	F	F	Grade separate, no access
US 158 Byp/US 158 (104)	F	-	Trumpet interchange
US 158 Byp/NC 46 (105)	-	F	At grade intersection, superstreet design
US 158 Byp/US 301 (106)	-	F	Half clover interchange
US 158 Byp/US 158 (107)	-	F	At grade intersection, superstreet design

Note 1: Intersection numbers in parentheses refers to the numbering system in the Capacity Analysis.  
 Note 2: "US 158 Bypass" denotes the proposed new location sections verses "US 158" which denotes widening along existing US 158.

In Jackson, the Old Jackson Bypass, Northern Bypass, Extended Northern Bypass and Southern Bypass alternatives were analyzed for capacity. As a result, an interchange is proposed in several locations. The first location is north of Jackson at the intersection of US 158 Bypass and NC 305. This interchange (Intersection # 108) is proposed for both of the Northern Bypass alternatives. The intersection of US 158 Bypass and NC 305 on the southeast of Jackson is also recommended for an interchange due to the Southern Bypass alternative. The remaining intersections with a failing LOS will be treated with a Superstreet design.

Directional Crossover Intersection (Superstreet) is the name of an intersection design on a divided highway in which a right turn, followed by a U-turn, replaces a traditional left-turn or through movement. Motorists using the major highway have the ability to turn right and (usually) left onto the minor street. Motorists on the side street can only turn right onto the major highway, then must proceed to a median crossover at least 800 feet downstream to make a U-turn on the major highway if they desire to travel in the opposite direction (see Figure 4).

**Table 2-8: Intersection Capacity Deficiencies (LOS E or F) Jackson (2030)**

<b>Intersection</b>	<b>Old Jackson Bypass (SR 1311)</b>	<b>Northern Bypass</b>	<b>Extended Northern Bypass</b>	<b>Southern Bypass</b>	<b>Proposed Improvement</b>
US 158 Byp/NC 305 (108) (121)	-	F	F	F	Diamond interchange
US 158 Byp/US 158 (109) (111)	-	F	E	F	Superstreet design
US 158 Byp/SR 1131/NC 305 (26)	F	-	-	-	Superstreet design
US 158/SR 1311 (38)	F	-	-	-	Superstreet design
US 158/NC 305 (70) (Existing Alignment)	C	C	C	B	

Note 1: Intersection numbers in parentheses refers to the numbering system in the Capacity Analysis.

Note 2: "US 158 Bypass" denotes the proposed new location sections verses "US 158" which denotes widening along existing US 158.

Through the Faison's Old Tavern community, widen existing, northern bypass, and southern bypass alternatives were studied for capacity deficiencies. There were no intersections, either existing or proposed, that generated a failing LOS. In order to provide access to the community, an interchange with SR 1344 (Galatia Road) is proposed with the Northern Bypass and with SR 1505.

Through Conway, both northern and southern bypass alternatives were studied. Failing LOS was discovered to occur on several new location intersections (see Table 2-9).

**Table 2-9: Intersection Capacity Deficiencies (LOS E or F) Conway (2030)**

<b>Intersection</b>	<b>Northern Bypass</b>	<b>Southern Bypass</b>	<b>Proposed Improvement</b>
US 158 Byp/NC 35 (138) (143)	E	F	Half clover interchange to avoid railroad bridges
US 158 Byp/US 158 Bus (140) (East end)	-	E	Superstreet design

\* - Intersection Number refers to the Capacity Analysis Intersection Numbering

### 2.5.2.3 Interchange Analysis

An interchange analysis was completed for the proposed interchange locations. The results are shown in Table 2-10.

**Table 2-10: Interchange Analysis (2030)**

<b>Intersection (**)</b>	<b>Alternative</b>	<b>Intersection LOS</b>	<b>Ramp LOS (where available)</b>
I-95/NC 46 (2)	Existing	*	*
US 158 Bypass/US 158 Bus (104) East of Town	Garysburg Northern Bypass	A	-
US 158 Bypass/US 301 (106) West of Town	Garysburg Southern Bypass	A	-
US 158 Bypass/US 301 (107) East of Town	Garysburg Southern Bypass	A	-
US 158 Bypass/NC 305 (108) West of Jackson	Jackson Northern Bypass/Jackson Extended Northern Bypass	A	-
US 158 Bypass/US 158 Bus (112) West of Jackson	Jackson Southern Bypass	A	-
US 158 Bypass/NC 305 (121) South of Jackson	Jackson Southern Bypass	C	A
US 158 Bypass/NC 35 (138) North of Conway	Conway Northern Bypass	B	A
US 158 Bypass/NC 35 (143) South of Conway	Conway Southern Bypass	B	A

\* - The NC 46 bridge over I-95/NC will be widened to four lanes but an interchange analysis was not performed for this intersection.

\*\* - Intersection Number refers to the Capacity Analysis Intersection Numbering

## 2.6 TRAFFIC SAFETY

Collision rates along the study corridor should improve as a result of the proposed widening. Overall, the project is expected to improve safety by providing a facility that better accommodates the existing traffic and projected future traffic. The median will separate directional traffic, further enhancing safety. The improved roadway will also enhance delivery of emergency medical services, which are provided on a regional basis. By utilizing bypass alternatives around developed areas of Garysburg, Jackson, Faison's Old Tavern and Conway, conflicts between through traffic, local motorists, and pedestrians will be reduced, increasing safety for each. Superstreet design will also be utilized at at-grade crossings to increase safety. Superstreets eliminate typical left turn movements and allow motorists to make a right turn followed by a median U-turn. This ultimately reduces the number of conflict points from 32 for a standard two-way median opening, to 18 for a superstreet.

## 2.7 PROJECT COSTS

Table 2-11 indicates the estimated right-of-way, construction, and mitigation costs for each alternative segment.

**Table 2-11: Estimated Project Cost By Alternative**

Alternative Description	PROJECT COSTS				
	Right-of-Way	Construction	Utilities	Mitigation	Total
Garysburg					
Northern Bypass (A1, B1)	\$10,648,250	\$48,500,000	\$1,188,686	\$736,820	\$61,073,756
<b>Southern Bypass 1 (A1, B2, B3)</b>	<b>\$13,548,750</b>	<b>\$53,100,000</b>	<b>\$1,015,868</b>	<b>\$1,277,263</b>	<b>\$68,941,881</b>
Southern Bypass 2 (A1, B2, B4)	\$13,713,250	\$57,500,000	\$953,060	\$1,616,515	\$73,782,825
Jackson					
Old Jackson Bypass (D1)	\$3,900,500	\$40,200,000	\$1,144,221	\$2,229,424	\$47,474,145
Extended Northern Bypass (C1, E1)	\$5,165,500	\$59,180,490	\$919,947	\$1,423,655	\$66,689,592
<b>Northern Bypass (C1, E2, E3)</b>	<b>\$6,225,000</b>	<b>\$71,300,000</b>	<b>\$1,054,723</b>	<b>\$990,837</b>	<b>\$79,570,560</b>
Southern Bypass (C1, E2, E4)	\$9,444,000	\$68,000,000	\$1,452,850	\$1,021,065	\$81,523,902
Faison's Old Tavern					
Widen on Existing 1 (F2, F5, F7)	\$12,684,000	\$33,400,000	\$1,290,430	\$225,511	\$47,599,941
Widen on Existing 2 (F4, F7)	\$13,688,000	\$31,200,000	\$1,155,899	\$17,690	\$46,061,589
Northern Bypass 1 (F2, F6, F9)	\$6,343,500	\$51,200,000	\$423,593	\$1,426,798	\$59,393,891
<b>Northern Bypass 2 (F2, F6, F10)</b>	<b>\$5,985,500</b>	<b>\$49,100,000</b>	<b>\$395,593</b>	<b>\$1,311,016</b>	<b>\$56,792,109</b>
Southern Bypass 1 (F1, F8)	\$6,069,500	\$43,300,000	\$318,493	\$434,440	\$51,122,433
Southern Bypass 2 (F3, F8)	\$5,790,000	\$44,400,000	\$267,539	\$407,320	\$50,864,859
Conway					
Northern Bypass 1 (G2, G6, G7, H1)	\$8,832,500	\$72,600,000	\$1,477,696	\$960,007	\$84,119,083
<b>Northern Bypass 2 (G1, G6, G7, H1)</b>	<b>\$8,570,500</b>	<b>\$64,000,000</b>	<b>\$1,383,772</b>	<b>\$900,912</b>	<b>\$74,855,184</b>
Southern Bypass 1 (G3, G5, G7, H1)	\$8,916,500	\$60,600,000	\$1,296,080	\$1,398,238	\$72,210,818
Southern Bypass 2 (G3, G4, H1)	\$7,177,500	\$66,200,000	\$638,257	\$1,769,379	\$75,785,136
<b>Preferred Alternative*</b>					
<b>Totals</b>	<b>\$34,329,750</b>	<b>\$237,500,000</b>	<b>\$3,849,956</b>	<b>\$4,480,028</b>	<b>\$280,159,734</b>

\*See section 2.8 for identification and discussion of preferred Alternative. **Bold indicates segment included in Preferred Alternative.**

## **2.8 PREFERRED ALTERNATIVE**

### **2.8.1 Preferred Alternative Selection Process**

The seventeen (17) detailed study alternatives were evaluated in the State Draft Environmental Impact Statement (DEIS). Following the publication and distribution of the DEIS to Federal, state and local agencies and organizations having an interest in the proposed project, a Corridor Public Hearing was held on September 22<sup>nd</sup>, 25<sup>th</sup>, and 30<sup>th</sup>, 2008 to provide the public an opportunity to comment on the alternatives. An additional public meeting was held in Jackson on July 19, 2010 to discuss minor changes in the alignment of the Jackson Extended Northern Bypass and the Jackson Northern Bypass. These changes were the result of agencies comments at the Merger Process Team meeting, held on March 26, 2009, detailed below.

In accordance with An Interagency Agreement Integrating Section 404/NEPA, the Merger Process Team was convened to consider the comments received on the DEIS and the 17 detailed study alternatives and to identify the “least environmentally damaging practicable alternative” or LEDPA. Agencies on the Merger Process Team who attended the March 26, 2009 and October 19, 2010 LEDPA selection meetings included: US Army Corps of Engineers, US Environmental Protection Agency (EPA), US Fish and Wildlife Service (FWS), National Marine Fisheries (NMFS), NC Department of Environment and Natural Resources Division of Water Quality (DWQ), NC Wildlife Resources Commission (WRC), State Historic Preservation Office (HPO), NC Division of Marine Fisheries, NCDOT Division 1, NCDOT Project Development and Environmental Analysis Branch, and NCDOT Roadway Design Unit.

In order to simplify the selection process, discussions at the concurrence meetings focused on alternatives for each individual community, with the exception of Faison’s Old Tavern and Conway which were combined due to the complexity of alternative combinations. In order to provide supplemental information for LEDPA decision-making, several techniques were used, however, Advantages/Disadvantages lists were the main tool used to facilitate discussion. This technique used limited impact data categories (e.g. total relocations, total stream impacts) in order to simplify the evaluation, and so that disproportionate weight and importance were not attached to impacts with greater numbers of data breakdown categories (e.g. high quality wetlands, medium quality wetlands, and low quality wetlands).

It should be noted that this approach was a tool to help sort and prioritize data. This technique was not the sole means used to identify the LEDPA. This technique does not assess one impact type as being more important or critical than another without detailed input. Nevertheless, these techniques were useful in organizing and comparing data at the concurrence meetings.

### 2.8.2 Selection of LEDPA and Preferred Alternative

As a result of the Concurrence Point 3 meetings, the Merger Process Team selected the following alternatives as the Preferred Alternative, or LEDPA:

- **Garysburg Southern Bypass 1 (Segments A1, B2, B3).**
- **Northern Jackson Bypass (Segments C1, E2, E3).**
- **Faison's Old Tavern Northern Bypass 2 (Segments F2, F6, F10).**
- **Conway Northern Bypass 2 (Segments G1, G6, G7, H1).**

The signed Concurrence Point 3 form is included in Appendix F. The following provides the rationale for each selection made. Tables 2-2, 2-3, 2-4, and 2-5 in section 2.4.6 provides impacts data to accompany this discussion.

Garysburg. **Garysburg Southern Bypass 1** was selected as the Least Environmentally Damaging Practicable Alternative for Garysburg, for the following reasons:

- 1) The Garysburg Northern Bypass was eliminated from consideration due to the disproportionately high and adverse impacts it would have on minority and low income populations within the Town limit of Garysburg.
- 2) Stream impacts for Garysburg Southern Bypass 1 are 1364 linear feet less than Garysburg Southern Bypass 2.
- 3) Garysburg Southern Bypass 1 is the less expensive of the two remaining alternatives.
- 4) Impacts associated with Garysburg Southern Bypass 1 and Garysburg Southern Bypass 2 are fairly similar, however, Garysburg Southern Bypass 1 provides a smoother and safer connection to the Jackson Bypass alternatives.

Jackson. **Northern Jackson Bypass** was selected as the Least Environmentally Damaging Practicable Alternative for Jackson, for the following reasons:

- 1) Old Jackson Bypass was eliminated from consideration due to high wetland and stream impacts (40 acres of wetland impacts and 1620 feet of stream impacts).
- 2) The Southern Jackson Bypass was also eliminated from consideration due to high environmental impacts, with 25 residential relocations, 30 acres of wetland impacts, and 2107 linear feet of stream impacts.
- 3) Although shifting the Extended Northern Jackson Bypass reduced wetland impacts by 12.5 acres, the wetlands avoided are low quality wetlands. The Extended Northern Jackson Bypass would still impact 23.5 total acres of wetlands, including 10 acres of high quality wetlands, 9.5 acres of medium quality wetlands, and 4 acres of low quality wetlands.

- 4) Conversely, the majority of wetland impacts associated with the Northern Jackson Bypass are to medium or low quality wetlands. The Northern Jackson Bypass would impact 10.4 total acres of wetlands, including 0.1 acres of high quality wetlands, 5.3 acres of medium quality wetlands, and 5 acres of low quality wetlands.
- 5) Shifting the Northern Jackson Bypass to the north eliminated its adverse effect on the Jackson Historic District. The new alignment will result in No Adverse Effect on both the Historic Peebles House and the Jackson Historic District.
- 6) The Extended Northern Jackson Bypass would fragment wildlife by segmenting a large tract of woodlands, east of its intersection with NC 305.
- 7) Public comments strongly supported the Extended Northern Jackson Bypass. Comments cited concerns that dividing the Historic Downtown from the newly developed county facilities, with a roadway, would divide the community. However, impacts to the natural environment do not justify the selection of the Extended Northern Jackson Bypass as the Least Environmentally Damaging Practicable Alternative.

Faison's Old Tavern & Conway. Due to the complexity of the connections between Faison's Old Tavern alternatives and Conway Bypass alternatives the two sections were evaluated in terms of total impacts.

**Faison's Old Tavern Northern Bypass 2 & Conway Northern Bypass 2** were selected as the Least Environmentally Damaging Practicable Alternatives for Faison's Old Tavern and Conway, for the following reasons:

- 1) Faison's Widen on Existing 1 and Faison's Widen on Existing 2 were eliminated from consideration due to high residential relocations, 36 relocations and 39 relocations respectively.
- 2) Faison's Southern Bypass 2 was dropped from consideration due to its tie-in to the Old Jackson Bypass alternative, previously eliminated from Jackson alternatives.
- 3) The combination of Faison's Southern Bypass 1 and Conway Southern Bypass 1 was dropped from consideration based on its high impact to the surrounding environment. The combination of Faison's Southern Bypass 1 and Conway Southern Bypass 1 would result in 45 acres of wetland impacts, 28 residential relocations, and 2,563 linear feet of stream impacts.
- 4) Likewise, the combination of Faison's Southern Bypass 1 and Conway Southern Bypass 2 was dropped from consideration based on its high impact to the surrounding environment. The combination of Faison's Southern Bypass 1 and Conway Southern Bypass 2 would result in 52 acres of wetland impacts, 22 residential relocations, and 3,331 linear feet of stream impacts.
- 5) The combination of Faison's Northern Bypass 1 and Conway Northern Bypass 1 was eliminated from consideration due to its high cost and 5,283 linear feet of stream impacts.

This combination would also require a small section of widening on existing US 158 between Faison's Old Tavern and Conway. This would limit the continuity of the freeway section by requiring partial control of access for this section of freeway.

- 6) Although the combination of Faison's Southern Bypass 1 and Conway Northern Bypass 1 has the lowest impact on the natural environment, with 24 acres of wetland impacts and 2,770 linear feet of stream impacts, the alternatives would require the widening of an existing section of US 158 between Faison's Old Tavern and Conway. This section of widening on existing would limit the continuity of the freeway section by requiring a section of partial control of access.
- 7) Faison's Northern Bypass 2 and Conway Northern Bypass 2 provide a continuous section of new location freeway from the west side of Faison's Old Tavern to the east side of Conway. This continuous section would provide approximately 11.5 miles of freeway with full control of access, minimizing secondary and cumulative impacts.

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### Chapter 3

## EXISTING ENVIRONMENTS

The project study area runs east-west through the center of Northampton County. This area, located within the Coastal Plain Physiographic Province, has relatively flat topography. The Roanoke River is the primary waterway in the study area. All waterways in the study area are a part of the Roanoke River basin system.

Agriculture has been the mainstay of the local economy since initial settlement.

There are several municipalities within the study area. Garysburg, Jackson, and Conway are located along the existing US 158 highway. The unincorporated community of Faison's Old Tavern is located between Jackson and Conway.

Major highways serving the region include Interstate 95, US 301, US 258, NC 46, NC 35, and NC 305. US 158 is the primary east-west highway in the study area.

### 3.1 HUMAN CHARACTERISTICS

#### 3.1.1 Population Characteristics

The 1990 US Census and 2000 US Census data (when available) were used to gather information on the population and demographics of the project study area unless otherwise stated. Census Tracts 9801 and 9803 encompass the length of the study corridor for this project. Data for the census tract that includes Weldon and data for Halifax County were not included because these areas encompass only a very small portion of the project. The statistics for the town of Weldon were included, however, as this data is more representative of the study area.

**Table 3-1: Population Growth, 1990-2000**

Area	Population		Growth	
	1990	2000	#	%
North Carolina	6,628,637	8,049,313	1,420,676	21.4
Northampton County	20,798	22,086	1,268	6.1
Town of Weldon	1,392	1,374	(-18)	(-1.3)
Town of Garysburg	1,057	1,254	197	18.6
Town of Jackson	592	695	103	17.4
Town of Conway	759	734	(-25)	(-3.3)
Tract 9801	5,298	5,431	133	2.5
Tract 9803	6,461	6,296	(-165)	(-2.6)

Source: US Census Bureau 1990 & 2000

3.1.1.1 Ethnicity

According to US census data, Northampton County is predominantly “Black or African American,” as this ethnic group includes 59.4 percent of the total population. In contrast, the State of North Carolina is predominantly “white” with 72.1 percent of the population in this ethnic group. Ethnicity in the three towns along the study corridor varies. In Conway, whites make up 65.5 percent of the population, while the Garysburg population is almost entirely made up of African-Americans with other ethnic groups accounting for less than 4 percent of the population. The town of Jackson includes a balance of whites and African-Americans. Other ethnic groups account for less than 1 percent of the total population.

The ethnic mix of Northampton County varied only slightly from 1990 to 2000 (less than 1 percent). The only significant change occurred in Jackson. Census data indicate that the African-American population increased from 41.6 percent to 47.6 percent, and the white population decreased from 58.4 percent to 51.9 percent.

**Table 3-2: Ethnicity and Race 2000**

Category	State	County	Weldon	Garysburg	Jackson	Conway	Tract 9801	Tract 9803
Total Pop.	8,049,313	22,086	1,374	1,254	695	734	5,431	6,296
White	5,804,656 (72.1%)	8,633 (39.1%)	497 (36.2%)	30 (2.4%)	361 (51.9%)	481 (65.5%)	3,077 (56.7%)	1,485 (23.6%)
Black or African American	1,737,545 (21.6%)	13,125 (59.4%)	862 (62.7%)	1,205 (96.1%)	331 (47.6%)	244 (33.2%)	2,270 (41.8%)	4,742 (75.3%)
American Indian / Alaska Native	99,551 (1.2%)	71 (0.3%)	2 (0.15%)	8 (0.6%)	0 (0%)	4 (0.5%)	22 (0.4%)	20 (0.3%)
Asia	113,689 (1.4%)	20 (0.1%)	1 (0.1%)	3 (0.2%)	1 (0.1%)	0 (0%)	10 (0.2%)	6 (0.1%)
Native Hawaiian / Pacific Islander	3,983 (0.05%)	12 (0.1%)	1 (0.1%)	0 (0%)	0 (0%)	0 (0%)	11 (0.2%)	1 (0.02%)
Hispanic or Latino (of any race)	378,963 (4.7%)	161 (0.7%)	11 (0.8%)	5 (0.4%)	2 (0.3%)	2 (0.3%)	33 (0.6%)	29 (0.5%)

Source: 2000 US Census Bureau

3.1.1.2 Age

Census data indicates an aging population in the entire study area. According to 2000 census data, 12 percent of the population of North Carolina is 65 or older. In Northampton County, 17.4 percent of the population is in this age group. In Jackson, 27.6 percent of the population is 65 or older. The median age for the study area ranges from 37.8 in the town of Garysburg to 45 years in the town of Jackson, compared to the state’s median age of 35.3. Many of the people in Northampton County, including study area tracts, are long-term residents, which is indicative of the higher elderly population.

3.1.2 Economic Characteristics

3.1.2.1 Income

The Federal Highway Administration’s (FHWA) “Actions to Address Environmental Justice in Minority and Low-Income Populations,” in compliance with Executive Order 12898, dated February 11, 1994, defines “low-income” as a household income at or below the Department of Health and Human Services (DHHS) poverty guidelines. For the purpose of this analysis, census poverty thresholds were used instead of poverty guidelines of the DHHS because there is very little difference between the United States Bureau of the Census poverty thresholds (by household size) and the DHHS poverty guidelines (by household size), and because the poverty thresholds are updated each year by the Census Bureau. Associated demographic data were collected and classified into degrees of poverty according to the United States Bureau of the Census poverty thresholds. The weighted average poverty threshold for 2000, according to the census, is an annual income level of \$17,603 for a family of four.

According to the US Census Income and Poverty Status in 1989, 179,906 families were below the poverty level in North Carolina (\$12,674 for a family of four). This equates to 7.1 percent of the total number of households. The percentage of families below the poverty level is significantly higher in the study area at the county, town, and tract level. The percentage of families below the poverty level in all three of the study area towns is greater than the state as a whole, with the greatest percentage in Garysburg at 21.7 percent. Census Tracts 9801 and 9803 area also higher than the state trend with 12.6 percent and 20 percent of households below the poverty level, respectively.

The median household income for North Carolina was \$26,647 in 2000. The median household income for the study area is lower than the state at the county, town, and tract levels. The median household income for Northampton County is \$18,029. A significantly lower median household income in Garysburg (\$12,865) may be associated with the aging population and lower educational attainment than the county and state as a whole.

**Table 3-3: Income Levels and Poverty Status for 1989**

Category	State	County	Weldon	Garysburg	Jackson	Conway	Tract 9801	Tract 9803
Number of House-holds	2,517,098	7,518	551	383	201	310	1,971	2,098
Families Below the Poverty Line	179,906 (7.1%)	1,149 (15.3%)	55 (10%)	83 (21.7%)	23 (10.5%)	48 (15.5%)	248 (12.6%)	420 (20%)

Source: 1990 US Census Bureau

### 3.1.2.2 Employment Status

According to the North Carolina Employment Security Commission, the unemployment rate in April 2002 for the state was 6.5 percent, while the rate for Northampton County was higher at 10.4 percent.

In North Carolina, 67.6 percent of the population 16 years and older is in the labor force. The county, town, and tract level yield somewhat lower statistics ranging from 47.2 percent in Census Tract 9803 to 64.6 percent in the town of Jackson. The lower rate may be associated with an aging population and is reflected in the poverty statistics for the area.

### 3.1.2.3 Economic Base

Northampton County has its roots in agriculture. By the time Northampton County was formed in 1741 it supported a plantation society, which thrived through the antebellum years. Agriculture plantation continues to be a principal industry, but employs only 6.4% of the work force according to the North Carolina Department of Commerce. Nearly one-third of the workforce (31.2%) is employed in the government sector, followed by manufacturing (17.7%), service (14.2%), retail trade (11%), and wholesale trade (7.3%). Other principal industries include textiles, lumber, chemical, and manufacturing businesses. The county's largest employers include International Paper in Seaboard, Resinall Corporation in Severn, Fineline Industries East Incorporated in Woodland, Hampton Farms in Severn, John B. Sanfilippo & Son Incorporated in Garysburg, FX Gear in Rich Square, Perdue near Conway, and Meherrin Agricultural and Chemical in Severn. Sanfilippo & Son, referred to locally as "the peanut factory," and Perdue are the only ones of these businesses located directly on an alternative. Until recently, Georgia-Pacific was the county's largest employer. The company closed its Conway hardboard manufacturing plant at the end of 2001. The company continues to operate its chemical facility, Georgia-Pacific Resins, which employs 100 people at the same site.

### 3.1.2.4 Housing Costs

The 2000 census data on housing values was not available, but the 1990 census data shows that housing values for the study area at all levels are significantly lower than the state median value, which is \$65,800. The median value in Northampton County is \$38,100. In Northampton County 71 percent of owner-occupied housing units are valued below \$50,000, as compared with 31.4 percent at the state level. These housing values correspond with the lower income levels for the area.

### 3.1.2.5 Business Activities and Employment Centers

Commercial uses are somewhat randomly distributed along most of the US 158 corridor. Jackson and Conway have concentrations of typical downtown businesses and services including a hardware store, florist, restaurant, bank, and professional and government offices. Gas stations/convenience stores are located in Garysburg, Jackson, and Conway. Major employers along the study corridors include John B. Sanfilippo & Son Incorporated on NC 46 just west of Garysburg and the Perdue facility on US 158 east of Conway. The Lowe's Home Improvement regional distribution center on NC 46 is also a major employment center.

3.1.3 Community Facilities and Services

3.1.3.1 Schools

Northampton County has six elementary schools with kindergarten through fifth grades. There are two middle schools located in Conway and Gaston, which include sixth through eighth grades. The county’s two high schools serve ninth through twelfth grade students. Two of these schools are located directly on an alternative, and several schools are located in the study area.

Garysburg Elementary School is located on NC 46. This school is set back from the road on a large site. Five buses carry students to and from school each day. Worn paths across the street indicate a high volume of pedestrian activity in the area. Children from nearby neighborhoods are able to walk to the school.

Central Elementary School is located on NC 305 north of Jackson. This school property sits just north of the proposed Jackson Extended Northern Bypass. Central opened in the fall of 2006 and was formed by combining Jackson Eastside Elementary and Seaboard-Coates Elementary Schools. The school has a total enrollment of approximately 215 students.

One of the county’s two high schools is located in the study area. Northampton County High School East is located on SR 1305 in proximity to the Faison’s Old Tavern southern bypass corridor. The northernmost corner of the school’s property falls within the corridor. All students arrive by car or bus. According to school officials, approximately 75 of the school’s 500 students drive and 11 buses serve the school.

In addition, school administration is housed in a former school off NC 305 and Bagley Drive in Jackson.

**Table 3-4: Schools in Project Corridor**

School	Location	Alternative Segment
Garysburg Elementary	Located on NC 46; set back from the road on a large site	B1
Central Elementary	Located on NC 305; north of Jackson	E1
Northampton High School	Located on SR 1305; in proximity to Faison’s Old Tavern southern bypass corridor	F8

3.1.3.2 Parks

A roadside picnic area is located on the north side of US 158 between Garysburg and Jackson. The picnic area, which overlooks a former millpond that served Boone’s Mill, is accessed by a dead-end section of roadway that parallels US 158. The picnic area is within the US 158 right-of-way. Tax records indicate that adjacent properties are under private ownership. The Northampton County Recreation Director confirmed that the county does not own any recreational facilities and uses school sites for recreational programs.

3.1.3.3 Churches

There are several churches within the study corridor and numerous churches in the study area. The following churches are located within or very close to the study corridor:

**Table 3-5: Churches in Project Corridor**

<b>Church</b>	<b>Location</b>	<b>Alternative Segment</b>
Oak Grove Baptist Church	South side of NC 46 near I-95; Garysburg vicinity	A1
The Apostolic Faith Church of Giving Grace	North side of US 158; Garysburg	B1
Mt. Carmel Baptist Church	SR 1333; north of Jackson	D1
Hill Chapel Baptist Church	North side of US 158 between Garysburg and Jackson	E1,E2
Piney Grove Baptist Church	SR 1500; east of Jackson	E4
Faison’s Assembly of God	South side of US 158; Faison community	F7
St. John AME Church	North side of US 158; Conway vicinity	G2
Zion Methodist Church	South of US 158; Faison Community	F7, F8, F9

All of the churches within the study corridor are situated fairly close to the roadway. Hill Chapel Baptist Church is extremely close to the roadway, however, best fit widening will be utilized to minimize impacts.

3.1.3.4 Transit

The Chowan Public Transportation Authority (CPTA) provides subscription and demand-responsive transportation in Northampton, Halifax, Bertie, and Hertford counties. Hours of operation are 6 a.m. to 6:30 p.m., Monday through Friday. Riders can schedule transportation a day in advance to any location within this four-county area. Some fees are either subsidized or paid through county social service departments. CPTA also provides 14 drivers to transport children to Head Start programs. In Northampton County, these programs are located in Woodland and Seaboard. The operations center is located in Rich Square in southern Northampton County.

3.1.3.5 Emergency Services

In Jackson, the rescue squad is located less than a block north of US 158. The county coordinates its emergency services with other political jurisdictions to ensure the most effective operation of emergency management plans.

There are volunteer fire departments operating in Garysburg, Jackson, and Conway. None of these emergency service facilities are located on an alternative. However, in Jackson, the fire department is located less than a block off US 158.

### 3.1.3.6 Public Housing

The Roanoke Chowan Regional Housing Authority provides housing for low-income families in Northampton, Halifax, and Hertford counties. The agency has several sites in Weldon and Northampton County, however, only one is located in the study area. Located on the southeast side of US 158 west of the Garysburg town limits, the “Garysburg Complex” includes 58 rental apartments. Rent is determined based on family income. Although the complex is visible from US 158, the property is not adjacent to the roadway. Several single-family residential lots buffer the complex from the roadway.

### 3.1.4 Community Cohesion

Cohesion is defined by the Federal Highway Administration as “those behavioral or perceptual relationships that are shared among residents of a community that cause the community to be identifiable as a discrete, distinctive geographic entity.” The majority of residential development, which can be defined as cohesive communities, in the study area is concentrated in and around the four municipalities; Garysburg, Jackson, Faison’s Old Tavern and Conway.

#### 3.1.4.1 Neighborhoods

The largest concentration of residential development in the western portion of the study area is located along US 158/US 301 and NC 46 in the immediate vicinity of Weldon and Garysburg. However, the designation of NC 46 as US 158 will limit any impact the project will have on the town of Weldon. Most of the residential development in the Garysburg area is bounded by US 158/US 301 to the south, US 301 to the east, and Seaboard Coastline Railroad to the northwest.

The largest concentration of residential development in the central portion of the study area is in the town of Jackson. Most residential development in this area is concentrated along US 158, NC 305, and SR 1108. Additional clusters of housing can be found along US 158 in the Faison’s Old Tavern area.

The largest concentration of residential development in the eastern portion of the study area is located around the intersection of US 158 and NC 35, within the Conway city limits. However, residential housing is also dispersed along US 158 and NC 35.

In addition to the more established residential developments, there are scattered farms, isolated clusters of homes, and rural residents owned and occupied by related family members throughout the study area. Although these homes do not constitute traditional planned neighborhoods, they are a very stable part of the study area’s residential character.

## **3.2 LAND USE AND TRANSPORTATION PLANNING**

### **3.2.1 Land Use Plans**

#### **3.2.1.1 Existing Land Use**

NC 46 and Garysburg Bypass. Land use along the NC 46 corridor is primarily agricultural. Some structures, including mostly single-family homes, a few commercial uses, and a church dot the roadway. A Lowe's Distribution facility sits on the north side of NC 46 in proximity to I-95. The Sanfilippo & Son Peanut factory is located on the south side of NC 46 just west of the railroad and the Garysburg town limits. The Garysburg Elementary School is located on the north side of the road just inside the town's western limits. Small ranch-style homes line NC 46 inside the town limits, with a convenience store at the road's eastern terminus at US 301.

The southern bypass alternative splits from existing NC 46 just east of the peanut factory. Land use is primarily agricultural. However, the alternative crosses a mobile-home community and cemetery adjacent to the railroad tracks at the town's western limits. This new cemetery is associated with nearby Chapel Grove Baptist Church. Land use on US 158 west of town includes residential and commercial uses.

Existing US 158 Garysburg. Along US 158 west of Garysburg, land use is primarily residential with scattered commercial uses including a convenience-type store with a laundromat, and a funeral home. A renter-occupied housing development, operated by the Roanoke-Chowan Housing Authority, is located on the southeast side of the highway, although situated well back from the road. An adjacent residential subdivision is under construction. Deerfield includes approximately 50 lots for single-family homes including modular homes and double-wide modular homes. In Garysburg, land use along the corridor is also mixed with several stores, an auto sales operation, and a church among the uses. Much of Garysburg is eligible as a district for the National Register of Historic Places (NR). Several abandoned brick structures of early to mid-twentieth century vintage are located around the US 158/US 301 split.

Existing US 158 Between Garysburg and Jackson. Land use along the corridor is primarily agricultural or vacant with several noteworthy historic structures and sites. Mowfield, Verona, and Longview are plantation-era properties with significant houses and landscapes. The latter is eligible for and the former two are listed in the National Register. Boone's Mill (said to be the site of a Civil War battle) is marked today by a picnic area with a view of the scenic millpond.

Existing US 158 Jackson. In Jackson, land use along US 158 is mixed but primarily includes commercial and institutional uses. The downtown commercial core contains typical early twentieth century brick stores, most of which are occupied. Businesses include a florist, dime store, restaurant, auto parts store, hardware store, grocery store, and an antiques shop. The 1858 Northampton County Courthouse dominates the downtown streetscape. Listed in the National Register, the structure is one of the state's finest antebellum Greek Revival courthouses. It is contained within the larger National Register – listed Jackson Historic District. Other institutional and office uses include a doctor's office, a lawyer's office, the town hall, the Northampton County Museum, the Northampton County Memorial Library, and the sheriff's office. This downtown commercial area and the adjacent residential areas to the north are

eligible for listing in the National Register of Historic Places. Outside the central core, uses include several convenience stores/gas stations, banks, a funeral home, auto repair, and a farm supply store with some scattered residential uses.

NC 305 Jackson. NC 305 runs north south through Jackson. North of Jackson is an agricultural area with associated residential uses. Of note are several residential structures, Businesses, and Northampton County facilities.

Existing US 158 Between Jackson and Conway. Land use is primarily agricultural with scattered residential uses. A review of USGS maps indicates that at least 16 cemeteries dot the corridor, with many of them located close to the roadway. Most of these cemeteries are probably associated with the Faison's Old Tavern community, which stretches along the corridor. This linear community includes a high density of houses relative to other unincorporated segments of the corridor. Several commercial uses and churches are also located along this segment of the roadway.

The northern Faison's Old Tavern bypass includes mostly agricultural land. There appear to be only a few homes in this corridor. The eastern end of the bypass will tie into the northern Conway bypass.

Existing US 158 Conway. Land use in Conway is residential towards the western and eastern town limits with commercial uses spreading from the town center at the intersection of US 158 and NC 35. Non-residential uses include a florist/gift shop, a hardware store, a barbershop, a restaurant, a grocery store, an appliance store, and the town hall. The downtown includes a small row of attached brick commercial buildings with the remainder being detached structures. Auto dependent uses include a convenience store/gas station and an auto repair shop. A great part of the town of Conway is eligible as a district for the National Register.

The northern Conway bypass has several residences in the corridor, but elsewhere land use is primarily agricultural. The roadway will cross several existing roads on its way to its eastern terminus. These intersections with SR 1342, SR 1341, NC 35, and US 158 include some residential uses.

Existing US 158 East of Conway. As in other segments of this corridor, agriculture dominates the remainder of the project corridor with scattered residential uses. The USGS maps note several cemeteries bordering this section of the roadway as well. The Perdue Hatchery facility occupies a large site on the south side of US 158. Just east of Conway is the National Register – eligible J. R. Martin Farm. The Francis Parker House is a National Register site, located on the north side of US 158 near the Northampton County line. The late eighteenth century house, situated close to the roadway, was moved to its present site from Hertford County and restored.

### 3.2.1.2 Zoning Characteristics

Land Use Plans do not exist for most of the study area; however, all jurisdictions have adopted or are preparing zoning ordinances. In addition, thoroughfare plans have been adopted for the entire study area. Plans are summarized by jurisdiction in the following sections.

Northampton County. Northampton County enforces a zoning ordinance outside municipal planning jurisdictions. According to the county's planning director, the zoning ordinance serves as the county's land use plan. Most of the US 158 corridor, as well as proposed corridors, is zoned Agricultural Residential. According to the town's zoning ordinance, "this district is established to promote a compatible mixture of agricultural, forestry, conservation, and very low-density residential uses where few public services will be available. Protection of the environment, preservation of prime farm land, and the continuation of rural lifestyles are goals this district seeks to attain." Residential uses in this district are intended to be those incidental to farming operations. The zoning map also designates a highway industrial district on the north side of US 158 just west of Garysburg with a small highway business area on the south side. The crossroads at Faison's Old Tavern is zoned highway business as well.

Garysburg. Garysburg's zoning ordinance essentially serves as the land use plan for the town. In order to provide for orderly and consistent development as well as restrict some types of undesirable development, the town's zoning regulations are also applied in an area extending one mile outside the corporate limits. The zoning ordinance allows primarily residential and agricultural uses along the existing US 158 and NC 46 corridors with a commercial concentration at the NC 46/US 301 intersection.

Jackson. Jackson's zoning map indicates that properties fronting on US 158 are zoned for either residential or commercial uses. The Jackson zoning officer indicated that there is no land use plan for the town of Jackson. The town is included in the Northampton County Thoroughfare Plan.

Conway. The town of Conway is currently considering the adoption of a zoning ordinance. The proposed ordinance indicates primarily residential and commercial zoning districts along US 158. There is no land use plan for the town. The Northampton County Thoroughfare Plan includes Conway.

### 3.2.1.3 Future Land Use

Garysburg. An Economic Development Plan was developed for the town of Garysburg in 1996. The plan recognizes the substandard housing conditions and limited economic activity in the town and is intended to serve as an information resource and guide for future development efforts. In developing the plan, a community needs survey identified housing repairs, storm drainage problems, and streets and sidewalks as major needs. The survey also revealed a need for additional retail and commercial businesses in Garysburg. To address this issue, the Economic Development Plan recommends a retail/commercial development strategy with a priority on strengthening existing businesses. The strategy also identifies businesses to be recruited, incentives for recruiting new businesses, and funding resources for community and economic development. The plan notes that sufficient undeveloped properties are available to accommodate the growth and development of the town.

A preliminary analysis of undeveloped properties indicates that there are 251 sites of less than one acre for residential development, ten sites of 1 to 10 acres for commercial development, two sites of 10 to 50 acres for commercial or industrial use, and one site of more than 50 acres suitable for residential or industrial use. There are also a number of large tracts of land in the

town's planning jurisdiction outside the corporate limits that are suitable for industrial or residential subdivision development. Industrial areas are designated along the NC 46 corridor and southwest of the US 158/US 301 intersection.

### 3.2.2 Transportation Plans

#### 3.2.2.1 Highway Plans

Northampton County. The Northampton County Thoroughfare Plan was developed concurrently with the Garysburg Thoroughfare Plan and adopted by the Northampton County Board of Commissioners and the NCDOT in 1995. The primary concern of the Board of Commissioners was the US 158 corridor, as it is the primary east-west route through the county. It was also noted that several other facilities needed study, including a connector between US 158 and I-95 and bypasses of Faison's Old Tavern, Jackson, and Conway, in order to relieve congestion and truck traffic.

The plan recommends improving US 158 to a four-lane divided highway on mostly new location throughout the county. Due to development along existing US 158, widening the road would be very disruptive and expensive, according to the plan. The plan endorses the realignment of US 158 south of Garysburg as proposed in the Garysburg Thoroughfare Plan. The improved roadway east of Garysburg is described in the plan as follows: "It should then run near or on SR 1311 (on new or existing locations) and rejoin existing US 158 where SR 1311 terminates. The corridor will then bypass Faison's Old Tavern and Conway to the south. An interchange is recommended for the proposed US 158/NC 35 intersection. Proposed US 158 will connect to the Murfreesboro Bypass near Hertford County." According to the county's Economic Development Director, the Northampton County Board of Commissioners supports a full grade-separated interchange at all intersections of NC and/or US highways.

An important issue in developing the plan was the relocation of US 158 to the SR 1311 (Old Jackson Bypass Road) corridor instead of improving the existing road. Based on a study of cost estimates, it was assumed that both alternatives were essentially equal in cost. The NCDOT Transportation Planning Branch and the Northampton County Economic Development Commission agreed that US 158 should be aligned near SR 1311 to provide for more direct east-west access. It was also estimated that 11 homes might receive proximity damages. The plan states, "the proposed design minimizes impacts to farmland, traverses cut-over timberland and borders wetland areas wherever possible. Some wetland impacts will occur, and one small gravesite will need to be relocated. The general effect of the proposed US 158 corridor will be to free existing US 158 for local traffic."

Garysburg. The Garysburg Town Council and the NCDOT adopted the Garysburg Thoroughfare Plan in 1994 as an update to a 1984 plan. Primary concerns addressed by the plan include the traffic on US 158, US 301, NC 46, and NC 186. Economic development issues were also a concern.

The plan recommends widening US 158 to a four-lane divided section and relocating the roadway to run south of Garysburg from Jackson Bypass Road (SR 1311) to the Roanoke River. In explaining the proposed improvements to US 158 the plan states, "Two options were

considered for improvements of US 158: widening the existing US 158 or locating a four-lane section on new location. Due to the development along the existing US 158, the widening of the existing section would be very disruptive and expensive, so this option was eliminated. It is recommended that the four-lane controlled access facility be moved south of Garysburg on new location. It should connect at US 301 just south of Washington Avenue (SR 1651) in Halifax County, cross the Roanoke River at a new location east of the existing US 158 bridge, and run south of Garysburg. The proposed US 158 should connect to the existing US 158 just south of Jackson Bypass Road (SR 1311)/US 158 intersection with an interchange. The general effect of the proposed US 158 corridor would be to free existing US 158 for local traffic. The proposed US 158 would increase speed and safety for through traffic.”

The plan also recommends extending NC 46, which connects Garysburg to I-95, east to a proposed realignment of US 301. The existing NC 46 ends at US 301, trucks and other traffic must turn south on US 301 to reach US 158. The thoroughfare plan recommends that NC 46 be extended to alleviate congestion and accidents at this intersection. It was also suggested that NC 46 be widened to a standard 24-foot pavement section to improve safety and capacity, in accordance with the Roanoke Rapids-Weldon-Gaston plan.

### **3.3 PHYSICAL ENVIRONMENT CHARACTERISTICS**

#### **3.3.1 Noise Characteristics**

Highway Traffic Noise. In accordance with Title 23 Code of Federal Regulations Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (Title 23 CFR 772), each Type I highway project must be analyzed for predicted traffic noise impacts. Type I projects are proposed Federal or Federal-aid highway projects for construction of a highway on new location or improvements of an existing highway which significantly changes the horizontal or vertical alignment or increases the vehicle capacity. Traffic noise impacts are determined from the current procedures for the abatement of highway traffic noise and construction noise found in Title 23 CFR 772, which also includes provisions for traffic noise abatement measures. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. A copy of the unabridged version of the full technical report entitled *Highway Traffic Noise / Construction Noise Analysis* can be viewed in Room 445, the Transportation Building, 1 South Wilmington Street, Raleigh.

#### **3.3.2 Air Quality**

The project is located in Northampton County, which has been determined to comply with the National Ambient Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable.

#### **3.3.3 Farmlands**

The Farmland Policy Protection Act (FPPA) of 1981 (7 CFR 658) is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that –to the greatest extent possible- Federal programs are

administered to be compatible with state, local units of government, and private programs and policies to protect farmland. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban build-up land.

The FPPA requires all federal agencies, or those receiving federal funding, to consider the impact of land acquisition and construction projects to farming operations and on prime farmland soils and soils of statewide or local importance, as designated by the Natural Resources Conservation Service (NRCS), a division of the US Department of Agriculture. Prime and unique farmland soils of local or statewide importance located in an urbanized area or in an area committed to urban development by the local governing body are exempt from the requirements of the FPPA. Much of the study area is rural in nature and there are numerous active farms.

As is required by the FPPA, the Form NRCS-CPA-106 (for corridor projects) has been completed (see Appendix G) according to FHWA guidelines. Sixteen (16) of the seventeen (17) corridors that were analyzed received total point values above 60 points for Parts III and VI of the NRCS CPA-106 form. Therefore, because point totals for these alternatives exceeded 60 points, and in accordance with FHWA guidance of FPPA, they were submitted to NRCS for review.

Northampton County has an established Voluntary Agricultural District (VAD) Program. According to local officials, the Northampton County VAD Ordinance has limited protections of VAD's and does not include a public hearing requirement. Old Jackson Bypass is the only alternative that does not impact a VAD.

A landowner at a Citizens Information Workshop identified his farm, south of Garysburg and US-158, as a Century Farm. Research from the NC Department of Agriculture & Consumer Services shows Century Farms located along each of the following alternatives:

- Garysburg Northern Bypass
- Garysburg Southern Bypass 1
- Garysburg Southern Bypass 2
- Old Jackson Bypass
- Faison's Widen on Existing 2
- Faison's Old Tavern Southern Bypass 2

#### 3.3.4 Utilities

Underground cable, sewer, electricity, water, gas, and telephone are located within the project corridor.

#### 3.3.5 Hazardous Materials

No hazardous waste sites or landfills were identified within the project limits. Nineteen possible sites presently or formerly containing petroleum underground storage tanks (USTs) were identified within the project limits (see Table 3-6).

**Table 3-6: Known and Potential GeoEnvironmental Impact Sites**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
New Dixie Oil 517 I-95 Exit 176 & NC 46 Gaston, NC 27832	New Dixie Oil Corp.	New Dixie Oil Corp.	0-022615
This former Texaco gas station and convenience store (Sunnyside Market) is located on the southeast quadrant of the I-95 Exit 176. Bottoms Interstate Shell also operated at this location prior to the Texaco operation, and a ground water incident was reported in that time period. Three USTs are located 80 feet South of the store and are listed on the UST Section registry. No monitoring wells were noted at the site, and there is no evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Former Truck Stop of America I-95 Exit 176 & NC 46 Gaston, NC 27832	Rena Development LLC	Rena Development LLC	N/A
This former truck stop and fueling station site is located on the northeast quadrant of the I-95 Exit 176. The store, scales, and fueling area were torn down but the foundation footprints are still visible. The pump island area is 200 feet from the NC 46 median. A ground water incident was listed for this operation, but no longer appears on the DENR Groundwater Incident database. This site does not appear on the UST Section registry. No monitoring wells were noted at the site, and there is no other evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
M.C. Dunlow Farm Supply 8026 NC 46 Gaston, NC 27832	Viola Dunlow	Viola Dunlow	N/A
This former farm supply and Sinclair gas station is located on the south side of NC 46. A pump island is 75 feet from the highway centerline. Two ASTs are located on the East side of the building. There is no UST Section Facility ID for this parcel, and no evidence of USTs or UST removal on site.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Vassor's Garysburg Mini Mart 103 US 301 Garysburg, NC 27831	William T. Vassor	William T. Vassor	0-022407
This active America Gas gas station and convenience store is located on the south side of NC 46. Three USTs are situated at the northwest corner of the store, and two USTs at the northeast corner. All are set back 85 feet from the NC 46 median. No monitoring wells were noted at the site, and there is no other evidence of USTs or UST removal.			

**Table 3-6: Known and Potential GeoEnvironmental Impact Sites (Cont'd)**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Cuz' Mini Mart 100 US 301 Garysburg, NC 27831	Thorton & Doris Majette	New Dixie Oil Corp.	0-022398
This active America Gas gas station and convenience store (aka: Majettes Grocery) is located on the northwest corner of the US 301 and NC 46 intersection. Four (4) USTs are located 100 feet from the NC 46 centerline. No monitoring wells were noted at the site, and there is no other evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Former store & gas station 999 US 158 Garysburg, NC 27831	Jessica Karnbach	Jessica Karnbach	N/A
This former gas station & store (aka: R.O. Harris Station) is located on the North corner of the SR 1301 (Cornwallis Road) and US 158 intersection. There is no UST Section Facility ID for this parcel, and no evidence of USTs or UST removal on site. A cursory Schonstedt survey did not pick up any large magnetic anomalies.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Davis Store 1859 US 158 Garysburg, NC 27831	Janet Davis c/o Teddie Boone	Janet Davis c/o Teddie Boone	N/A
This former store and possible gas station is located on the South side of US 158. The store front is 65 feet from the US 158 median. There is no UST Section Facility ID for this parcel, and no evidence of USTs or UST removal on site. A cursory Schonstedt survey did not pick up any large magnetic anomalies.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Ray's Place 6530 US 158 Jackson, NC 27845	Joseph & Annie Epps	Joseph & Annie Epps	N/A
This active sore may also be a former gas station. The present management could not recount the parcel history. The store front is 75 feet from the US 158 median. There is no apparent record of this business on the UST Section registry. No monitory wells were noted at the site, and there is no evidence of USTs or UST removal. This site will have a low impact to this project.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Former store & gas station US 158 Seaboard, NC 27876	Oscar & Judy Barnes	Oscar & Judy Barnes	N/A
This former gas station & store is located on the south side of US 158 in the 7900 block. The wood structure is 50 feet from the highway median. There is no apparent UST Section Facility ID for this business. However, at least two (2) monitoring wells are located in front of the building and 28 feet from the US 158 median. The wells were installed in 1997. A cursory Schonstedt survey did not indicate any large magnetic anomalies.			

**Table 3-6: Known and Potential GeoEnvironmental Impact Sites (Cont'd)**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Popes garage 8335 US 158 Conway, NC 27820	Alton & Margaret Pope	Alton & Margaret Pope	N/A
This former garage is located on the north side of US 158. The wood structure is set back 50 feet from the US 158 centerline. Tires, automotive parts, oil filters in water filler drums, and vehicles, are located on the east and north sides of this parcel. There is no UST Section Facility ID for this parcel, and no evidence of USTs or UST removal on site.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Taylor's Gas & Grocery 8715 US 158 Seaboard, NC 27876	Joyce Taylor	Joyce Taylor	0-029087
This former gas station and convenience store is located on the north side of US 158. The UST registry shows that four (4) USTs were removed from the property in 1999. A cursory Schonstedt survey did not locate any large magnetic anomalies. The pump island is located 60 feet from the US 158 median. No monitoring wells were noted at this site, and there is no other evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Craven Davis Store 8761 US 158 Seaboard, NC 27876	Marion Davis	Eastern Fuels, Inc.	0-033724
This former gas station and convenience store is located on the North side of US 158, and West of the SR 1505 (NCHS East Road) intersection. One (1) UST was removed in 1994. A vent line is still located at the southeastern corner of the building. The storefront and pump island, are set back 52 feet and 50 feet respectively, from the highway median. Although a groundwater incident associated with this site, no monitoring wells were observed. There is no other evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Pope's Auto Sales 8775-9 US 158 Seaboard, NC 27876	W.N. Taylor est.	W.N. Taylor est.	N/A
This active used car lot is located on the North side of US 158, and West of the SR 1505 (NCHS East Road) intersection. There is no UST Section Facility ID for this parcel, and no evidence of UST's or UST removal on site.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Faison Old Tavern 8785 US 158 Seaboard, NC 27876	Elmo Fletcher Cordle	Elmo Fletcher Cordle	N/A
This former tavern is located at the intersection of the US 158 and SR 1505 (NCHS East Road). There is no apparent record of this business on the UST Section registry. No monitoring wells were noted at the site, there is no evidence of the UST's or UST removal.			

**Table 3-6: Known and Potential GeoEnvironmental Impact Sites (Cont'd)**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Old Tavern Flea Market 8799 US 158 Seaboard, NC 27876	Lafayette Majette	Lafayette Majette	0-026625
This former gas station and convenience store is located on the northwest corner of US 158 and SR 1344 (Galatia Church Road) intersection. The business has apparently operated under several names, including Ram 4, Red Apple Market #4, and Red Apple Market #46. Two groundwater incident numbers are associated with this property. The UST section registry indicates that six (6) USTs were removed in March 1993. Two (2) vent lines are still located near the front entrance. The storefront and pump island, are set back 80 feet and 60 feet respectively, from the highway median. Although groundwater incidents are associated with this site, no monitoring wells were observed. There is no other evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Tractor Trailer Repair Yard 8979 US 158 Conway, NC 27820	Felicia Ramsey-Green	ET Eight, Inc.	N/A
This active truck repair and junkyard is located on the north side of NC 158 and intersection with Cumbo Road (private). Several tractor rigs and trailers are scattered over the property. The shop building is located near the rear of the property and oil staining was noted in the soil. There is no UST Section Facility ID for this parcel, and no evidence of USTs or UST removal on site.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Northeastern Home Care 9181 US 158 Conway, NC 27820	James Titus Deloath	James Titus Deloath	N/A
This active health care clinic is located on the north side of US 158. A pump island was noted at the front entrance and 78 feet from the highway median. The clinic manager indicated that a gas station operated this location in the 1970's. An earlier survey showed two (2) UST fill ports and vent lines on the west side of the building in 2002. There is no UST Section Facility ID for this parcel, and no present evidence of USTs or UST removal on site.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Former W.F. Davis Store 9454 US 158 Conway, NC 27820	Jean Davis Watson	Eastern Fuels, Inc.	0-034221
This former gas station and convenience store is located on the south side of US 158. The UST registry shows that three (3) USTs were removed from the property in December 1993. The property owner confirmed the removal, and former location of the USTs. The wood structure, with asbestos siding, is set back 75 feet from the US 158 median. At least three (3) monitoring wells are located adjacent to the west side of the building, and surrounding the old tank bed. There is no other evidence of USTs or UST removal.			

**Table 3-6: Known and Potential GeoEnvironmental Impact Sites (Cont'd)**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Davis Farm Supply 10505 US 158 Conway, NC 27820	Susan D. Pope	Susan D. Pope	N/A
This active farm supply and pesticide business is located across from the US 158 and SR 1500 (Zion Church Road) intersection. The storeowner indicated that no gas station operated on this location. No monitoring wells were noted at the site, and there is no evidence of USTs or UST removal.			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Residence 10793 US 158 Conway, NC 27820	George Thurman Majette	George Thurman Majette	N/A
This residence is located on the north side of US 158. The Building has the appearance of a former store and is 45 feet from the highway median. There is no UST Section Facility ID for this parcel, and no magnetic anomalies.			

3.3.6 Floodplains/Floodways

Northampton County is a participant in the National Flood Insurance Regular Program. The North Carolina Floodplain Mapping Program designates several of the proposed stream crossings as Zone AE status, indicating that base flood elevations for the 100-year flood has been established. At such stream crossings, a designated non-encroachment area will be established which will carry the same regulatory status as a designated 100-year floodway.

3.3.7 Wild and Scenic Rivers

No waters in the study area are designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River.

3.3.8 State/National Forests

No State or National Forests currently exists within Northampton County, North Carolina.

3.3.9 Gamelands and Wildlife Refuges

The Upper Roanoke River Wetlands Game Land is located within Northampton County; however, the Game Land is not located within the project study corridor. The Game Land is located south of Jackson on SR 1108.

No Wildlife Refuges are located within the study area.

### 3.4 CULTURAL RESOURCES

#### 3.4.1 Historic Architectural Resources

This project is subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified as 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally-funded, licensed, or permitted) on properties included in or eligible for inclusion on the National Register of Historic Places (NR) and to afford the Advisory Council a reasonable opportunity to comment on such undertakings.

During the review of historic properties within the study corridors, thirty-five properties were identified within the study area (see Table 3-7). These properties are either listed on the National Register or are eligible for listing on the Register.

**Table 3-7: Historic Architectural Resources - Eligible Properties**

<b>Name</b>	<b>Status</b>	<b>Alt. Segment Location</b>
Francis Parker House	NR	H1
J. R. Martin Farm	DOE	G4, G5, G6
St. John AME Church	DOE	G2, G3
Jackson Elementary School	DOE	E4
Henry Stephenson House	DOE	C1, D1
Bellevue	SL and DOE	D1
Mt. Carmel Baptist Church	DOE	D1, F3
Norris Boone House	DOE	G1
Deberry Mill	DOE	G1
Mowfield	NR	E1, E2, E3
Verona	NR	E1, E2
Longview	DOE	C1
(former) Nebo Baptist Church and Cemetery	DOE	H1
Ira W. Futrell House	DOE	Eliminated
Northampton County Courthouse Square Historic District (in Jackson HD)	NR	E3, E4
Milwaukee Historic District	DOE	Eliminated
Conway Historic District	DOE	G1, G2, G3, G5, G6,
Peebles House (Holly Lodge)	DOE	E3

**Table 3-7: Historic Architectural Resources - Eligible Properties (Cont'd)**

<b>Name</b>	<b>Status</b>	<b>Alt. Segment Location</b>
Jackson Historic District	NR	E3, E4
Stephenson Farm	DOE	B1, B3, D1
Garysburg United Methodist Church Cemetery	NR	B1, B2, B3
Triangle Service Station	DOE	B1, B3, B4
ACL Railroad Bridge	SL and DOE	Eliminated
SAL Railroad Bridge	SL and DOE	Eliminated
Roanoke Canal Historic District	NR	Eliminated
Weldon Historic District	NR	Eliminated
Grace Episcopal Church (in Weldon HD)	NR	Eliminated
Zion Methodist Church	DOE	F7, F8, F9
Garysburg Historic District	DOE	B1, B2, B3, B4
Gov. Thomas Bragg (Amis-Bragg) House (in Jackson HD)	NR	E3, E4
Church of the Savior and Cemetery (in Jackson HD)	NR	E3, E4
SAL-ACL Railroad Station	SL and DOE	Eliminated
Peebles Hill Historic District	DOE	E3, E4
Oak Grove Baptist Church	DOE	A1
Northampton County Home	DOE	E1, E3

NR = Listed on National Register of Historic Places

SL = Study list for National Register

DOE = Determination of Eligibility

### 3.4.2 Archaeological Resources

One potential site is a roadside picnic area located on the north side of US 158 between Garysburg and Jackson. The picnic area, which overlooks a former millpond, is accessed by a dead-end section of roadway that parallels US 158 to the north. A state historical marker reads, "Boon's Mill. Here on July 28, 1863, a Confederate force repulsed a Union march on the vital Wilmington and Weldon Railroad. Breastworks 50 yds. S.W."

The picnic area is within the US 158 right of way. Tax records indicate that adjacent properties are under private ownership. The Boone's Mill site may be eligible for listing in the National Register. (Note: Boone's Mill was historically spelled "Boon's Mill," as noted on the historical marker, while the contemporary spelling is "Boone's Mill.")

A detailed archeological study is currently underway for all sections of the Preferred Alternative/LEDPA.

### 3.5 NATURAL ENVIRONMENT CHARACTERISTICS

#### 3.5.1 Soils/Topography/Geology

Northampton County is on the North Carolina and Virginia border along the divide of the Piedmont and Coastal Plain physiographic provinces in North Carolina. This divide, commonly referred to as the Fall Zone, separates two physiographic regions that contain moderately different physical characteristics. The project study area is located in the Middle Coastal Plain physiographic province (Daniels et al. 1999). The topography of this region is described as smooth, gently sloping, plateau-like uplands with gentle to steep valley slopes near the rivers (Daniels et al. 1999). Elevations in the project study area range from approximately 50 feet above mean sea level (MSL) to 140 feet above MSL. Current land uses within the project vicinity include rural residential, agricultural, timber production, and undeveloped.

Six soil associations are present within the project study area (Shaffer 1994). The Turbeville-Caroline association is a well-drained soil located on uplands and has a loamy surface layer with a clayey subsoil. The Turbeville-Caroline association exists in areas that are nearly level to strongly sloping. The Gritney-Caroline association is a moderately well-drained to well-drained soil located on ridgetops and side slopes and has a loamy surface layer with a clayey subsoil. The Norfolk-Bonneu-Goldsboro association occurs on ridgetops and side slopes. These soils are well-drained to moderately well-drained and are described as having a sandy or loamy surface layer and loamy subsoil. The Craven-Bethera-Lenior association consists of moderately well-drained to poorly-drained soils that have a loamy surface layer and clayey subsoil and occurs on uplands. The Wickham-Altavista association is characteristic of narrow flood plains along the Roanoke River. These soils are well-drained to moderately well drained and have a loamy surface layer and loamy subsoil. The Wehadkee-Chastain association consists of poorly-drained to well-drained soils that have a loamy surface layer and loamy subsoil and occurs on flood plains.

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Cowardin et al. 1979).

Forty soil types are found within the project study area (Shaffer 1994). Table 3-8 lists each soil map unit and its soil series with slope, drainage capabilities, site index, and general characteristics. The project study area is dominated by the upland soils Gritney sandy loam, Goldsboro sandy loam, Norfolk sandy loam, and Bonneau loamy sandy.

**Table 3-8: Soil Series within the Project Study Area**

Map Unit	Soil Series	Slope	Site Index **	Drainage	Hydric Status	General Characteristics
AtA*	Altavista fine sandy loam	0-3%	91	Moderately	Hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 1.5 to 2.5 feet during wet periods. Soils are located on terraces along larger streams.
AuA	Autryville loamy sand	0-3%	77	Well Drained	Non-hydric	Soils have moderately rapid permeability in the upper part of the soil and moderate in the lower part. Available water capacity is low. The seasonal high water table is at a depth of 4 to 6 feet.
Be*	Bethera silt loam	0-2%	95	Poorly Drained	Hydric	Soils have slow permeability and high available water capacity. The seasonal high water table is at or near the surface for 3 to 5 months in most years. Soils are on broad flats or in shallow depressions on the uplands.
BoB	Bonneau loamy sand	0-6%	95	Well Drained	Non-hydric	Soils have moderate permeability and low available water capacity. The seasonal high water table is at a depth of 3.5 to 5.0 feet. Soils are generally uplands.
BoC	Bonneau loamy sand	6-12%	95	Well Drained	Non-hydric	Soils have moderate permeability and low available water capacity. The seasonal high water table is at a depth of 3.5 to 5.0 feet. Soils are generally uplands.
CaA	Caroline sandy loam	0-2%	76	Well Drained	Non-hydric	Soils have moderately slow or slow permeability and high available water capacity. A perched seasonal high water table is at a depth of 3.5 to 5.0 feet.
CaB	Caroline sandy loam	2-6%	76	Well Drained	Non-hydric	Soils have moderately slow or slow permeability and high available water capacity. A perched seasonal high water table is at a depth of 3.5 to 5.0 feet.
CrA*	Craven fine sandy loam	0-1%	88	Moderately Well Drained	Hydric	Soils have slow permeability and moderate available water capacity. The seasonal high water table is at a depth of 2 to 3 feet during the spring and winter. Soils are on broad, smooth ridges in the uplands.

**Table 3-8: Soil Series within the Project Study Area (Cont'd)**

Map Unit	Soil Series	Slope	Site Index **	Drainage	Hydric Status	General Characteristics
CrB	Craven fine sandy loam	1-4%	88	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate available water capacity. The seasonal high water table is at a depth of 2 to 3 feet during the spring and winter. Soils are located on uplands.
CrC	Craven fine sandy loam	4-10%	88	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate available water capacity. The seasonal high water table is at a depth of 2 to 3 feet during the spring and winter. Soils are located on side slopes along drainageways.
CsB2	Craven sandy clay loam	1-4%	80	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate available water capacity. The seasonal high water table is at a depth of 2 to 3 feet during the spring and winter. Soils are located on narrow ridges in the uplands.
CuB	Craven-Urban land complex	0-4%	***	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate available water capacity. The seasonal high water table is at a depth of 2 to 3 feet. Intricate mix of 50% Craven soil and 35% Urban land.
ExA	Exum loam	0-2%	82	Moderately Well Drained	Non-hydric	Soils have slow permeability and high available water capacity. The seasonal high water table is at a depth of 2 to 3 feet. Soils are located on uplands.
GoA	Goldsboro sandy loam	0-2%	90	Moderately Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 2 to 3 feet. Soils are located on uplands.
GuA	Goldsboro Urban-land complex	0-2%	***	Moderately Well Drained	Non-hydric	Goldsboro soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 2 to 3 feet. Intricate mix of 50% Goldsboro soil and 30% Urban land.
GxB	Gritney sandy loam	2-6%	85	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate water capacity. The seasonal high water table is at a depth of 1.5 to 3 feet. Soils are located on uplands.
GxC	Gritney sandy loam	6-10%	85	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate water capacity. The seasonal high water table is at a depth of 1.5 to 3 feet. Soils are located on side slopes and rolling areas on uplands.
GyB2	Gritney sandy clay loam	2-6%	80	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate water capacity. The seasonal high water table is at a depth of 1.5 to 3 feet. Soils are eroded and located on uplands.

**Table 3-8: Soil Series within the Project Study Area (Cont'd)**

Map Unit	Soil Series	Slope	Site Index **	Drainage	Hydric Status	General Characteristics
GyC2	Gritney sandy clay loam	6-10%	80	Moderately Well Drained	Non-hydric	Soils have slow permeability and moderate water capacity. The seasonal high water table is at a depth of 1.5 to 3 feet. Soils are eroded and located on side slopes and rolling areas on uplands.
Le*	Lenoir silt loam	0-2%	87	Somewhat Poorly Drained	Hydric B	Soils have slow permeability and moderate available water capacity. The seasonal high water table is at a depth of 1.0 to 2.5 feet during wet periods. Soils are in broad interstream areas on uplands.
Ly*	Lynchburg fine sandy loam	0-2%	86	Somewhat Poorly Drained	Hydric B	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 0.5 foot to 1.5 feet. Soils are located on uplands.
NoA	Norfolk sandy loam	0-2%	84	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 4 to 6 feet. Soils are located on uplands.
NoB	Norfolk sandy loam	2-6%	84	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 4 to 6 feet. Soils are located on uplands.
NoC	Norfolk sandy loam	6-10%	84	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 4 to 6 feet. Soils are located on side slopes that drain into creeks.
NuB	Norfolk-Urban land complex	0-6%	***	***	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 4 to 6 feet. Soils are located around the towns of Jackson, Seaboard, Garysburg, and Conway.
OcA	Ocilla loamy fine sand	0-3%	85	Somewhat Poorly Drained	Non-hydric	Soils have moderate permeability and low available water capacity. The seasonal high water table is at a depth of 1.5 to 2.5 feet during wet periods. Soils are located on uplands.
PtA	Pactolus loamy fine sand	0-2%	86	Moderately Well Drained	Non-hydric	Soils have rapid permeability and low available water capacity. The seasonal high water table is at a depth of 1.5 to 3.0 feet. Soils are located on uplands.
Ra*	Rains fine sandy loam	0-2%	94	Poorly Drained	Hydric A	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of 1 foot during wet periods. Soils are located on uplands.
Se	Seabrook loamy sand	0-2%	81	Moderately Well Drained	Non-hydric	Soils have rapid permeability and low available water capacity. The seasonal high water table is at a depth of 2 to 4 feet. Soils are located on stream terraces.
TrA	Turberville loamy sand	0-2%	80	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are located on uplands.

**Table 3-8: Soil Series within the Project Study Area (Cont'd)**

Map Unit	Soil Series	Slope	Site Index **	Drainage	Hydric Status	General Characteristics
TrB	Turberville loamy sand	2-6%	80	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are located on uplands.
TsA	Turberville sandy loam	0-2%	80	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are located on broad, smooth landscape positions in uplands.
TsB	Turberville sandy loam	2-6%	80	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are located on uplands.
TtB2	Turberville sandy clay loam	2-6%	80	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are eroded and located on uplands.
TxB	Turberville-Urban land complex	0-8%	***	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are an intricate mix of 50% Turberville soil and 30% Urban land.
Ud	Udorthents, loamy	***	***	***	Non-hydric	Natural soil layering sequence is disturbed. Map unit includes borrow pits, cut and fill areas, and landfills.
WeD2	Wedowee sandy clay loam	8-15%	70	Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. The seasonal high water table is at a depth of more than 6 feet. Soils are eroded and located on uplands.
Wh*	Wehadkee loam	0-2%	93	Poorly Drained	Hydric A	Soils have moderate permeability and high available water capacity. The seasonal high water table is at or near the surface during wet periods. Soils are located on flood plains along major rivers and creeks.
WtE	Winton fine sandy loam	10-25%	93	Moderately Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. A perched seasonal high water table is at a depth of 2 to 4 feet. Soils are located on slopes along rivers and their tributaries.
WtF	Winton fine sandy loam	25-50%	93	Moderately Well Drained	Non-hydric	Soils have moderate permeability and available water capacity. A perched seasonal high water table is at a depth of 2 to 4 feet. Soils are located on slopes along rivers and their major tributaries.

Source: Shaffer 1994.

\* Occurs on Hydric Soils list, Gregory 2001.

\*\* Site Index values are based on potential productivity of *Pinus taeda* and/or *Uiquidambar styraciflua*

\*\*\* - No designation has been assigned for the mapping unit.

### 3.5.2 Biotic Communities and Wildlife

Distribution and composition of terrestrial and aquatic communities reflect variations in topography, soils, hydrology, and past and present land uses. Within the project study area, some of the natural community patterns have been modified by previous disturbances. The following community profile description reflects the Schafale and Weakley (1990) classification scheme and contains the description of the range of communities that were observed. Nine vegetative communities are located in the project study area: Dry Mesic Oak-Hickory Forest, Mesic Mixed Hardwood Forest (Coastal Plain subtype), Mesic Pine Flatwoods, Maintained/Disturbed (including agricultural land and existing roadways), Coastal Plain Bottomland Hardwoods (Brownwater Subtype), Coastal Plain Semi-permanent Impoundment, Coastal Plain Small Stream Swamp (Brownwater Subtype), Nonriverine Wet Hardwood Flat, and Wet Pine Flatwoods.

#### 3.5.2.1 Terrestrial Communities and Wildlife

##### 3.5.2.1.1 Vegetative Communities

Dry-Mesic Oak-Hickory Forest. Dry-Mesic Oak-Hickory Forests are found on mid-slopes, low ridges, upland flats, and other dry-mesic upland areas. The community is generally underlain by acidic upland soils. Typically, the canopy and subcanopy strata are composed of a variety of oaks and hickories with white oak (*Quercus alba*) dominating the canopy. Other common canopy species include northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), mockernut hickory (*Carya tomentosa*), and pignut hickory (*Carya glabra*). In areas of disturbance, tulip tree (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), and a variety of pines (*Pinus spp.*) may contribute to the canopy. The understory typically contains red maple (*Acer rubrum*), flowering dogwood (*Comus florida*), sourwood (*Oxydendron arboreum*), American holly (*Ilex opaca*), and black gum (*Nyssa sylvatica*). The vines commonly found in this community are muscadine grape (*Vitis rotundifolia*), and poison ivy (*Toxicodendron radicans*). The herbaceous layer tends to be sparse.

In the project study area, Dry-Mesic Oak-Hickory Forests tended to occur on midslopes and ridges. This community was often found between maintained/disturbed areas such as agricultural lands, which occur on the upper slopes and ridges, and Mesic Mixed Hardwoods (Coastal Plain Subtype), which occur on the lower slopes and in the valleys. Typical species found to dominate the canopy layer of Dry-Mesic Oak-Hickory Forests included white oak, post oak (*Quercus stellata*), southern red oak (*Quercus falcata*), black oak, mockernut hickory, pignut hickory, and loblolly pine (*Pinus taeda*). These forests maintained a moderately dense to open understory dominated by species such as red maple, sweetgum, sourwood, American holly, blackgum (*Nyssa sylvatica*), black cherry (*Prunus serotina*), and a mixture of younger canopy species. The shrub layer often consisted of American holly, deerberry (*Vaccinium stamineum*), red maple, Chinese privet (*Ligustrum sinense*), and saplings of canopy species. Within the herb and vine layers, dominant species included common greenbrier (*Smilax rotundifolia*), glaucous-leaved greenbrier (*Smilax glauca*), Japanese honeysuckle (*Lonicera japonica*), muscadine grape, poison ivy, and crane fly orchid (*Tipularia discolor*).

Mesic Mixed Hardwood Forest (Coastal Plain Subtype). Mesic Mixed Hardwood Forest (Coastal Plain Subtype) occurs on mesic (non-wetland) upland areas throughout the Coastal Plains. Primarily found on north-facing river bluffs and ravine slopes in areas protected from fire by topography and moisture, these communities are supported by various moist upland soils. The canopy within this community is dominated by American beech (*Fagus grandifolia*), tulip tree, white oak, northern red oak, and sweetgum. Understory species include dogwood, American holly, hop hornbeam (*Ostrya virginiana*), sourwood, and red maple. The shrub and herb layers are described as ranging from sparse to dense and fairly diverse. Common shrubs include horse sugar (*Symplocus tinctoria*), witch-hazel (*Hamamelis virginiana*), and giant cane (*Arundinaria gigantea*). Herbaceous species may include partridgeberry (*Mitchella repens*), Christmas fern (*Polystichum acrostichoides*) and various sedges (*Carex* spp.). Other oak species observed include southern red oak and willow oak (*Quercus phellos*). Chinese privet was common in the understory. Common greenbrier and muscadine grape were also typical in this community.

The Mesic Mixed Hardwood Forest (Coastal Plain Subtype) was a dominant community within the project study area. Most often this community occurred on the low and mid slopes transitioning from wet areas dominated by bottomland hardwood species to upland communities such as Mesic Pine Flatwoods, Dry-Mesic Oak-Hickory Forests, and agricultural fields. The canopy within this community was dominated by tulip tree, sweetgum, white oak, red maple, willow oak, water oak, and American beech. Loblolly pine was also observed in the canopy layer. The understory within this community was often moderately dense and dominated by younger canopy species as well as American holly and sourwood. The shrub layer consisted of coastal pepperbush (*Clethra alnifolia*), American holly, various blueberries (*Vaccinium* spp.), Chinese privet, and saplings of canopy species. The herb and vine layers included species such as poison ivy, Japanese honeysuckle, Christmas fern, ebony spleenwort (*Asplenium platyneuron*), muscadine grape, common greenbrier, and giant cane. Areas that had recently been timbered but were beginning to reestablish vegetation consistent with this community type were also mapped as Mesic Mixed Hardwood Forest (Coastal Plain Subtype). These cutover communities typically ranged from 5 to 15 years in age.

Mesic Pine Flatwoods. Mesic Pine Flatwoods are mesic sites, located either on flat or rolling Coastal Plain sediments, that are neither excessively drained nor with a significant seasonal high water table. This community is underlain by loamy or fine-textured soils, sometimes on sands, and is characterized as having a closed to open canopy mainly consisting of longleaf pine (*Pinus palustris*) or loblolly pine. The understory is commonly sparse and contains species such as Southern red oak, water oak, post oak, mockernut hickory and sweet gum. The shrub layer will have varying densities and is similar to Wet Pine Flatwoods. The herbaceous layer is generally dominated by pineland three-awn grass (*Aristida stricta*), bracken fern (*Pteridium aquilinum*), old switch panic grass (*Panicum virgatum*), little bluestem (*Andropogon scoparium*), and roundhead bushclover (*Lespedeza capitata*).

The Mesic Pine Flatwoods was another dominant community within the project study area, typically occurring on broad flats along interstream divides. This community often consisted of large contiguous tracts of land that were being leased for hunting. Many of these tracts of land are owned by timber companies and routinely logged and replanted. Planted pine forests of all ages were mapped within this community type. The canopy layer was almost exclusively dominated by loblolly pine with only longleaf pine present at one location. In addition,

sweetgum and various oaks were found in the canopy as well. The understory and shrub layers were moderately dense to sparse and consisted of sweet gum, red maple, water oak, willow oak, southern red oak, post oak, sweetbay magnolia (*Magnolia virginiana*), American holly, blackgum, winged elm (*Ulmus allata*), and black cherry. The herb and vine layers included species such as poison ivy, common greenbrier, blackberry (*Rubus* sp.), ebony spleenwort, muscadine grape, partridge berry, and Japanese honeysuckle. This community often occurred adjacent to Wet Pine Flatwoods. The main differentiating factor between this community and the Wet Pine Flatwoods community is the lack of hydrophytic herbaceous vegetation such as giant cane and netted chain fern (*Woodwardia areolata*).

Maintained/Disturbed Lands. The maintained/disturbed lands community is characterized by human influences and anthropogenic surfaces related to agricultural, commercial and residential development, roadways, railways, and other areas that have been manipulated. Vegetation associated with this community is kept in an early state of succession by regular mowing, plowing, or other maintenance. Within the project study area, this community includes the following areas: agricultural, rural residential, paved and unpaved roads, railways, industrial sites, parking lots, commercial development, and recent cutovers (generally less than 2 years old).

Agricultural fields and recent cutover areas are present throughout much of the project study area. Agricultural fields within the project study area consisted of crop land, active horse and cattle pasture, plant nurseries, poultry and swine farms, and food plots for wildlife. Cutover areas too young to be classified as other vegetative communities were classified as maintained/disturbed lands. Ground cover was often dense in these areas due to debris left over from timber harvesting and the abundance of early successional species. Species common within recent cutover areas included sweetgum, loblolly pine, red maple, blackberry, various rushes (*Juncus* spp.), wool grass (*Scirpus cyperinus*), trumpet vine (*Campsis radicans*), and poison ivy.

Within fallow fields, vegetation was dominated by sweetgum and loblolly pine. Vines and shrubs within these areas included muscadine grape, honeysuckle, and blackberry. The herbaceous layer had high diversity commonly including ebony spleenwort, longstalked aster (*Aster dumosus*), feather grass (*Microstegium vimineum*), and Chinese bushclover (*Lespedeza cuneata*). Maintained/disturbed land also includes roadsides and railroad buffers within which sweetgum, ragweed (*Ambrosia* spp.), common greenbrier, blackberry, fescue (*Festuca* spp.), and trumpet vine were found.

Mature hardwood trees were noted adjacent to maintained residential areas within the project study area. Canopy trees surrounding the residential areas include red maple, water oak, pecan (*Carya illinoensis*), loblolly pine, and willow oak. Fescue, Japanese honeysuckle, blackberry, poison ivy, and dandelion (*Taraxacum* spp.) were observed as the primary groundcover. Other species identified in these residential areas include mimosa (*Albizia julibrissin*), flowering dogwood, red mulberry (*Morus rubra*), eastern red cedar (*Juniperus virginiana*), and sweetbay magnolia.

### 3.5.2.1.2 Terrestrial Wildlife

The various forest communities present within the project study area, together with disturbed lands, offer plant diversity and water availability for wildlife. These forests provide a variety of habitats for amphibians, reptiles, birds, and mammals. Species observed during the site visit, either directly or indirectly by sign, scat, or tracks, are indicated by an asterisk (\*).

The project study area likely contains a diverse amphibian population. A variety of salamanders including the marbled (*Ambystoma opacum*), two-lined (*Eurycea bislineata*), three-lined (*E. guttolineata*), southern dusky (*Desmognathus auriculatus*), northern dusky (*Desmognathus fuscus*), mud (*Pseudo triton montanus*), many-lined (*Stereochilus marginatus*), slimy (*Plethodon glutinosus*), and redback (*Plethodon cinereus*) may exist within the project study area. Salamanders forage on insects (both aquatic and terrestrial), crustaceans, worms, and other organisms along the forest floor and in the streams. Salamanders can be found in a variety of habitats, though most are associated with small streams and seepages. Species such as the marbled, slimy, and redback salamanders are found primarily in terrestrial habitats under rocks, leaves, and woody debris. A variety of toads and frogs may be present throughout the project study area as well. Toads that may exist within the project study area include the eastern spadefoot toad (*Scaphiopus holbrooki*), American toad (*Bufo americanus*), \* southern toad (*Bufo terrestris*), and Fowler's toad (*Bufo woodhousei*). The American toad inhabits a variety of habitats from home gardens to forests. Bullfrogs\* (*Rana catesbeiana*) inhabit large ponds, lakes, and streams and consume insects, crayfish, and occasionally small vertebrates. Other amphibians that are likely present include spring peepers\* (*Hyla crucifer*), green tree frogs (*Hyla cinerea*), and pickerel frogs\* (*Rana. palustris*). Spring peepers mainly inhabit woodlands while pickerel frogs and tree frogs are found along shaded streams and wet areas.

Reptile species including snakes, lizards, and turtles are found throughout a variety of ecotones. During field investigations, the majority of reptiles were observed in forested areas near water. Depending upon the species, snakes forage on slugs, earthworms, insects, small mammals and their eggs, fish, and amphibians. Several snake species that are likely to be observed within the project study area include the brown snake (*Storeria dekayi*), northern water snake (*Nerodia sipedon*), \* brown water snake (*Nerodia taxispilota*), \* black racer (*Coluber constrictor*), eastern kingsnake (*Lampropeltis getulus*), \* rough green snake (*Opheodrys aestivus*), \* eastern garter snake (*Thamnophis sirtalis*), \* worm snake (*Carphophis amoenus*), \* copperhead (*Agkistrodon contortrix*), cottonmouth (*Agkistrodon piscivorus*), \* and rat snake (*Elaphe obsoleta*). \*

Lizards feed primarily on insects and inhabit a wide variety of habitats. Lizard species that are likely to be observed within the project study area include the eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), and broadhead skink (*E. laticeps*). The eastern fence lizard avoids dense woods and inhabits open areas such as open pine woods, fences, and building sites. Broadhead skinks are arboreal, generally found in living and dead trees to considerable heights.

Turtles are generally omnivorous and found in or near water. Turtle species that are likely to be found within the project study area include the snapping turtle (*Chelydra serpentina*), \* yellowbelly slider (*Chrysemys scripta*), \* and eastern box turtle (*Terrapene carolina*). \* Snapping turtles are very aggressive animals, feeding on aquatic invertebrates and numerous small

vertebrates in addition to vegetation. Eastern box turtles are largely terrestrial and often found away from water, but they will enter water during dry, hot weather.

The project study area offers various types of habitat for birds including open fields, residential areas, forests of various ages and types, open water, stream banks, cutovers, and wetlands. This habitat diversity provided an opportunity for a wide variety of bird species to be observed within the project study area. Predatory birds observed within the project study area included the red-tailed hawk (*Buteo jamaicensis*), \* barred owl (*Strix varia*),\* Cooper's hawk (*Accipiter cooperii*),\* and red-shouldered hawk (*Buteo lineatus*). \* These predatory birds mainly consume rodents and other small animals, and nest above the ground. A bald eagle (*Haliaeetus leucocephalus*)\* was sighted perched in a tree within the project study area; however, no nesting sites were identified during field investigations. The bald eagle primarily feeds on fish; therefore, it is often found near open water. Great blue herons (*Ardea herodias*)\* were commonly observed along stream banks and pond edges within the project study area. Great blue herons feed primarily on fish and other animals that live in or near the water, and nest in the tops of tall trees near water.

During the months of March, April, and May an assemblage of migratory song birds was observed within the project study area. During the spring, as the weather warms and defoliating insects emerge, these migratory birds inhabit forests throughout North Carolina as they move northward. Migratory species observed within the project study area include the summer tanager (*Piranga rubra*), \* blue grosbeak (*Guiraca caerulea*), \* indigo bunting (*Passerina cyanea*), \* white-eyed vireo (*Vireo griseus*), \* common yellowthroat (*Geothlypis trichas*), \* black and white warbler (*Mniotilta varia*), \* prairie warbler (*Dendroica discolor*), \* and hooded warbler (*Wilsonia citrine*). \* The diets of these birds may include a combination of seeds, berries, vegetation, worms, and insects. Their nests are generally above ground, usually in trees or shrubs.

Game species such as American woodcock (*Scolopax minor*), \* Northern bobwhite quail (*Colinus virginianus*),\* Canada goose (*Branta canadensis*),\* mourning dove (*Zenaida macroura*),\* and wood duck (*Aix sponsa*)\* were also present within the project study area. Aside from the mourning dove and wood duck, these birds nest on the ground. Scavengers such as the turkey vulture (*Cathartes aura*)\* and black vulture (*Coragyps atratus*)\* were also found in the project study area. These birds feed primarily on fresh or rotting carrion and roost singly or communally at night. A list of all bird species observed within the project study area is included in the NRTR.

A diverse mammal population is expected to be associated with the communities present within the project study area. Recent cutover areas throughout the project study area offer habitat for the eastern cottontail (*Sylvilagus floridanus*), \* and whitetailed deer (*Odocoileus virginianus*). \* These cutover areas are also inhabited by the gray fox (*Urocyon cinereoargenteus*)\* which rely on rabbits and other small mammals as their primary food source. Mammals observed near streams and wetlands throughout the project study area included muskrat (*Ondatra zibethicus*),\* beaver (*Castor canadensis*), \* and mink (*Mustela vison*). \* Other mammals observed within the project study area included Virginia opossum (*Didelphis virginiana*), \* raccoon (*Procyon lotor*),\* eastern mole (*Sealopus aquaticus*),\* and bobcat (*Felis rufus*). \* The agricultural fields within the project study area likely support small rodents such as the eastern harvest mouse

(*Reithrodontomys humulis*) and meadow vole (*Microtus pennsylvanicus*). The eastern harvest mouse feeds on seeds, fruits, and grasses common to this old-field habitat, and the meadow vole feeds on the leaves and stems of a variety of grasses and forbs as well as fungi and insects. The mature hardwood forests throughout the project study area offer habitat for species such as the gray squirrel (*Sciurus carolinensis*). \* The gray squirrel feeds on acorns and other nuts from mast-producing trees. Bat species likely to exist within the project study area include Eastern pipistrelle (*Pipistrellus subjlavus*), big brown bat (*Eptesicus fuscus*), red bat (*Lasivus borealis*), and evening bat (*Nycticeius humeralis*). Bats are the only mammals capable of sustained flight and are rarely seen due to their nocturnal nature. They feed on insects and typically roost in old buildings, caves, and trees. The farm buildings and extensive forested areas within the project study area offer excellent habitat for these bats.

### 3.5.2.2 Aquatic Communities and Wildlife

Coastal Plain Bottomland Hardwoods (Brownwater Subtype). The Coastal Plain Bottomland Hardwoods (Brownwater Subtype) are found throughout the Coastal Plain along large and medium size rivers. The Coastal Plain Bottomland Hardwoods correspond to the new 'The North Carolina Wetland Assessment Methods' (WAM) wetland types: Bottomland Hardwood Forest, Riverine Swamp Forest and Headwater Wetlands. This Palustrine community has a variety of coarse to fine-grained alluvial soils and is seasonally to intermittently flooded. The canopy is comprised of a various mixture of bottomland oaks including swamp chestnut oak (*Quercus michauxii*), cherrybark oak (*Quercus pagoda*), laurel oak (*Quercus laurifolia*), water oak, willow oak, and Shumard oak (*Quercus shumardii*). Other hardwoods within the canopy include sweetgum, green ash (*Fraxinus pennsylvanicum*), shagbark hickory (*Carya ovata*), bitternut hickory (*Carya cordiformis*), black walnut (*Juglans nigra*), hackberry (*Celtis laevigata*), and American elm (*Ulmus americana*). The understory is commonly made up of ironwood (*Carpinus caroliniana*), deciduous holly (*Ilex decidua*), paw paw (*Asimina triloba*), and American holly. Typical vine species in this community include poison ivy, muscadine grape, and common greenbrier. The herb layer is generally sparse with sedges, Indian sea oats (*Chasmanthium latifolium*), slender spike grass (*Chasmanthium laxum*), violet (*Viola* spp.), and false nettle (*Boehmeria cylindrica*).

In the project study area this vegetative community occurred most often in the floodplains of second or higher order streams. This community was also associated with a majority of the larger wetland systems within the project study area, such as Corduroy Swamp, Ramsey Creek, and Wildcat Swamp. Coastal Plain Bottomland Hardwood Communities grade to Mesic Mixed Hardwood Forest (Coastal Plain Subtype) on the upland side. They grade to Coastal Plain Small Stream Swamp (Brownwater subtype) which is found along first order streams and headwater wetlands. The canopy was dominated by water oak, willow oak, laurel oak, sweetgum, tulip tree, red maple, and hackberry. The understory was fairly open and commonly contained sycamore (*Platanus occidentalis*), sweetbay magnolia, Chinese privet, coastal pepperbush, river birch (*Betula nigra*), ironwood, black willow (*Salix nigra*), American holly and younger canopy species. The herbaceous layer was quite diverse in the wetter portions of this community. Common herbaceous species observed include giant cane, netted chain fern, sensitive fern (*Onoclea sensibilis*), tearthumb (*Polygonum sagittatum*), slender spikegrass, wool grass, soft rush (*Juncus effusus*), various sedges, feather grass, and Christmas fern. Vines occurring in this community included Japanese honeysuckle, cross vine (*Bignonia capreolata*), and poison ivy.

Coastal Plain Semi-permanent Impoundment. The Coastal Plain Semi-permanent Impoundment is a Palustrine community and generally consists of beaver ponds, blocked embayments, and similar manmade impoundments. The Coastal Plain Semi-permanent Impoundment corresponds with WAM's Non-Tidal Freshwater Marsh. These communities are permanently flooded in the center and the existing soils are gradually covered by clayey or mucky sediments. Canopy coverage in this community ranges from absent to nearly closed, and usually consists of cypress (*Taxodium* spp.) or swamp blackgum (*Nyssa biflora*). Floating or submergent aquatics often occur in the interior of this community, with emergent vegetation sometimes present at the margins. Common herbaceous species within this community include tearthumb, green arrow-arum (*Peltandra virginica*), and arrowhead (*Sagittaria* spp.).

Within the project study area this community consisted of manmade ponds, such as Boone's Millpond, borrow pits, gravel/sand pits, and agricultural ponds. No canopy was present in this community; however, it did support various floating, submergent, and/or emergent vegetation near the pond edges. This community was bordered by a variety of other communities including Maintained/Disturbed Lands, Coastal Plain Bottomland Hardwoods (Brownwater Subtype), Wet Pine Flatwoods, Mesic Pine Flatwoods, and Mesic Mixed Hardwood Forest (Coastal Plain Subtype).

Coastal Plain Small Stream Swamp (Brownwater Subtype). The Coastal Plain Small Stream Swamp (Brownwater Subtype) is a Palustrine community located along floodplains of small streams. The Coastal Plain Small Stream Swamp corresponds with WAM's Riverine Swamp Forest and Headwater Wetlands. These communities are made up of various alluvial soils and are intermittently, temporarily, or seasonally flooded. The canopy varies but is comprised of bald cypress, swamp blackgum, and various bottomland hardwoods such as chestnut oak, Shumard oak, southern red oak, laurel oak, water oak, willow oak, sweet gum, hackberry, sycamore, river birch, green ash, black walnut, and swamp cottonwood (*Populus heterophylla*). The understory is made up of ironwood, Carolina ash (*Fraxinus caroliniana*), American holly, and red maple.

This community occurred along first order streams and headwater wetlands throughout the project study area. The canopy species typically consisted of swamp blackgum, green ash, and red maple. Bald cypress (*Taxodium distichum*) was occasionally found dominating the canopy of this community as well. The understory and shrub layer was fairly open and consisted of ironwood, Chinese privet, possum-haw viburnum (*Viburnum nudum*), and young canopy species. Poison ivy, common greenbrier, giant cane, feather grass, arrow-arum (*Peltandra* sp.), and false nettle occupied the herb and vine layers. This community typically graded into Mesic Mixed Hardwood Forest (Coastal Plain Subtype) on the adjacent slopes and transitioned to Coastal Plain Bottomland Hardwoods (Brownwater Subtype) further downstream. This community is distinguished from Bottomland Hardwoods by their occurrence on small stream floodplains and headwater wetlands without well-developed alluvial landforms.

Wet Pine Flatwoods. This community is found in areas that are seasonally wet to usually wet that are generally flat. The Wet Pine Flatwoods correspond with WAM's Pine Flat. Soils are most commonly wet and sandy. The canopy can be open or closed and consist of various pines including longleaf pine, loblolly pine or pond pine (*Pinus serotina*). The understory layer is commonly sparse to absent. However, a low shrub layer consisting of species such as deciduous holly, dangleberry (*Gaylussacia frondosa*), stagger-bush (*Lyonia mariana*), coastal sweet bay,

red bay (*Persea borbonia*), giant cane, and blueberry (*Vaccinium* spp.). The herbaceous layer has little diversity and will likely include the pineland three-awn grass and bracken fern.

In the project study area, Wet Pine Flatwoods typically occurred along broad interstream divides. These areas were often planted pine forests that were owned by timber companies and leased to individuals for hunting purposes. Tire ruts were commonly found throughout this community as a result of past logging operations, which have also resulted in significant soil compaction in some areas. Loblolly pine dominated the canopy in this community and giant cane was often thick in the understory. Other species found within this community include willow oak, water oak, sweetgum, red maple, netted chain fern, sweetbay magnolia, and common greenbrier. The dominance of hydrophytic vegetation such as giant cane and netted chain fern distinguished this community from Mesic Pine Flatwoods, which often occurred adjacent to it on the landscape.

Non-riverine Wet Hardwood Flat. Non-riverine Wet Hardwood Flats are described as poorly drained interstream flats with fine-textured soils, not associated with rivers or estuaries. The Non-riverine Wet Hardwood Flat corresponds with WAM's Hardwood Flat. These communities are underlain by poorly drained loamy or clayey mineral soils. These areas are seasonally saturated or flooded by high water tables with poor drainage. The canopy is dominated by various hardwood trees commonly found in bottomlands. These species include swamp chestnut oak, laurel oak, cherrybark oak, tulip tree, sweet gum, American elm, and red maple. The understory stratum is composed of ironwood, red maple, American holly, and paw paw. The shrub layer is often sparse to moderate, and species include spice bush (*Lindera benzoin*), red bay, Coastal pepper bush, highbush blueberry (*Vaccinium corymbosum*), wax myrtle (*Myrica cerifera*), and giant cane. Vines within this community include poison ivy, trumpet vine, and muscadine grape. The herbaceous layer is made up of sedges, lizard's tail (*Saururus cernuus*), false nettle, netted chainfern and partridge-berry.

This community occurred along interstream divides as medium to large flats, but also as small areas surrounded by agricultural fields and other upland communities. This community was fairly uncommon within the project study area. In the larger flats, the canopy was composed of various oak species such as willow oak, water oak, white oak, swamp chestnut oak, and tulip tree. Red maple, ironwood, and American holly dominated the understory, which was moderately open. The smaller areas were generally dominated by species such as sweetgum, red maple, black willow, common greenbrier, and coastal pepperbush. The herbaceous layer was usually sparse in this community. This community is distinguished from Mesic Mixed Hardwood Forest (Coastal Plain Subtype) by the presence of hydrophytic species such as black willow and coastal pepper bush. The presence of willow oak, swamp chestnut oak, and water oak distinguish this community from Dry-Mesic Oak-Hickory Forest, and its position on the landscape separates it from Coastal Plain Bottomland Hardwood Forest (Brownwater Subtype).

#### 3.5.2.2.1 Aquatic Fauna

Aquatic habitat within the project study area ranged from small headwater streams and wetlands to large third and fourth order streams and floodplain communities. The diversity of aquatic habitat available produces a variety of aquatic fauna within the project study area. Species observed during the field investigations, either directly or indirectly by are indicated by an asterisk (\*).

The most important physical factors that affect freshwater organisms are temperature, light, water current, and substrate (Voshell 2002). As stream order increases, these factors change and have a part in determining the type of organisms present within each aquatic community. Benthic species typically found dominating the smaller headwater and second order streams include various shredders such as mayflies (Ephemeroptera), stoneflies (Plecoptera), crane flies (Nematocera), and case maker caddisflies (Trichoptera). Shredders are most abundant in first and second order streams because these streams usually have an abundance of coarse particulate organic material (CPOM) entering the stream, which provides a food source for these organisms. Filter-feeders and collector-gatherers are most abundant in higher order streams due to the abundance of fine particular organic matter (FPOM), and may include species such as common net spinner caddisflies (Trichoptera), true flies (Diptera), and water boatmen (Heteroptera). Predator species that may be found in streams of all orders within the project study area include damselflies (Zygoptera), dragonflies (Anisoptera), hellgrammites (Megaloptera), and water striders (Heteroptera). Bivalves are most abundant in medium to large rivers and prefer a stable substrate consisting of gravel or a combination of gravel and sand. The only bivalves (*Elliptio* sp.)\* observed within the project study area were found in Reedy Branch, just south of US 158. Crayfish (Decapoda)\* were observed in streams and wetlands throughout the project study area.

Redbreast sunfish (*Lepomis auctus*), bluegill (*L. macrochirus*), largemouth bass (*Micropterus salmoides*), Eastern silvery minnow (*Hybognathus regius*), golden shiner (*Notemigonus crysoleucas*), common carp (*Cyprinus carpio*), tessellated darter (*Etheostoma olmstedii*), yellow bullhead (*Ameiurus natalis*), black crappie (*Promoxis nigromaculatus*), channel catfish (*Ictalurus punctatus*), hickory shad (*Alosa mediocris*), yellow perch (*Perea falvescens*), and striped bass are species that may be present in streams and creeks throughout the project study area. These fish feed on a variety of living and organic matter including algae, insects, worms, crustaceans, snails, fish, and detritus.

Other aquatic species likely include several of the amphibian, reptilian, and mammalian species. Salamanders, frogs, turtles, beavers and muskrats are a few of the species that inhabit both terrestrial and aquatic communities.

### 3.5.2.3 Summary

Impacts to terrestrial and aquatic organisms will occur as a result of construction of this project. The acreage covered by each vegetative community within the project study area is depicted in Table 3-9.

**Table 3-9: Vegetative Communities Within the Project Study Area**

<b>Community Type</b>	<b>Area Occupied by Community (Acres)</b>	<b>Percentage of the Total Study Area Coverage</b>
<b>Terrestrial</b>		
Dry Mesic Oak-Hickory Forest	221	3%
Mesic Mixed Hardwood Forest	749	11%
Mesic Pine Flats	927	13%
Maintained/Disturbed	4,097	58%
<b>Aquatic</b>		
Bottomland Hardwood	238	3%
Coastal Plain Semi-permanent Impoundment	10	<1%
Coastal Plain Small Stream Swamp	416	6%
Nonriverine Wet Hardwood Flat	95	1%
Wet Pine Flatwoods	363	5%
<b>Total</b>	<b>7,116</b>	<b>100%</b>

### 3.5.3 Water Resources

#### 3.5.3.1 Watershed Characteristics

The project study area is within the Roanoke and Chowan River basins. Approximately 33 percent of the project study area is located in the Roanoke River basin and 67 percent in the Chowan River basin. The information presented in the following section is derived from the Roanoke River Basinwide Assessment Report (NCDWQ 2005b) and the Chowan River Basinwide Assessment Report (NCDWQ 2006a) unless otherwise stated.

The Roanoke River flows from the Blue Ridge Mountains in Virginia, east-southeastward across mountainous, piedmont, and coastal topography, into the Albemarle Sound in North Carolina. The Roanoke River Basin encompasses approximately 3,503 square miles and includes approximately 2,389 miles of streams and rivers in North Carolina. A portion of the project study area is located in USGS HUC 03010107 and DWQ Subbasin 03-02-08. Four major stream systems, Arthurs Creek, Trouble Field Creek, Occoneechee Creek, and Gumberry Swamp, drain the project study area within the Roanoke River Basin. These streams flow south to their confluence with the Roanoke River.

The Chowan River is formed at the Virginia-North Carolina State line by the confluence of the Nottoway and Blackwater Rivers, and flows southeastward into the Albemarle Sound in North Carolina. The Chowan River Basin encompasses approximately 1,315 square miles in North Carolina; however, approximately 76 percent of the drainage basin lies in Virginia. The remaining portion of the project study area is located in USGS Hydrologic Cataloging Unit (HUC) 03010203 and DWQ Subbasin 03-01-02. Eight major stream systems drain the project study area in the Chowan River Basin: Wiccacanee Swamp, Ramsey Creek, Corduroy Swamp, Wildcat Swamp, Paddys Delight, Reedy Branch, Kirbys Creek, and Maple Fork Branch. These

streams flow predominantly east and southeast and their waters eventually drain into the Meherrin River.

Eighty-four stream segments comprising 11.7 miles were identified within the project study area. The Natural Resources Technical Report (NRTR) lists these streams along with their associated NCDWQ Index Number, physical characteristics, and Best Usage Classification.

### 3.5.3.2 Water Quality

Best usage classification for surface waters is determined by NCDWQ. All of the waters in the Roanoke River Basin portion of the project study area are classified as Class C waters. All of the waters in the Chowan River Basin portion of the project study area are classified as Class C, nutrient sensitive waters (NSW) except for Paddys Delight Creek. It is classified as Class B, NSW from its source to the dam at Doolittle Millpond. Class C denotes waters that are suitable for aquatic life propagation, wildlife, secondary recreation, and agriculture. Class B denotes waters that are for primary recreation including frequent use for organized swimming. Nutrient sensitive waters are waters subject to growths of vegetation requiring limitations on nutrient inputs. Unnamed tributaries (UTs) receive the same best usage classification as the named streams into which they flow. No Outstanding Resource Waters (ORW), High Quality Waters (HQW), or Water Supply Waters (WS) occur within the project study area. Neither the Roanoke River nor the Chowan River Basins are subject to vegetated riparian buffer requirements by the state.

The Ambient Monitoring System (AMS) is a network of water quality monitoring stations strategically located for the collection of physical and chemical water quality data to help determine a waterbody's classification and corresponding water quality standards. The AMS determines how well a waterbody supports its designated uses. Since none of the streams within the project study area are monitored by NCDWQ, they are not rated. There are ambient monitoring stations on the Roanoke River at NC 46 (approximately 2.5 miles upstream of the project study area) and at US 258 (approximately 4 miles downstream of the project study area). This section is currently rated as Supporting aquatic life based on the ambient monitoring at these sites.

Section 303(d) of the Clean Water Act (CWA) requires states to develop a comprehensive public accounting of all impaired waters. The list includes waters impaired by pollutants, such as nitrogen, phosphorus and fecal coliform bacteria, and by pollution, such as hydromodification and habitat degradation. The source of impairment might be from point sources, nonpoint sources, or atmospheric deposition. The Roanoke River, from the Roanoke Rapids dam to the Albemarle Sound, is listed on the draft North Carolina 303(d) List as impaired because of fish consumption advisories (NCDWQ 2006b). The impairment is due to high mercury levels, likely resulting from atmospheric deposition (NCDWQ 2005b).

### 3.5.3.3 Surface Waters

#### 3.5.3.3.1 Streams

There are ten named stream systems (on USGS maps) within the project study area and they are summarized in the following text.

**Arthur's Creek** (NCDWQ 23-28) and four of its unnamed tributaries are located within the project study area. Arthur's Creek is a perennial stream with a bankfull width of 30 feet and a bank height of 6 feet. It has a USACE quality assessment of 57. The stream segment within the project study area is immediately downstream of extensive gravel pits. Arthur's Creek has moderate sinuosity and a variety of fish, amphibians, and benthic macroinvertebrates were observed. However, this stream has evidence of impacts from agriculture and timber production in addition to some bank failures and channel widening.

Two segments of **Trouble Field Creek** (NCDWQ 23-29.2) and six of its unnamed tributaries are found within the project study area. Trouble Field Creek is a perennial stream with a bankfull width of 6 to 12 feet and a bank height of 6 feet. It has an average USACE quality assessment of 74. The upstream portion of Trouble Field Creek within the project study area exhibits moderate stream geomorphology with the characteristics becoming strong in the downstream portion. This stream is very sinuous with a moderate slope. There are small wetland areas along both portions of the stream with only minor impacts from agriculture or timber production.

Both segments of **Occoneechee Creek** (NCDWQ 23-31) within the project study area are in proposed widening areas. In addition to the main channel, there are three unnamed tributaries within the project study area. The upstream segment is located along the Old Jackson Bypass (SR 1311) and has a braided channel flowing through a coastal plain small stream swamp. The downstream segment intersects US 158 west of Jackson and is a single channel flowing through a bottomland hardwood community. The bankfull width ranges from 4 to 8 feet upstream to 15 to 20 feet in the downstream segment and a bank height of 1 to 3 feet upstream and 3 to 4 feet downstream. Both reaches are stable with little evidence of erosion or impacts from agriculture or timber production. Both segments have similar USACE quality assessments of 88 and 89, respectively.

The project study area intersects **Gumberry Swamp** (NCDWQ 23-32-1) at three different locations. In addition, there are six unnamed tributaries to Gumberry Swamp in the project study area. The upstream location of Gumberry Swamp intersects the Jackson Bypass and has a USACE quality assessment of 72. This stream is located within a bottomland hardwood wetland and was over its banks at the time of the investigation. There was little evidence of disturbance and good wildlife habitat was present. The middle crossing of Gumberry Swamp is located northeast of Jackson where the stream is a braided channel within a beaver impounded area. Therefore, bankfull width ranged from 20 to 50 feet and bank heights were from 2 to 5 feet. To the east of this stream segment, land that was historically used for crop production has been converted to the production of pine (estimated age 5 years). This segment of Gumberry Swamp has a USACE quality assessment of 74. The downstream segment of Gumberry Swamp is along the proposed widening of US 158 to the southwest of Jackson at the discharge to Boones Millpond. This stream segment has a bankfull width of 30 to 35 feet and a bank height of 5 to 6

feet. There is riprap on the stream banks and slight erosion downstream of US 158. A bottomland hardwood wetland community is located to the east of the stream and a young mesic hardwood community is located to the west of the stream. This downstream segment of Gumberry Swamp has a USACE quality assessment of 71.

The main channel of **Ramsey Creek** (NCDWQ 25-4-8-1) is crossed by the project study area at four different locations: SR 1311 (Jackson Bypass Road) and all three alternatives around the town of Jackson. The SR 1311 location is the only area where there is a defined stream channel. The defined channel is approximately 100 feet in length. The stream discharges from a beaver dam and flows through a set of culverts under SR 1311 (Jackson Bypass Road). This stream segment has a bankfull width of 12 to 20 feet and a bank height of 1 to 3 feet. It has a USACE quality assessment of 60. The remaining portions of Ramsey Creek are encompassed in bottomland hardwood wetland communities delineated as WB29, WB25, and WB54, respectively. There are four unnamed tributaries draining into Ramsey Creek within the project study area.

The upstream portion of **Wiccacanee Swamp** (DWQ 25-4-8-1.5) is crossed by the project study area along the proposed widening of SR 1311 and the downstream portion is crossed east of Jackson along US 158. The upstream segment is located within a bottomland hardwood wetland community and has a bankfull width 12 to 15 feet and bank height of 3 to 5 feet. Downstream of SR 1311, the Wiccacanee Swamp has erosion due to cows accessing the stream from adjacent pasture land. This segment has a USACE quality assessment of 52. The downstream segment of Wiccacanee Swamp is also within a bottomland hardwood wetland community and has braided channels, a bankfull width of 2 to 5 feet, and bank height of 1 to 3 feet. This downstream segment of Wiccacanee Swamp has a USACE quality assessment of 92 and is characterized by a wide riparian zone providing canopy coverage and stable stream conditions. There are no tributaries to Wiccacanee Swamp in the project study area.

**Wildcat Swamp** (NCDWQ 25-4-8-2) begins near the center of the project study area where SR 1331 (Jackson Bypass Road) intersects US 158. It flows in an eastwardly direction between the proposed widening of US 158 and the proposed new southern alignment until it turns south and intersects the project study area west of SR 1505. Upstream of US 158, two tributaries join to form braided Wildcat Swamp within a bottomland hardwood wetland community with a bankfull width up to 25 feet. A single channel is formed as Wildcat Swamp crosses US 158 and has a bankfull width of 6 to 8 feet and bank height of 2 feet. The USACE quality assessment is 53 for Wildcat Swamp due to unnatural levees and runoff from adjacent agricultural fields. There is no defined stream channel where the project study corridor crosses Wildcat Swamp at the downstream location. This area is delineated as bottomland hardwood wetland community WB60 and has standing surface water throughout. There are five unnamed tributaries to Wildcat Swamp in the project study area.

**Corduroy Swamp** (NCDWQ 25-4-4-1) is located along the north side of the project study area that is proposed as new alignment between Jackson and Conway north of US 158. The main channel of Corduroy Swamp is not within the project study area. However, there are 18 unnamed tributaries to Corduroy Swamp as well as bottomland hardwood wetlands defined as Corduroy Swamp within the project study area.

The main channel of **Kirbys Creek** (NCDWQ 25-4-4) is located northeast of Conway in the proposed new alignment portion of the project study area. Approximately 0.4 miles upstream of the study area, Kirby's Creek discharges from a 40-acre pond at NC 35 and flows through a bottomland hardwood wetland community lacking a defined channel. Approximately 1,000 feet of channel was delineated within the wetland. The channel has frequent meanders and stable banks with tannic waters characteristic of swamps. The stream channel has a bankfull width of 10 feet and bank height of 3 feet. Macroinvertebrates from the Diptera family were observed in leaf pack habitat. Kirbys Creek has USACE quality assessment of 73. There are 10 unnamed tributaries to Kirbys Creek within the project study area. The southern boundary of this stream and wetland system is bounded by relatively steep slopes uncharacteristic of the project study area.

**Reedy Branch** (NCDWQ 25-4-4-3) is located in the eastern portion of the project study area where the northern and southern alternatives around Conway meet the existing US 158. Reedy Branch flows north into Kirbys Creek approximately 1 mile north of the study area. Reedy Branch has a bankfull width of 8 feet and bank height of 3 feet with frequent meanders and stable banks. Several *Elliptio* sp. were observed in the upstream portion of Reedy Branch. The USACE quality assessment of the stream is 79. However, recent timber harvesting on adjacent land upstream of US 158 has the potential to degrade the stream. There are three unnamed tributaries to Reedy Branch in the project study area.

#### 3.5.3.3.2 Ponds

There are 18 surface water bodies or ponds within the project study area comprising 7.3 acres. Fourteen of the ponds are less than 1 acre in size and are generally located within agricultural or residential land either at the beginning of streams or as depressions within uplands. The size of each pond is listed in Table 3-10. Three larger ponds located within the project study area are described as follows.

Pond P2 is part of a series of ponds that were created when sand was removed from these areas. This pond is located northeast of the intersection of Jackson Bypass Road (SR 1311) and SR 1301. Pond P5 was formed as the result of a borrow pit and is located along US 158 at SR 1312 west of Occoneechee Creek. Pond P7 is Boone's Millpond located along US 158 southwest of Jackson.

**Table 3-10: List of Ponds within the Project Study Area**

<b>ID</b>	<b>Surface Area (Acres)</b>	<b>Type/Land Use</b>
P1	0.4	Forested
P2	0.8	Sand Pit
P3	0.3	Residential
P4	0.3	Forested
P5	0.8	Borrow Pit
P6	0.1	Forested
P7	1.3	Millpond
P8	0.6	Residential
P9	0.4	Hog Lagoon
P10	0.1	Residential
P11	0.3	Residential
P12	0.2	Forested
P13	0.1	Forested
P14	0.4	Agricultural
P15	0.1	Forested
P16	0.8	Forested
P17	0.1	Forested
P18	0.1	Agricultural
P19	0.1	Residential

### 3.5.4 Jurisdictional Issues

#### 3.5.4.1 Waters of the United States

"Waters of the United States," or jurisdictional waters, are defined in the Clean Water Act (CWA) (32 USC 1251 et seq) as water bodies including lakes, rivers, streams and wetlands. All jurisdictional waters were identified and delineated within the project study area. ARCADIS and NCDOT met with representatives from the United States Army Corps of Engineers (USACE) and the North Carolina Division of Water Quality (NCDWQ) in May 2006 to determine the jurisdictional status of the streams and wetlands within the project corridors. At the time, a jurisdictional determination could not be issued, as all USACE representatives were instructed to await court case decisions. This has since been resolved.

#### 3.5.4.2 Jurisdictional Wetlands

Wetlands, for the purposes of the CWA, are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically any adapted for life in saturated soil conditions (33 CFR 328.3). Any action that proposes to place fill into these areas falls under the jurisdiction of the USACE under Section 404 of the CWA (33 USC 1344).

One-hundred forty-six (146) jurisdictional wetlands comprising 858.3 acres were delineated during field investigations. A complete list of each wetland, NCDWQ quality rating, acreage,

and USFWS classification is available in the NRTR document. Table 3-11 lists the eleven USFWS wetland types that were identified within the project study area.

**Table 3-11: USFWS Wetland Types Found within the Project Study Area**

<b>USFWS</b>	<b>Description</b>
PEM1F	Palustrine, emergent, nonpersistent, semi-permanently flooded
PFO1/2C	Palustrine, forested, broad-leaved/needle-leaved deciduous, seasonally flooded
PFO1/2F	Palustrine, forested, broad-leaved/needle-leaved deciduous, semi-permanently flooded
PFO1/4A	Palustrine, forested, broad-leaved/needle-leaved evergreen, temporarily flooded
PFO1/4C	Palustrine, forested, broad-leaved/needle-leaved evergreen, seasonally flooded
PFO1A	Palustrine, forested, broad-leaved deciduous, temporarily flooded
PFO1C	Palustrine, forested, broad-leaved deciduous, seasonally flooded
PFO1F	Palustrine, forested, broad-leaved deciduous, semi-permanently flooded
PFO4A	Palustrine, forested, needle-leaved evergreen, temporarily flooded
PSS1A	Palustrine, scrub shrub, broad-leaved deciduous, temporarily flooded
PUBHh	Palustrine, unconsolidated bottom, permanently flooded, impounded

NCDWQ rates the value of wetlands based on water storage, bank/shoreline stabilization, pollutant removal, wildlife habitat, aquatic life value, and recreation/education opportunities. Each wetland was given a numerical rating on a 0-100 scale with an associated rating of high (100-66), medium (65-33), or low (32-0). Table 3-12 summarizes the amount of high, medium, and low quality wetlands within the project study area. Specific wetland site information can be found in Appendix E.

**Table 3-12: Summary of Wetland Quality within the Project Study Area**

<b>Rating</b>	<b>Wetland Sites</b>	<b>Acres</b>
High	39	463
Medium	58	171
Low	49	226
Total	146	860

3.5.4.2.1 Isolated Wetlands

Isolated wetlands are "Waters of the United States" that have been determined by the USACE to meet the functions of a wetland but are not used for interstate commerce or are not connected to a navigable water body. Isolated wetlands are regulated by NCDWQ and Section 401 regulations, but are not regulated by the USACE and Section 404 regulations. Five isolated wetlands are located within the project study area.

**Table 3-13: Isolated Wetlands within the Project Study Area**

<b>ID Number</b>	<b>DWQ Rating</b>	<b>DWQ Quality</b>	<b>USFWS</b>	<b>Acres</b>
WB43	6	Low	PFO1/2F	0.1
WA08	25	Low	PEM2H	0.7
WA09	11	Low	PEM2H	0.3
WB71-Isolated	33	Low	PFO1C	1.1
WB96	14	Low	PFO1/2F	0.2

WB43 is a depressional wetland within a planted pine forest and is surrounded by upland. Precipitation is the hydrologic input to the wetland and groundwater is the output. This community is dominated by a sparse canopy of red maple, sweet gum, and black gum trees with a dense herbaceous layer of soft rush and wool grass. This wetland was delineated in January 2006 and soil was saturated within 1 inch of the surface.

WA08 and WA09 are old gravel pits located north and south of NC 46 in the western portion of the project study area. These wetlands have a permanent pool of water and support hydrophytic vegetation. The delineation of these wetlands occurred in September 2005 and was verified by the USACE and NCDWQ in May 2006. Aerial photography and USGS show both areas as having surface water. Hydrologic input is precipitation and overland flow from the road and output is through groundwater. These wetlands are located upslope from Arthur's Creek, but no hydrologic connection was found.

WB71 is a depressional wetland located 300 feet west of a riverine wetland system. It was delineated in May 2006 and verified by the USACE and NCDWQ several weeks later. A scrub-shrub vegetative community exists due to disturbance in the last 5 years. The dominate trees include sweet gum, black gum, red maple, and water oak. There was a low diversity of herbaceous vegetation consisting mainly of wool grass and giant cane. The past disturbance has left tire ruts 1 to 2 feet deep. The source of water to the wetland is precipitation and overland flow with groundwater as the outlet.

WB96 is a depressional wetland located within a planted sweet gum plantation. Therefore, the canopy is made of sweet gum trees planted in bedded rows 10 feet apart. Intermixed with the sweet gum are red maple, loblolly pine, soft rush, wool grass, and poison-ivy vines. This wetland was delineated in May 2006 and had surface water of 1 to 3 inches throughout the wetland, oxidized root channels, and water stained leaves.

#### 3.5.4.2.2 Manmade Linear Wetlands

Manmade linear wetlands meet the same criteria as jurisdictional wetlands. Section 404 and 401 permits are required for impacts to these wetlands, but often mitigation is not required. Four linear manmade wetlands were identified within the project study area. These wetlands are connected to jurisdictional wetlands but extend into adjacent uplands as ditches within agricultural fields. These wetlands are identified as WB97, WB63, and WA 28 (see Appendix E). The USACE Wetland Data Forms and NCDWQ Wetland Rating Forms for these wetlands are located in the NRTR.

### 3.5.4.3 Jurisdictional Streams

The NCDWQ is the principal administrative agency of Section 401 of the Clean Water Act in North Carolina. NCDWQ has created definitions for the identification of jurisdictional streams (NCDWQ 2005a). A perennial stream has a clearly defined channel that contains water year-round during a year of normal rainfall with the aquatic bed located below the water table for most of the year (15A NCAC 02B .0233[2][i]). An intermittent stream has a well-defined channel that contains water for only part of the year, typically during the winter and spring when the aquatic bed is below the water table (15 A NCAC 02B .0233[2][g]).

### 3.5.4.4 Biological Data

Benthic macroinvertebrate sampling within the NCDWQ Subbasin 03-02-08 consists of seven sites. One monitoring station is located on the Roanoke River at Halifax, approximately 8 miles downstream of the project study area. This site was not sampled in 2005 due to high flow conditions, but received a rating of Good in 1999. Another sampling point is located on Occoneechee Creek approximately 3 miles downstream of the project study area. Occoneechee Creek is a swampy stream and was rated as Natural with a total taxa richness of 22 and Ephemeroptera, Plecoptera, Trichoptera (EPT) taxa richness of 4. Swampy streams are characterized by low velocities, lower dissolved oxygen, lower pH, and sometimes complex braided channels.

Benthic macroinvertebrate sampling within the NCDWQ Subbasin 03-01-02 consists of five sites, with two of these sites downstream of the project study area. One sampling point is located on Kirbys Creek at SR 1362 and is approximately 3 miles downstream of the project study area. Another monitoring station is located on Potecasi Creek at SR 1504 near Creeksville and is approximately 2.5 miles downstream of the project study area. Kirbys Creek is a swamp stream benthic reference site. This stream rated Moderate in 2005 after rating Natural in 1997 and 2000. The decline is due to a lower habitat score and a decrease in the number of EPT taxa; however, it continues to support a healthy and pollution intolerant aquatic community. The Potecasi Creek monitoring station is approximately 2.5 miles downstream from the confluence of Wiccacanee Swamp and Ramsey Creek. This stream site rated Moderate in 2005. This site had the second highest habitat score in the Chowan basin, but only one EPT species was collected.

Fish tissue surveys consisting of two sites on the Roanoke River, in NCDWQ subbasin 03-02-08, were conducted through 1999. One of these sites was located approximately 2 miles south of the project study area, near the town of Weldon. These surveys were conducted as part of special mercury contamination assessments in the eastern part of the state and during routine basinwide assessments. Six bowfin samples from the site near Weldon had mercury concentrations greater than the EPA screening value; however, metal concentrations in 21 samples of other fish species were less than federal and state thresholds for fish consumption.

There are no fish community sampling sites in NCDWQ subbasin 03-02-08. The North Carolina Wildlife Resource Commission (NCWRC) has designated the Roanoke River from the Roanoke River Dam to US 258 as a Primary Nursery Area (PNA) (15 NCAC IOC .0503). This 35-mile reach of the river has been designated as the spawning reach for the striped bass (*Marone saxatilis*).

3.5.4.5 Protected Species

3.5.4.5.1 Federally Threatened and Endangered Species

Some populations of fauna and flora have declined, or are in the process of declining due to either natural forces or their inability to coexist with humans. Federal law (under the provisions of Section 7 of the Endangered Species Act of 1973, as amended [ESA]) requires that any action likely to adversely affect a species classified as federally protected is subject to review by the USFWS. Other species may receive additional protection under state laws. As of September 2010, the USFWS had identified two species that could potentially occur in Northampton County. These include one endangered species, the red-cockaded woodpecker (*Picoides borealis*), and one species that was considered threatened but has since been delisted, the bald eagle (*Haliaeetus leucocephalus*). As of August 8, 2007, the bald eagle was removed from the Endangered Species Act list. However, this raptor will still be protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA).

**Table 3-14: Threatened and Endangered Species Known for Northampton County**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat Requirements</b>	<b>Habitat Available</b>
<i>Haliaeetus leucocephalus</i>	Bald Eagle	P	E	Mature trees near open water	Yes
<i>Picoides borealis</i>	Red-cockaded Woodpecker	E	E	Open, old growth stands of pine	Yes

P – Protected  
E – Endangered

3.5.4.6 Essential Fish Habitat

Essential fish habitat is defined by the National Oceanic Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (NMFS 1999). A draft list of counties in North Carolina containing EFH as well as a draft list of water bodies within the listed counties has been produced by the Beaufort, North Carolina, office of the NMFS. Northampton County is not included on the draft list; therefore this project is not anticipated to impact EFH.

3.5.4.7 NPDES Discharges

Point source dischargers located throughout North Carolina are regulated through the National Pollutant Discharge Elimination System (NPDES) program. Dischargers are required by law to register for a permit. There are 10 permitted NPDES dischargers in DWQ Subbasin 03-02-08 (NCDENR 2006). None of the permitted NPDES dischargers are within a half-mile of the project study area. Information concerning the dischargers in this subbasin is included in Table 3-15. There are no NPDES facilities in the 03-01-02 subbasin (NCDENR 2006).

**Table 3-15: NPDES Dischargers within Subbasin 03-02-08 Northampton County**

<b>NPDES Permit #</b>	<b>Facility</b>	<b>Permit Type</b>	<b>Water Body</b>
NC0025721	Town of Weldon WWTP	Major, Municipal	Roanoke River
NC0024201	Roanoke Rapids, WWTP	Major, Municipal	Chockoytte Creek
NC0025437	Town of Rich Square, WWTP	Minor, Municipal	Bridgers Creek
NC0028835	Perdue Farms, Inc. (Lewiston)	Minor, Industrial & Commercial	Roanoke River
NC0079014	Virginia Electric and Power Company (Rosemary Power Station)	Minor, Industrial & Commercial	Chockoytte Creek
NC0066192	Town of Halifax WWTP	Minor, Municipal	Quankey Creek
NC0038636	Halifax County (Bakers Elementary School WWTP)	Minor, 100% Domestic	UT Kehukee Swamp
NC0027642	NCDOC-Odom Correctional Facility WWTP	Minor, 100% Domestic	Roanoke River
NC0027626	NCDOC-Caledonia Correctional WWTP	Minor, Industrial & Commercial	Roanoke River
NC0000752	International Paper Company (Roanoke Rapids Mill)	Major, Industrial & Commercial	Roanoke River

WWTP – Waste Water Treatment Plant

3.5.4.8 No-point Source Discharges

No-point source (NPS) pollution is described as pollution contained in stormwater and snowmelt runoff from agricultural, urban, mined, and other lands. NPS pollution comes from diffuse sources in contrast to point source pollution, which is discharged through a pipe or outlet. Surface water as well as leachate to groundwater can be impacted by NPS pollution. Evidence of NPS dischargers observed within the project study area includes agricultural runoff, runoff from residential lawns, and stormwater runoff from paved parking lots and roads.

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## Chapter 4

### ENVIRONMENTAL CONSEQUENCES

In this SFEIS the environmental consequences are shown only for the Preferred Alternatives (LEDPA) unless any change occurred to the alternative. In this case, only the Jackson Northern Bypass and Jackson Extended Northern Bypass were revised and impacts are reflected for those alternatives. Environmental consequences for other detailed study alternatives are described in the State Draft Environmental Impact Statement published on February 28, 2008.

#### 4.1 DIRECT IMPACTS

##### 4.1.1 Human Environment

##### 4.1.1.1 Community

Social and psychological impacts can result from changes in population, community cohesion, social values, or the quality of life of the residents in the project study area as a result of the proposed project. Overall, the project is expected to have a positive impact on quality of life in Northampton County by providing a safer roadway and a more efficient means to reach and be reached by services.

For the most part, the bypass alternatives will not directly cause or encourage an influx or loss of population, affect the cohesion of the area, or isolate people from one another. Some displacements will occur with all bypass alternatives; however, it does not appear that these displacements will have any community-wide social or psychological effects, as most of the heavily populated areas were avoided.

##### 4.1.1.2 Relocations

Both residential and commercial displacements will result from project implementation (see the Relocation Reports in Appendix D). Approximately 38 residents and 4 businesses will be relocated by the preferred alternative.

NCDOT's policy regarding displacements involves providing assistance to those affected by transportation improvements per the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act. All alternatives under evaluation will result in the displacement of homes and/or businesses. Some residents in the Project Study Area are low-income. If so, and if they are displaced, the Last Resort Housing Program established by the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (PL 91-646) may be used.

The Division of Highways offers a Relocation Assistance Program to help minimize the effects of displacement on families and businesses. The occupants of the affected residences or businesses may qualify for aid under one or more of the NCDOT relocation programs.

It is the policy of the NCDOT to ensure that comparable replacement housing will be available prior to construction of state and federally assisted projects. Furthermore, the North Carolina

Board of Transportation has the following three programs to minimize the inconvenience of relocation:

- Relocation Assistance
- Relocation Moving Payments
- Relocation Replacement Housing Payments or Rent Supplement

The Relocation Assistance Program provides experienced NCDOT staff to assist displacees with information such as availability and prices of homes, apartments, or businesses for sale or rent and financing or other housing programs. The Relocation Moving Payments Program provides for payment of actual moving expenses encountered in relocation. Where displacement will force an owner or tenant to purchase or rent property of higher cost or to lose a favorable financing arrangement (in cases of ownership), the Relocation Replacement Housing Payments or Rent Supplement Program will compensate up to \$22,500 to owners who are eligible and qualify and up to \$5,250 to tenants who are eligible and qualify.

The relocation program for the proposed action will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), and the North Carolina Relocation Assistance Act (GS-133-5 through 133-18). The program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do business. At least one relocation officer is assigned to each highway project for this purpose.

The relocation officer will determine the needs of displaced families, individuals, businesses, non-profit organizations, and farm operations for relocation advisory services without regard to race, color, religion, sex, or national origin. The NCDOT will schedule its work to allow ample time prior to displacement for negotiations and possession of replacement housing that meets decent, safe, and sanitary standards. The displacees are given at least a 90-day written notice after NCDOT purchases the property. Relocation of displaced persons will be offered in areas not generally less desirable in regard to public utilities and commercial facilities. Rent and sale prices of replacement property will be within financial means of the families and individuals displaced, and will be reasonably accessible to their places of employment. The relocation officer will also assist owners of displaced businesses, non-profit organizations, and farm operations in searching for and moving to replacement property.

All tenant and owner residential occupants who may be displaced will receive an explanation regarding all available options, such as (1) purchase of replacement housing, (2) rental of replacement housing, either private or public, or (3) moving existing owner-occupant housing to another site (if possible). The relocation officer will also supply information concerning other state or federal programs offering assistance to displaced persons and will provide other advisory services as needed in order to minimize hardships to displaced persons in adjusting to a new location.

The Moving Expense Payments Program is designed to compensate the displacee for the costs of moving personal property from homes, businesses, non-profit organizations, and farm operations acquired for a highway project. Under the Replacement Program for Owners, NCDOT will participate in reasonable incidental purchase payments for replacement dwellings such as

attorney's fees, surveys, appraisals, and other closing costs and, if applicable, make a payment for any increased interest expenses for replacement dwellings. Reimbursement to owner-occupants for replacement housing payments, increased interest payments, and incidental purchase expenses may not exceed \$22,500 (combined total), except under the Last Resort Housing provision.

A displaced tenant may be eligible to receive a payment, not to exceed \$5,250, to rent a replacement dwelling or to make a down payment, including incidental expenses, on the purchase of a replacement dwelling. The down payment is based upon what the state determines is required when the rent supplement exceeds \$5,250.

It is the policy of the state that no person will be displaced by the NCDOT's state or federally assisted construction projects unless and until comparable replacement housing has been offered or provided for each displacee within a reasonable period of time before displacement. No relocation payment received will be considered as income for the purposes of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under the Social Security Act or any other federal law.

Last Resort Housing is a program used when comparable replacement housing is not available, or when it is unavailable within the displacee's financial means, and the replacement payment exceeds the federal/state legal limitation. The purpose of the program is to allow broad latitudes in methods of implementation by the state so that decent, safe, and sanitary replacement housing can be provided. Last Resort Housing may be used if necessary.

4.1.1.3 Community Facilities & Services

4.1.1.3.1 Schools

No schools would be directly impacted by the LEDPA. School bus routes may experience minor delays during project construction activities.

4.1.1.3.2 Churches

There are several churches within the study corridor. The following churches are located within the study corridor and are likely to be impacted by right of way acquisition. No church relocations are anticipated for the LEDPA.

**Table 4-1: Churches in Project Corridor**

<b>Church</b>	<b>Location</b>	<b>Alternative Segment</b>
Oak Grove Baptist Church	South side of NC 46 near I-95; Garysburg vicinity	A1
Hill Chapel Baptist Church	North side of US 158 between Garysburg and Jackson	E2

#### 4.1.1.3.3 Parks & Recreational Facilities

No official parks or recreational sites will be impacted by the preferred alternative. However, the roadside picnic area, which overlooks a former millpond (that served Boone's Mill), is accessed by a dead-end section of roadway that parallels US 158. The picnic area is within the existing US 158 right of way. Impacts to the site will be minimized as much as possible.

#### 4.1.1.3.4 Police, Fire & Emergency Services

There will be no permanent impacts to area emergency facilities. Careful staging of highway construction activities such as lane closures will insure that emergency vehicles can maintain prompt response times in case of time-critical events. The improvements to the US 158 highway should result in quicker emergency response times.

#### 4.1.1.4 Environmental Justice

According to Transportation and Environmental Justice, one of the three fundamental environmental justice principles is, "to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations." Overall, the study area includes a high percentage of low-income and minority populations.

An Environmental Justice Technical Memorandum was completed for the Town of Garysburg dated October 8, 2010. Detailed information concerning this investigation is on file at the North Carolina Department of Transportation:

Results of the study found that according to the 2000 Census, 60.9% of Northampton County's population was minority while the town of Garysburg's population was 97.6% minority. As for low income, 15.3% of Northampton County and 21.7% of Garysburg households were considered below poverty level. Garysburg constitutes an environmental justice community based on race. Due to current economic conditions, a July 2010 unemployment rate of 11.5%, it may also be by low income status.

The Southern Bypass Alternatives would have low to moderate community impacts. Community concerns were expressed about impacts to Sanfilippo & Son, both to the property itself as well to access to it. The proposed grade separation over the Northern railroad tracks would impact both a church cemetery and a manufactured home neighborhood through additional noise and visual intrusion.

Impacts associated with the Southern Bypass Alternatives, to minority and low income populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the project are anticipated to be equitably distributed throughout the community.

This assessment has found no evidence or indication of discrimination on the basis of race, color, natural origin, age, sex, or disability. The proposed project is being implemented in accordance with Executive Order 12898.

#### 4.1.1.5 Economic

Overall, the improved roadway may have an impact on economic development in the county and benefit employers in neighboring counties, such as Nucor in Hertford County. A good transportation network is often criterion for new industries to locate in an area. An improved roadway will also facilitate commutes to and from work locations. The widening of existing US 158 may have an effect on viability of existing and future businesses by controlling access to the roadway. Displacements, especially in the downtown areas will likely have a substantial impact on the tax bases in Jackson and Conway. Because municipal residents pay county property taxes, these displacements will alter Northampton County's tax base as well. New alignments will remove more land from property tax rolls. It is assumed that land values for agricultural land are lower than commercial property in downtown areas. Changes in individual property values are dependent on proximity to the new roadway. Most of the bypass alternatives may affect existing businesses on US 158 to some degree by removing through traffic. Travel-related businesses such as gas stations and convenience stores will be most affected. A portion of the peanut factory site is located in the southern bypass corridor. The alignment will be shifted as far to the east as possible to minimize impacts to this site.

#### 4.1.2 Land Use and Transportation Planning

##### 4.1.2.1 Land Use Plans and Compatibility

There are no land use plans for much of the study area; however, most of the area is zoned. Outside of the corporate limits, widening the existing roadway is not expected to cause changes in existing land use patterns. Construction of any of the bypass alternatives will open new land for development, most of which is currently zoned for agricultural uses. However, access controls paired with zoning regulations will direct development. Displacements, especially in towns, will not only result in alterations to existing land use but may also alter future land use patterns in the towns.

All of the bypass alternatives will impact farms including cultivated fields and farm buildings. Some of these alternatives also bisect farm roads, potentially impacting farming operations.

##### 4.1.2.2 Transportation Plans

###### Compatibility with Highway Plans

Garysburg/ Northampton County: the Garysburg and Northampton County plans endorsed improving existing US 158 from Weldon to Garysburg. This alternative was developed by NCDOT but was then eliminated from consideration due to impacts to the Roanoke River; instead, NC 46 will be improved. The plans endorsed bypassing Garysburg to the south, which is consistent with the preferred alternative selected by the Project Team.

Jackson: the Northampton County plan endorsed utilizing SR 1311 (Old Jackson Bypass Rd) as the new route for US 158. The "Old Jackson Bypass" alternative was developed to address this issue; however, the alternative was eliminated due to high wetland and relocation impacts.

Faison’s Old Tavern and Conway: the Northampton County plan endorsed bypasses of Faison’s Old Tavern and Conway. The LEDPA is consistent with this endorsement.

Compatibility with Transit Plans

No transit plans currently exist for Northampton County.

Compatibility with Bicycle/ Pedestrian Plans

No bicycle or pedestrian plans currently exist for Northampton County and the potential for bicycle and pedestrian traffic in most of the unincorporated study area is low. Due to vehicle speeds and the lack of shoulder along existing US 158, these portions of the roadway are not conducive to either bicyclists or pedestrians. However, in the towns there is opportunity for notable pedestrian activity. Bypass alternatives will take through traffic off local roads, making them more conducive to pedestrian activity.

4.1.3 Physical Environment

4.1.3.1 Noise

Traffic Noise Impacts and Noise Contours. The maximum number of receptors in each project alternative predicted to become impacted by future traffic noise is shown in Table 4-2. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria or by a substantial increase in exterior noise levels.

**Table 4-2: Predicted Traffic Noise Impacts**

<b>Traffic Noise Impacts</b>				
<b>Alternative</b>	<b>Residential</b>	<b>Churches/ Schools</b>	<b>Businesses</b>	<b>Total</b>
Garysburg Southern Bypass 1	8	0	0	8
Northern Jackson Bypass	52	0	0	52
Faison’s Old Tavern Northern Bypass 2	11	0	0	11
Conway Northern Bypass	2	0	0	2
<b>LEDPA Total</b>	<b>73</b>	<b>0</b>	<b>0</b>	<b>73</b>

\*Per TNM<sup>2.5</sup> and in accordance with 23 CFR Part 772

The maximum extent of the 72- and 67-dBA noise level contours, measured from the center of the proposed roadway, is 37 feet and 47 feet, respectively.

“Do Nothing” Alternative. The Traffic Noise Analysis did not consider traffic noise impacts for the “no-build” alternative because this project is largely proposed to occur along new alignments. If the traffic currently using the network of roads in the project area should double within the

next twenty years, research indicates that future noise levels would increase by approximately 3 dBA. Additional research has found that humans barely detect noise level changes of 2-3 dBA, whereas a 5-dBA change is more readily noticeable. Therefore, most people working and living near the roadway will not notice this predicted increase.

Traffic Noise Abatement Measures. Measures for reducing or eliminating the traffic noise impacts were considered for all impacted receptors in each alternative. The primary noise abatement measures evaluated for highway projects include highway alignment changes, traffic system management measures, buffer acquisition and noise barriers. For each of these measures, benefits versus costs, engineering feasibility, effectiveness and practicability, land use issues, and other factors were included in the noise abatement considerations.

Substantially changing the highway alignment to minimize noise impacts is not considered a viable option for this project due to engineering and/or environmental factors. Traffic system management measures are not considered viable for noise abatement due to the negative impact they would have on the capacity and level of service of the proposed roadway. Costs to acquire buffer zones for impacted receptors will exceed the NCDOT abatement threshold of \$35,000 per benefited receptor, causing this abatement measure to be unreasonable.

Noise Barriers. Noise barriers include three basic types: vegetative barriers, earthen berms and noise walls. These structures act to diffract, absorb and reflect highway traffic noise. For this project, the cost of acquiring additional right of way and planting sufficient vegetation is estimated to exceed the NCDOT abatement threshold of \$35,000 per benefited receptor. Also, for this project, earthen berms are not found a viable abatement measure because the additional right of way, materials and construction costs are estimated to exceed the NCDOT abatement threshold of \$35,000 per benefited receptor.

This project will have both partial control of access (on widening segments) and full control of access (on new location segments). For partial control, most commercial establishments and residences will have direct access connections to the proposed project. All intersections will either be at-grade or incorporate interchanges. Businesses, churches and other related establishments require accessibility and high visibility. Noise barriers do not allow uncontrolled access, easy accessibility or high visibility, and would therefore not be acceptable abatement measures for this project.

Based on this preliminary study, remaining receptors (those not taken by right of way) at all interchanges will have a maximum predicted increase of approximately 5 dBA and are predicted to remain well below the impact threshold. Based on the preliminary studies, traffic noise abatement is not recommended and no noise abatement measures are proposed. This evaluation completes the highway traffic noise requirements of Title 23 CFR Part 772. No additional noise analysis will be performed for this project unless warranted by a significant change in the project scope, vehicle capacity or alignment.

In accordance with NCDOT Traffic Noise Abatement Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the Record of Decision. For development

occurring after this date, local governing bodies are responsible to insure that noise compatible designs are utilized along the proposed facility.

#### 4.1.3.2 Air Quality

Mobile Source Air Toxics (MSATs). Recently, concerns for air toxics impacts are more frequent on transportation projects during the NEPA process. Transportation agencies are increasingly expected by the public and other agencies to address MSAT impacts in their environmental documents as the science emerges. Mobile Source Air Toxics (MSATs) analysis is a continuing area of research where, while much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health impacts from MSATs are limited. These limitations impede FHWA's ability to evaluate how mobile source health risks should factor into project-level decision-making under the National Environmental Policy Act (NEPA). Also, EPA has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process. FHWA has several research projects underway to more clearly define potential risks from MSAT emissions associated with transportation projects. While this research is ongoing, FHWA requires each NEPA document to qualitatively address MSATs and their relationship to the specific highway project through a tiered approach (US DOT, Federal Highway Administration memorandum, "Interim Guidance on Air Toxic Analysis in NEPA Documents", February 3, 2006). The FHWA will continue to monitor the developing research in this emerging field. A qualitative analysis of MSATs for this project is available for review in the project *Air Quality Analysis*, located in the Project File, Century Center Building A, 1000 Birch Ridge Drive, Raleigh.

#### 4.1.3.3 Farmland

Impacts of land acquisition and construction of the proposed project on farming operations and prime and important farmland soils is a concern. In accordance with FPPA, Parts I, II, III and VI of the NRCS-CPA 106 forms (for corridor projects) were completed for all of the alternatives and were then submitted to the NRCS for further analysis and completion of Parts IV and VII.

NRCS has reviewed Parts IV and V of the NRCS CPA-106 form and all alternatives received final point totals of less than 160 points (see Appendix G). Therefore, all alternatives fall below the NRCS minimum criteria rating and will not be evaluated further for farmland impacts. Farmland impacts associated with the LEDPA are shown in Table 4-3.

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**Table 4-3: Farmland Conversion Impacts (for Preferred Alternatives)**

<b>R-2582/84 Farmland Conversion Matrix</b>	<b>Sheet / Column NRCS Form</b>	<b>Impacted Acres</b>	<b>NRCS Evaluation</b>
<b>Garysburg</b>			
Garysburg Southern Bypass 1	1/B	88	Below Threshold
<b>Jackson</b>			
Northern Jackson Bypass	2/C	107	Below Threshold
<b>Faison's Old Tavern</b>			
Faison's Old Tavern Northern Bypass 2	3/D	157	Below Threshold
<b>Conway</b>			
Northern Conway Bypass 2	5/B	165	Below Threshold

No other alternatives other than those already discussed in this document will be considered without a re-evaluation of the project's potential impacts upon farmland.

4.1.3.3.1 Farmland Access

Access to farmland may be affected by the full control of access required for sections of new location roadway. Alternative methods of access such as bridging and access roads will be evaluated for each potential site. NCDOT will continue to work closely with landowners and local officials to minimize these impacts. If no feasible access can be provided property remnants will be acquired by the NCDOT.

4.1.3.4 Visual

Visual impacts can affect a community from both the view of the road and the view from the road. The view of the road by residents contributes to the feeling of community pride and value. The view from the road is the user's perspective and leaves an impression of the community on the driver as well as the residents. The overall character of the study area will be affected as the existing two-lane section changes to a four-lane, median-divided facility. The most significant visual changes will result where displacements occur.

Boone's Mill is an important local historical site. The scenic area offers picnic opportunities for travelers and residents. There are several former plantations and later farms along the roadway that are either listed in the National Register or are eligible. The Francis Parker House in eastern Northampton County sits close to the roadway.

The view of the road will be altered as residences and businesses become closer to the roadway.

4.1.3.5 Hazardous Materials

Table 4-4 lists the 6 UST sites and the anticipated impact on the project.

**Table 4-4: Known and Potential GeoEnvironmental Impact Sites**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>	<b>Segment</b>
New Dixie Oil 517 I-95 Exit 176 & NC 46 Gaston, NC 27832	New Dixie Oil Corp.	New Dixie Oil Corp.	0-022615	A1
<b>This site will have a low impact to this project.</b>				
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>	<b>Segment</b>
Former Truck Stop of America I-95 Exit 176 & NC 46 Gaston, NC 27832	Rena Development LLC	Rena Development LLC	N/A	A1
<b>This site will have a negligible impact to this project.</b>				
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>	<b>Segment</b>
M.C. Dunlow Farm Supply 8026 NC 46 Gaston, NC 27832	Viola Dunlow	Viola Dunlow	N/A	A1
<b>This site will have a low impact to this project.</b>				
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>	<b>Segment</b>
Former store & gas station 999 US 158 Garysburg, NC 27831	Jessica Karnbach	Jessica Karnbach	N/A	C1
<b>This site will have a low impact to this project.</b>				
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>	<b>Segment</b>
Davis Store 1859 US 158 Garysburg, NC 27831	Janet Davis c/o Teddie Boone	Janet Davis c/o Teddie Boone	N/A	C1
<b>This site will have a low impact to this project.</b>				
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>	<b>Segment</b>
Ray's Place 6530 US 158 Jackson, NC 27845	Joseph & Annie Epps	Joseph & Annie Epps	N/A	F2
<b>This site will have a low impact to this project.</b>				

4.1.3.6 Floodplain/Floodway

It is anticipated that this project will involve several locations requiring approval of a Conditional Letter of Map Revision for a floodway revision. After completion of the project, a final Letter of Map Revision will also need to be approved. The NCDOT's Hydraulics Unit will coordinate with local authorities and the Federal Emergency Management Agency (FEMA) in

the final design phase of the project and following construction, upon acceptance by NCDOT, to ensure compliance with applicable floodplain management ordinances.

4.1.3.7 Protected Land

4.1.3.7.1 Wild and Scenic Rivers

Under provisions of the Wild and Scenic Rivers Act, if a federal action compromises the designation of a Wild and Scenic River or forecloses the possibility of future designation, the implementation of the federal action must be coordinated with the US Department of the Interior (DOI).

There are no Wild and Scenic Rivers within the project, therefore the Wild and Scenic Rivers Act does not apply.

4.1.3.7.2 State/National Forests

The proposed project will not impact any State or National Forests.

4.1.3.7.3 Gamelands and Wildlife Refuges

The proposed project will not impact any state gamelands, or wildlife refuges.

4.1.4 Cultural Resources

4.1.4.1 Historic Architectural Resources

NCDOT, in consultation with the Army Corp of Engineers and North Carolina State Historic Preservation Office (HPO), on September 28, 2010 determined that the LEDPA, as discussed in section 2.8.2, will have an adverse effect to four historic properties and no adverse effect to four historic properties. The extent and details of the impacts are noted in Table 4-5. A copy of the final concurrence form for effects can be found in Appendix C.

**Table 4-5: Historic Architectural Resources (for Preferred Alternatives)**

Name	Status	Alt. Segment Location	Map	Effects
Francis Parker House	NR	H1	Figure 2t	Adverse effect
J. R. Martin Farm	DOE	G6	Figure 2r & 2s	Adverse effect
Henry Stephenson House	DOE	C1	Figure 2d	Adverse effect
Mowfield	NR	E2	Figure 2f & 2g	No adverse effect
Longview	DOE	C1	Figure 2e	No adverse effect
Peebles House (Holly Lodge)	DOE	E3 Rev.	Figure 2i	No adverse effect
Jackson Historic District	NR	E3 Rev.	Figure 2i	No adverse effect
Oak Grove Baptist Church	DOE	A1	Figure 2a	Adverse effect

NR = Listed on National Register of Historic Places

DOE = Determination of Eligibility

#### 4.1.4.2 Archaeological Resources

Detailed Archaeological Surveys for the LEDPA are currently underway. The survey's findings will be reported to the State Historic Preservation Office (HPO). Any data recovery that is needed will be coordinated with the State Historic Preservation Office and documented in the State Record of Decision (ROD) for this project.

#### 4.1.5 Natural Environment

##### 4.1.5.1 Biotic Community and Wildlife

##### 4.1.5.1.1 Terrestrial Community and Wildlife

Temporary fluctuations in the populations of animal species that utilize the communities within the project study area are anticipated during the course of construction. Slow-moving, burrowing, and/or subterranean organisms will be directly impacted by construction activities, while more mobile organisms will be displaced to adjacent communities. Most species that may be temporarily displaced would be expected to re-colonize the area quickly once construction is complete.

Impacts to terrestrial plants and wildlife due to road construction may involve changes in microclimate, modified hydrologic regimes, soil compaction, habitat fragmentation, and increased road mortality. Changes in microclimate (moisture regimes, wind access, and available light) and microhabitat (wetlands and seeps) can negatively affect animals, such as salamanders, that rely on small pockets of these resources. Changes in microclimate can also affect the assemblage of plant life. For example, species that are shade intolerant will likely out-compete shade tolerant species in areas adjacent to the road. Cut and fill activities associated with construction can modify hydrologic regimes. Crossings of streams and wetlands can also change hydrologic patterns of these habitats, affecting the animals and plants that live there.

Construction of a new road corridor would involve impacts to areas that road construction on existing alignment would not. Soil within the new road corridor would likely become compacted, reducing its ability to transport water. This change in the physical properties of the soil would alter the habitat for slow-moving, burrowing, and/or subterranean species such as woodchucks and moles.

The majority of the land within the project study area has already been fragmented by roads, residential and commercial development, and agricultural practices. However, several large tracks of land within the project study area may be further fragmented as a result of construction of a new road corridor. Habitat fragmentation divides ecological units and increases wildlife competition, mortality, and avoidance behavior, which could potentially lower wildlife diversity.

Road mortality for animals could also increase as a result of construction of a new road corridor. Many animals such as Virginia opossum, raccoon, and gray fox are generalists and are attracted to the artificially created edge habitats associated with roads and other types of development. Several bird species are also attracted to this edge habitat. While these animals might benefit

from the additional habitat created by the new road corridor they would also be subject to mortality due to passing vehicles.

#### 4.1.5.1.2 Aquatic Community and Wildlife

Cut and fill activities associated with road construction will impact soils due to removal, relocation, and compaction. The primary sources of water quality degradation in rural areas are agricultural operations and construction. Aquatic organisms are very sensitive to discharges and inputs resulting from construction. Precautions should be taken to minimize impacts to water resources in the project study area during construction. Appropriate measures must be taken to avoid spilling construction materials and chemicals and to control runoff.

Potential impacts to aquatic resources associated with construction of the proposed project include increased sedimentation, scouring of the streambed, soil compaction, and loss of shading due to vegetation removal. Increased sedimentation from lateral flows is also expected. Measures to minimize these potential impacts include the formulation of an erosion and sedimentation control plan, provisions for waste materials and storage, stormwater management measures, and appropriate road maintenance measures. NCDOT's Best Management Practices (BMPs) for Protection of Surface Waters and Sedimentation Control guidelines should be strictly enforced during the construction stages of the project.

Aquatic organisms are acutely sensitive to changes in their environment, and environmental impacts from construction activities may result in long-term or irreversible effects. Impacts usually associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the substrate and impacts adjacent streamside vegetation. Such disturbances within the substrate lead to increased siltation, which can clog the gills and/or feeding mechanisms of benthic organisms, fish, and amphibian species. Siltation may also cover benthic macroinvertebrates with excessive amounts of sediment that inhibit their ability to obtain oxygen.

The removal of streamside vegetation and placement of fill material during construction enhances erosion and possible sedimentation. Early re-vegetation of these areas helps to reduce the impacts by stabilizing the underlying soils and holding them in place. Erosion may carry soils, toxic compounds, trash, and other materials into the aquatic communities at the construction site. As a result, bars may form at and downstream of the site. Increased light penetration from the removal of streamside vegetation may increase water temperatures. Warmer water contains less oxygen, thus reducing aquatic life that depends on high oxygen concentrations.

An in-stream construction moratorium, to limit the effects on fishery resources, such as the striped bass, will be implemented February 15 through June 30 (as per NMFS, FWS, and WRC). The Roanoke River is listed as a primary nursery area by the NMFS. Although the Roanoke River no longer intersects the project study area, there are unnamed tributaries to the Roanoke River within the project study area.

#### 4.1.5.2 Water Resources

Construction of the proposed project may impact water resources by one or more of the following processes:

- Increased sedimentation and siltation from construction and/or erosion.
- Alteration of water levels and flows due to interruptions and additions to surface and ground water flow from construction.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Changes in water temperature due to vegetation removal.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentration of toxic compounds from highway runoff, construction, and toxic spills, and increased vehicular use.

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion control schedule and use of best management practices. The contractor will be required to follow contract specifications pertaining to erosion control measures (as outlined in 23 CFR 650, Subpart B and Article 107-13) entitled Control of Erosion, Siltation, and Pollution (NCDOT, Specifications for Roads and Structures). These measures are outlined in the following list.

- Use of dikes, berms, silt basins, and other containment measures to control runoff during construction.
- Regular maintenance and inspection of these structures to insure effectiveness.
- Elimination of construction staging areas in floodplains or adjacent to streams and tributaries to help reduce the potential for petroleum contamination or discharges of other hazardous materials into receiving waters.
- Rapid re-seeding of disturbed sites to help alleviate sediment loadings and reduce runoff. Partial mitigation of increased runoff from new highway surfaces by providing grassed road shoulders and limited use of ditching.
- Careful management and use of herbicides, pesticides, de-icing compounds, or other chemical constituents to minimize potential negative impacts on water quality. Roadside maintenance crews are well-versed in the use of these chemicals.
- Avoidance of direct discharges into streams whenever feasible. Filtering runoff effluent through roadside vegetation in order to remove contaminants and to minimize runoff velocities.

##### 4.1.5.2.1 Surface Waters/Jurisdictional Issues

###### 4.1.5.2.1.1 Streams

Of the 84 stream segments identified within the project study area, 37 of these streams comprising 7.2 miles were classified as intermittent and 47 streams comprising 4.5 miles were identified as perennial streams. All impacts to perennial streams typically require compensatory mitigation. Final determination of mitigation requirements for impacts to intermittent streams is

left to the discretion of the USACE and will be determined during the permitting stage of the project. Stream impacts associated with the LEDPA can be found in Table 4-6.

4.1.5.2.1.2 Ponds

Eighteen surface water bodies or ponds were found within the Study area; however, only 8 are within the LEDPA study corridor. The NCDOT will utilize best fit widening to minimize impacts to surface water bodies.

4.1.5.2.1.3 Wetlands

Wetland and stream impacts for all alternatives can be found in Appendix E.

Wetland and stream impacts were calculated for the LEDPA. Wetland impacts are calculated from slope stake to slope stake plus an additional 25’ outside of each limit as determined from the current functional design plans for each alternative studied. Table 4-6 shows the anticipated wetland and stream impacts associated with the LEDPA.

**Table 4-6: Wetland and Stream Impacts for LEDPA**

<b>Segment</b>	<b>Wetland/ Stream Identification</b>	<b>Wetland Impacts (Acres)</b>	<b>Stream Impacts (Feet)</b>	<b>Avoidance &amp; Minimization</b>
A1	SA 01		129	Widening on north side of NC 46 to reduce impacts to Historic Oak Grove Baptist Church
	WA 01	0.4		Widening on north side of NC 46 to reduce impacts to Historic Oak Grove Baptist Church
	WA 03	0.1		None
	SA 02		192	None
	WA 04	0.1		None
	WA 09	0.2		Widening to the south side of NC 46 avoids impacts to WA 08
B2	SA 04		156	None
	WA 07	2.1		None
	SB 02		261	Maintained 90° crossing
	WB 02	0.1		Half-Cloverleaf interchange build on south side of US 158/ US 301 to minimize impacts to WB 02 and WB 03

**Table 4-6: Wetland and Stream Impacts for LEDPA (Cont'd)**

<b>Segment</b>	<b>Wetland/ Stream Identification</b>	<b>Wetland Impacts (Acres)</b>	<b>Stream Impacts (Feet)</b>	<b>Avoidance &amp; Minimization</b>
B3	WB 02	2.3		Half-Cloverleaf interchange build on south side of US 158/ US 301 to minimize impacts to WB 02 and WB 03
	WB 03	1		Half-Cloverleaf interchange build on south side of US 158/ US 301 to minimize impacts to WB 02 and WB 03
	SB 01		1075	None
	WB 04	3.3		None
	WB 06	1.1		New alignment avoids impacts to SB 03
	SB 05		228	Widening on south side of US 158 to minimize impacts to SB 07
	WB 08	0.7		Widening on south side of US 158 to minimize impacts to WB 08 and SB 07
C1	WB 14	0		Widening on south side to avoid impacts to WB 14
	WB 11	1.1		Widening on north side of US 158 to minimize impacts to WB 11
	WB 12	0		Widening on south side of US 158 to minimize impacts to WB 12 and WB 13
	WB 13	0.1		Widening on south side of US 158 to minimize impacts to WB 12 and WB 13
	WB 17	0.1		Widening on south side of US 158 to minimize impacts to WB 17
	WB 18	2.2		None
	SB 11		222	None
E2	WA 20	0.2		Widening on south side of US 158 to minimize impacts to WA 20
	WA 21	0.8		None
	WB 95	0.9		None
	WB 92	1.4		Impacts are due to longer radius of curve to limit impacts to Historic Mowfield Property
	WB 19	0.1		None
	SB 15		196	Additional bridge on south side of US 158 to minimize impacts
	WB 21	0.1		None
	WB 20	0.1		Widening on south side of US 158 to avoid impacts to WB 20 and P 7
	SB 16		1149	None

**Table 4-6: Wetland and Stream Impacts for LEDPA (Cont'd)**

<b>Segment</b>	<b>Wetland/ Stream Identification</b>	<b>Wetland Impacts (Acres)</b>	<b>Stream Impacts (Feet)</b>	<b>Avoidance &amp; Minimization</b>
E3 Rev.	WB 23	1.7		Impacts are due to shift in corridor and alignment to reduce impact to Jackson Historic District
	SB 19		0	Impact avoided by shift in corridor and alignment to reduce impacts to Jackson Historic District
	WB 25-27	0		A 1295-ft bridge will be used to minimize impacts
	WB 94	0.3		Shift to south to minimize impacts
	WA 94	1.1		None
	WA 92	0.2		None
F2	WA 92	1.8		None
	WA 93	0.8		Widening on north side of US 158 to minimize impacts to WA 93
	SA 90		221	None
	SA 25		175	None
	WA 46	0.5		None
	WA 47	0.2		Widening on north side of US 158 to minimize impacts to WA 47
F6	WA 42	1.4		None
	SA 29		238	None
	WA 43	0.3		New alignment is to the south to minimize impacts
	WA 53	1.4		Crossing is approximately 90° and at narrowest point
	SA 30		236	Crossing is approximately 90° to minimize impacts
	WA 54	6.7		None
	SA 35		222	None
	WA 55	0.6		None
	SA 36		345	Half-Cloverleaf Interchange on east side of SR 1344 to reduce impacts
	SA 37		238	Half-Cloverleaf Interchange on east side of SR 1344 to reduce impacts
	WA 56	0.3		None

**Table 4-6: Wetland and Stream Impacts for LEDPA (Cont'd)**

<b>Segment</b>	<b>Wetland/ Stream Identification</b>	<b>Wetland Impacts (Acres)</b>	<b>Stream Impacts (Feet)</b>	<b>Avoidance &amp; Minimization</b>
F10	WA 57	2		New alignment crosses southern portion to minimize impacts
	WA 58	0.7		New alignment crosses southern portion to minimize impacts
	SA 39		217	New alignment crosses southern portion to minimize impacts
	WA 59	4.6		None
	SA 42		32	New alignment crosses southern portion to minimize impacts
	SA 41		272	Crossing is approximately 90° to minimize impacts
	SA 43		242	None
	SA 44		500	None
	SA 45		290	None
	SA 46		283	None
	WA 60	0.1		None
G1	WA 61-62	0.5		Crossing is approximately 90° and at narrowest point
	WA 63	0.9		Crossing located at narrowest point
	WA 65	0.2		New alignment crosses northern portion to minimize impacts
	WA 67	0.1		New alignment is to the south to minimize impacts
	WA 68	2.9		None
	WA 70-72-73	5.4		Crossing shifted to the south
	SA 52		279	None
	SA 50		330	None
	SA 53		308	None

**Table 4-6: Wetland and Stream Impacts for LEDPA (Cont'd)**

<b>Segment</b>	<b>Wetland/ Stream Identification</b>	<b>Wetland Impacts (Acres)</b>	<b>Stream Impacts (Feet)</b>	<b>Avoidance &amp; Minimization</b>
G6	WA 75-76	0.8		New alignment crossing is approximately 90° to minimize impacts
	SA 54		321	New alignment crossing is approximately 90° to minimize impacts
	WA 77 (1-24)	1.3		New alignment crosses southern portion to minimize impact
	WA 77 (25-56)	1		New alignment crosses southern portion to minimize impact
	SA 58		281	None
	SA 56		51	None
	SA 57		43	New alignment crosses southern portion to minimize impact
	SA 60		42	None
	SA 61		113	None
G7	SB 35		181	None
	WB 75	0.1		None
	WB 76	0.1		Widening on southern side of US 158 to minimize impacts to WB 76
	WB 83	0.1		Widening on southern side of US 158 to minimize impacts to WB 83
	SB 64		74	Widening on southern side of US 158 to minimize impacts
	WB 82	0.1		None
H1	WB 84	0.1		Widening on southern side of US 158 to minimize impacts to WB 84 and Historic Francis Parker House
	WB 85	0		None
<b>Total</b>		<b>56.8</b>	<b>9142</b>	

4.1.5.2.2 Bridging

Table 4-7 illustrates the proposed structures for the LEDPA. These include all locations that are deemed major hydraulic crossings and have been agreed upon by the Merger Team at the Concurrence Point 2A meeting, (see section 6.1.1 for explanation of the Merger Process/Terms). Proposed structures for all detail study alternatives can be found in Appendix E.

**Table 4-7: Proposed Bridges/Drainage Structures**

Segment	Wetland/Stream System	Existing Structure	Proposed Structure
A1	WA 03/ WA 06/ SA 02	Triple 9-ft x 9-ft RCBC	Retain and extend as needed
B3	WB 06/ SB 03	Not applicable	Single 6-ft x 5-ft RCBC
B1/B3	WB 09/ SB 05	Triple 8-ft x 6-ft RCBC	Retain and extend as needed
C1	WB 17/ WB 18/ SB 11	Triple 8-ft x 9-ft RCBC	Retain and extend as needed
E2	UT to Gumberry Swamp	2 @ 46-in x 31-in CSPA	Single 8-ft x 5-ft RCBC
E2	WB 20/ WB 21/ SB 15	120-ft bridge	Add parallel 120-ft bridge to the south
E3	WB 25/ WB 27	Not applicable	1295-ft bridge
F2	WA 46/ WA 47/ SA 25	Single 54-in CMP	Double 6-ft x 5-ft RCBC
G1	WA 63/ SA 48	Not applicable	Single 6-ft x 6-ft RCBC
G1	WA 70/ WA 72/ WA 73/ SA 51/ SA 52	Not applicable	Double 6-ft x 6-ft RCBC or 975-ft bridge
G7	WB 76/ SB 35	Single 10-ft x 6-ft RCBC	Retain and extend as needed

\* CMP – Corrugated Metal Pipe

\* CSPA – Corrugated Steel Pipe Arch

\* RCBC – Reinforced Concrete Box Culvert

4.1.5.2.3 Permit Issues

This section discusses the necessary permits or certifications that would be required for project construction as well as methods to avoid, minimize, or compensate for those impacts.

4.1.5.2.3.1 Permit Requirements

Section 404 of the CWA requires regulation of discharges into Waters of the United States. The United States Environmental Protection Agency (USEPA) is the principal administrative agency of the CWA; however, the USACE has the responsibility for implementation, permitting, and enforcement of the provisions of the CWA covering discharges of fill materials (33 CFR 320-330). An Individual Permit would likely be required based on the potential that cumulative loss of stream channel and wetlands would be greater than the current thresholds for Nationwide Permits.

Any action that may result in a discharge into Waters of the United States within North Carolina requires a water quality certification from NCDWQ. An Individual 401 Water Quality Certification will be necessary for impacts before an Individual 404 Permit can be obtained. The USACE does not have jurisdiction over isolated wetlands. Therefore, an Isolated Wetland Permit will be required from NCDWQ if an alternative impacts any of the isolated wetlands. NCDOT will coordinate with the USACE and NCDWQ after the completion of final design to obtain the necessary permits required by Sections 404 and 401 of the CWA.

#### 4.1.5.2.3.2 Mitigation

The USACE has adopted, through the Council on Environmental Quality (CEQ), a mitigation policy that embraces the concepts of "no net loss of wetlands" and sequencing. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Avoidance, minimization, and compensatory mitigation must be considered in sequential order.

**Avoidance** examines all appropriate and practicable possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the USEPA and the USACE, "appropriate and practicable" measures to offset unavoidable impacts should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes.

In the development of alternatives, several wetland areas were avoided by shifting alignments. Impacts to the Roanoke River were avoided by eliminating the "Garysburg – Widen Existing" option between Weldon and Garysburg.

**Minimization** includes the examination of appropriate and practicable steps to reduce the adverse impacts to waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, right-of-way widths, fill slopes, and/or road shoulder widths. The following other methods will minimize adverse impacts to water resources.

- Strict enforcement of BMPs to control sedimentation during project construction
- Bridge high quality, linear wetland systems
- Minimize clearing and grubbing activity
- Decrease or eliminate discharges into streams
- Re-establish vegetation on exposed areas
- Minimize in-stream activity

Project specific avoidance and minimization efforts, as concurred upon by the Section 404/NEPA Merger Project Team can be found in Appendix F.

**Compensatory mitigation** is not normally considered until anticipated impacts to waters of the United States have been avoided or minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been completed. Compensatory actions often include restoration, creation, and enhancement of Waters of the United States. Such action should be undertaken in areas adjacent to the discharge site when feasible.

Opportunities for on-site mitigation were investigated within the project vicinity. Soil survey data (Shaffer 1994) and aerial photography were used to determine specific sites for field investigation. Field investigations resulted in a surprisingly low potential for on-site mitigation. Many of the streams that are mapped within agricultural fields, pastures, and cutovers are intermittent or ephemeral channels. The majority of perennial streams within the project study area exist in mature bottomland hardwood systems or other areas that are already forested. Vegetation surrounding the perennial streams protects the banks and creates a fairly stable stream system in most cases. There are also very few areas mapped as hydric A soils that are not currently forested, and in most cases considered existing wetlands.

There are four potential on-site mitigation opportunities, consisting of riverine wetland mitigation along with small amounts of stream mitigation, adjacent to the project study area.

The first opportunity exists along the headwaters of Wildcat Swamp. This area is located east of US 158 south of its intersection with Wildcat Swamp (SA25). The land is currently in active cattle pasture. An unnamed tributary, which starts as the discharge from Pond P8, was dry during site visits in May 2006 and determined to be an ephemeral channel. Therefore, stream mitigation is not an option at this site. However, the soils surrounding the unnamed tributary are mapped as Hydric B soils. There are two existing ponds along the tributary, one near its headwaters (P8) and one just before its confluence with Wildcat Swamp (outside the project study area). Cattle have unrestricted access to both ponds as well as to the ephemeral channel that connects them. Low to moderate potential for approximately 2 to 3 acres of headwater wetland restoration/creation exists along this tributary. The cattle need to be restricted from this drainage feature. The ponds and the land surrounding them could be drained, graded, and planted with native vegetation to reestablish what appears to have once been a headwater wetland system draining into Wildcat Swamp. The ephemeral channel that connects the two ponds could also be planted and possibly graded into a wetland swale.

Another on-site mitigation opportunity exists along an unnamed tributary to Gumberry Swamp. This site is located just south of SR 1311 (Jackson Bypass Road) approximately 0.5 mile east of its intersection with Gumberry Swamp. This tributary begins in the project study area, in an agricultural field, as a linear manmade wetland (WA28). Approximately 500 feet south of the project study area, this manmade wetland transitions into a channelized stream. The stream flows into a large beaver swamp, which eventually drains into Gumberry Swamp. The stream was determined to be perennial at the time of the site visit in May 2006. There was water in the channel, persistent bed and banks, low to moderate flow, and a relic floodplain.

The stream has been straightened and ditched in the past and lost connection to its floodplain. The stream is incised, with high banks at its headwaters but its bank height decreases as it reaches its confluence with the beaver swamp. The soils surrounding this tributary are mapped as Hydric B soils and there appears to be existing wetlands in the relic floodplain on the north side of the stream. Moderate potential for approximately 2 acres of wetland enhancement, restoration, and/or creation along with 300 to 400 linear feet of stream restoration exists at this site. The linear manmade wetland could be graded and planted with native vegetation to establish a natural headwater wetland. The stream could be restored by reconnecting it to its floodplain and establishing proper dimension, pattern, and profile. The land adjacent to the stream could be graded and planted with native vegetation to restore, create, and/or enhance riverine wetlands.

A third on-site mitigation opportunity exists along an unnamed tributary to Lily Pond Creek (SB24). This site is located just west of the town of Jackson. The tributary flows north to south through agricultural fields, under US 158, and continues through agricultural fields out of the project study area to the south. This tributary has been straightened and ditched and has lost connection to its floodplain. There is a very narrow strip of vegetation along each side of the stream, but the channel is incised and shows moderate amounts of erosion. The stream was determined to be ephemeral upstream of US 158 and intermittent downstream of US 158 at the time of the site visit in May 2006. Although there was standing water in most of the intermittent portion of the stream, there were areas of dry streambed. The soils surrounding the tributary are mapped as Hydric A and B soils. The relic floodplain on each side of the stream is in agricultural production and the stream is draining approximately 300 acres of agricultural land. Northampton County was suffering from a drought at the time of the site visit. This stream should be re-evaluated under normal rainfall conditions to determine its status as intermittent versus perennial downstream of US 158. If this stream were determined to be perennial under normal circumstances, there is potential for approximately 4,000 linear feet of stream and several acres of riverine wetland restoration at this site. Since the stream is classified as intermittent, this site is not eligible for stream mitigation.

Possibly the best opportunity for on-site mitigation exists at a site approximately 0.25 miles north of the intersection of Ramsey Creek and US 158 just east of the town of Jackson. The floodplain of Ramsey Creek at this location was flagged as an existing wetland (WB54-55). The land north of this wetland is currently in active cattle pasture west of US 158 and has a commercial plant nursery to the east of US 158. Hydric A soils are mapped within the existing wetland (WB54-55) and on the land to the north of this wetland. According to the Northampton County NRCS (05-09-06), the land that is currently in active cattle pasture is mapped as prior converted agricultural land. At the time of the site visit, in May 2006, the cattle pasture adjacent to the wetland had standing water in several places and contained hydric soil indicators. The dominant vegetation within this portion of the cattle pasture was soft rush and fescue. The plant nursery to the east of US 158 is also mapped as Hydric A soils; however, this area was not checked for hydrology or hydric soil indicators. This site provides an excellent opportunity for approximately 6 acres of wetland enhancement within the cattle pasture and possibly 10 acres of wetland restoration or enhancement within the plant nursery. The cattle pasture could be planted with native vegetation and the wetland (WB54-55) adjacent to the cattle pasture could be used as a reference wetland to restore the cattle pasture and possibly the plant nursery to bottomland hardwood forests.

If sufficient on-site mitigation is not found, impacts will be compensated through offsite mitigation. In accordance with the MOA among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District," July 22, 2003, the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP), will be requested to provide off-site mitigation to satisfy the CWA compensatory mitigation requirements for this project.

#### 4.1.5.2.4 Buffer Areas

The proposed project will not impact any existing buffers.

#### 4.1.5.2.5 Federally Threatened and Endangered Species

##### **Bald Eagle** (*Haliaeetus leucocephalus*)

Federal Status: DELISTED from ESA, Protected under MBTA and BGEPA

State Status: ENDANGERED

Biological Conclusion: **NOT APPLICABLE**

The Roanoke River is the largest body of water providing nesting habitat for bald eagles. There are several small millponds and large beaver swamps that may provide foraging habitat. The gravel pits northwest of Garysburg and the sand pits east of Garysburg are the largest bodies of open water that may provide additional nesting habitat.

Bald eagle surveys were conducted during each field day with special attention given to preferred habitat areas. Field surveys were conducted between September 2005 and May 2006. The western portion of the project study area near Garysburg is within 1 mile of the Roanoke River, which is suitable habitat for this raptor. A review of the NCNHP database of rare species and unique habitats in September 2005 and March 2006 depicted no observations of the bald eagle within or near the project study area.

A single bald eagle was observed in the riparian area of Trouble Field Creek. This area is 1.25 miles northeast of the Roanoke River and 0.5 mile west of the sand pit ponds along SR 1311. No nests were located within or adjacent the project study area. The USFWS (Jordan 2006) and NCWRC (Allen 2006) have no known nests within one mile of the project study area.

##### **Red-cockaded Woodpecker** (*Picoides borealis*)

Federal Status: ENDANGERED

State Status: ENDANGERED

Biological Conclusion: **NO EFFECT**

A review of the NCNHP database of rare species and unique habitats in July of 2007 revealed no observations of the RCW within or near the project study area. The listing for this county is based on a historic record from 1973.

The project was evaluated for the presence of potential nesting and foraging habitat using aerial photography and ground-truthing. Each area of potential habitat was evaluated based on its geographic relationship to the project corridor and connectivity to other areas of suitable habitat. Appropriate habitat was field surveyed.

A total of 24 forested stands were identified as potentially containing suitable foraging or nesting habitat for the RCW. Field surveys revealed that the majority of forested stands either lacked a dominant pine component, were not connected to stands containing necessary foraging and/or nesting habitat, or were too young to be considered suitable habitat. No active cavity trees were found during field surveys, nor were any individual red-cockaded woodpeckers observed. A single mature loblolly pine was observed to contain multiple cavity excavations. However, evening and morning monitoring of this tree did not reveal active use by the RCW or any other woodpecker species. The cavities in this tree showed evidence of disturbance from other species and were not symmetrical as would be expected in an RCW cavity that was still active. Additionally, there were no cavities that had active resin flows around the entrance. It is possible that this tree contains relict RCW cavities. This evidence is supported by the fact that a single Long leaf pine remains in close proximity. RCW activity in this area, if it ever existed, appears to be historic. No evidence of current RCW activity was found at any of the stand locations. Therefore, this project will not affect the RCW.

#### 4.1.5.2.6 Essential Fish Habitat

The proposed project will have no impact on essential fish habitat.

#### 4.1.6 Construction

Impacts during construction of this project are expected to be similar to those associated with any major roadway construction. The temporary increase in noise and air pollution, erosion, utility disruptions, traffic maintenance, visual and safety considerations must be examined during design and construction. The plans and specifications for the project will be developed to minimize these and other impacts.

Prior to right-of-way acquisition, there will be a design public meeting and/or hearing for the LEDPA to address details of the project and potential impacts from construction. A preconstruction conference also will be held involving the contractor, local officials, public utility officials and the Division of Highways. This preconstruction conference will address construction procedures and precautionary measures to also take place prior to construction, to allow ample time for relocation of any affected geodetic markers.

Potential construction impacts are summarized below.

#### 4.1.6.1 Air Quality

Adverse construction impacts to air quality may include air pollutant emissions from construction equipment exhaust; fugitive dust emissions from clearing, demolition, grading and other construction activities; open burning for the disposal of construction debris; and particulate matter emitted from hot asphalt plants providing materials for construction.

Vehicular activity associated with construction operations is not expected to represent an air quality problem, except for temporary fugitive dust emissions.

Fugitive dust emissions can be mitigated by minimizing the area of exposed earth material; providing temporary and permanent seeding and landscaping as early as possible; providing coverage for hauled and stockpiled materials; and applying water to stabilized exposed earth and haul areas. The NCDOT Standard Specifications for Road and Structures, Section 107, Legal Relations and Responsibility to Public, requires that the contractor control dust within the project area and all other areas affected by the construction of the project (i.e., unpaved roads, haul roads, disposal and borrow sites, etc.).

In accordance with Section 200, Clearing and Grubbing, of the NCDOT Standard Specifications for Roads and Structures, when debris is disposed of by burning, all burning shall be done in such a manner as to prevent injury to all property within and outside of the right-of-way. Burning shall be done in compliance with all local, state, and federal laws, ordinances and regulations. All burning shall be under the constant care of competent watchmen. Burning shall be thorough and shall not be permitted to smolder and result in dense smoke.

Particulate matter emitted from hot mix asphalt plants providing materials for construction will be controlled within the limit established by the State Air Pollution Control Board.

#### 4.1.6.2 Water Quality

Soil erosion resulting from roadway grading operations constitutes the major potential impact to water quality. The amount of erosion during construction varies dependent on the size of the disbursed area, roadway vertical grades, roadway cut and fill slopes, and the effectiveness of installed erosion control devices. The effectiveness of the erosion control devices will depend upon the quality of maintaining the devices.

Based upon the presence of wetlands, streams, and other natural habitats within the study area, the entire study area is deemed sensitive to sedimentation impacts. Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion control schedule and the NCDOT Best Management Practices for Protection of Surface Waters, as applicable. The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Standard Specifications for Roads and Structures).

Mitigation measures to control erosion and sedimentation are described in the Federal Aid Policy Guide and the North Carolina Administrative Codes, Chapter 4, Sedimentation Control.

Measures commonly recommended for the construction phase of highway projects include: mulching, sodding, diversion berms, sediment catch basins, and clean-up practices. Construction activities shall be organized in stages to minimize the exposures of cleared areas and erodible earth to the extent possible. Wherever feasible, erosion control measures shall be retained as permanent features in the roadway design.

#### 4.1.6.3 Noise

Construction noise, especially during the grading and structure building phase, is of particular concern. The operation of equipment, such as front-end loaders, bulldozers, graders, scrapers, compressors, and pile drivers, will cause temporary noise impacts during construction.

Although no methods have been established for predicting construction noise impacts, FHWA recommends the following general steps be performed for this type of project:

- Identify land use or activities which may be affected by noise from construction of the project;
- Determine measures which are needed to minimize or eliminate adverse construction noise impacts to the community; and,
- Incorporate the needed noise abatement measures in the construction contract plans and specifications.

Noise sensitive areas near project construction sites may experience increases in noise levels. These increases, however, would be temporary and would not require special mitigation. Table 4-8 indicates the noise levels which can be anticipated during construction for various types of equipment, based on the General Services Administration Standards adopted in 1972. No areas within the study where extreme quiet is necessary will be impacted by construction noise.

Adverse effects from construction noise can be minimized by limiting the permitted times and/or days for operating certain equipment, and by locating temporary construction work areas and material storage areas away from noise sensitive receptors.

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**Table 4-8: Construction Noise Levels**

<b>Type of Equipment</b>	<b>GSA Maximum Allowable Noise Level At 50 Feet (dBA)</b>	<b>Extent Of Noise Impact In Excess Of 70 dBA (Feet)</b>
Front loader	79	150
Backhoe	85	300
Dozer graders, tractor	80	160
Concrete mixer, concrete pump, crane, derrick	82-88	200-400
Pumps	76	100
Generators	78	140
Compressors	81	180
Pile drivers	101	1,865
Jack hammers	88	400
Rock drill	98	1,335
Pneumatic tools	86	335
Saws, vibrations	76-78	100-140
Truck	91	600
Scrapers, pavers	88-89	400-465

SOURCE: General Services Administration Standards, 1972.

#### 4.1.6.4 Biotic Communities

Construction practices such as staging and stockpiling operations could result in the displacement of the resident wildlife population. Both the clearing of habitats and the noise and vibration from construction operations could result in disruption to mobile wildlife species. Sedentary species may be lost. The period of construction activities would be a period of maximum disruption since this would initiate competition between relocates and the resident wildlife populations adjacent to the construction site. Biotic impacts are anticipated to be temporary, however, because staging and stockpiling areas will be abandoned after construction. Ultimately, these areas may provide replacement habitat for some wildlife species.

#### 4.1.6.5 Construction Waste

Waste and construction debris shall be disposed of in areas that are outside of the right-of-way and provided by the contractor, unless otherwise required by the plans or special provisions. Disposal of waste or debris in active public waste or disposal areas will not be permitted.

Standards included in the NCDOT's Standard Specifications require the contractor to exercise every reasonable precaution throughout construction of the project to prevent pollution of rivers, streams, and water impoundments. Pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful wastes will not be discharged into or alongside rivers, streams or impoundments or into natural or man-made channels emptying into such receiving waters.

Renovations of structures containing asbestos material and demolition of both non-asbestos containing structures and asbestos containing structures must be in accordance with NCAC 2D.0525, which requires notifications and removal prior to demolition.

The contractor is required by NCDOT Standard Specifications to provide sanitary facilities for use by his employees during construction of the project. The contractor will be required to observe and comply with all laws, ordinances, regulations, orders and decrees regarding the disposal of solid waste.

#### 4.1.6.6 Traffic Maintenance & Detour Accessibility

The contractor will be required to maintain through and local traffic including all existing roads which cross, intersect or are located within the project limits.

Construction work will be carried out in a manner which would create a minimum amount of inconvenience to traffic, especially emergency service vehicles. Detours will be adequately signed and maintained.

The contractor will be required to provide, erect and maintain barricades, warning lights, danger signals, signs and sufficient flagmen to direct traffic during construction. All necessary precautions will be used to protect the construction workers and the safety of the public.

Two-way traffic should be maintained, if possible, at all times. However, if one-way traffic is required, traffic will be periodically altered by flagmen and/or traffic control devices in order to minimize excessive delays.

Signing, barricades, lighting, traffic control devices, and traffic control operations used in maintaining traffic will be in accordance with the Manual on Uniform Traffic Control Devices for Street and Highways.

#### 4.1.7 Irretrievable and Irreversible Commitment of Resources

The construction of the US 158 project in the proposed corridor will require certain irreversible and irretrievable commitments of resources.

Woodlands, farmland, floodplains and other land taken in right-of-way will be irreversibly committed to transportation use. Loss of businesses, wildlife, farm and forest products associated with these lands will be irretrievable. Construction of the freeway will have an irreversible effect on noise, water and air quality along the corridor.

In addition to natural resources, there are human resources which will be consumed. The labor, energy, and materials committed for construction of the freeway will be irretrievable. A commitment of funds will be necessary for construction and maintenance of the new facility.

The project's irreversible commitment of resources is outweighed by the beneficial commitment to a safer, improved transportation facility. Benefits will consist of improved local accessibility, savings in vehicle operating costs and time, and maintaining and improving the communities' economic growth and well-being of the community.

#### 4.1.8 Relationship Between Short-term Impacts and Long-term Productivity

This section discusses the relationship between those aspects of the human environment that must be used in construction of the project as they may relate to long-term productivity of the area.

The construction phase of the proposed action will cause short-term impacts on the environment. These impacts will include increased noise and air pollution, increased erosion and siltation of streams and ponds, and occasional disruption of utilities and traffic. No long-term impacts are expected from the construction activity.

The proposed action will require displacement of homes and businesses within the proposed right-of-way. However, replacement housing available will be found for the displaced homeowners and tenants within the study area. Many of the businesses will relocate and employment opportunities will be redistributed to new locations. Improved access within the study area will increase land value and stimulate long-term residential and business growth.

Construction of the highway will cause short-term changes and losses to natural resources. Aquatic and terrestrial habitats within the limits of construction will be replaced by the freeway. However, some habitat within the right-of-way could be eventually restored as a result of aquatic and terrestrial productivity and migration.

Land use planning and/or zoning control by local municipal and county officials should ensure development along the proposed freeway that is compatible with the highway environment and existing land use. Long-term land use goals will control growth and development along the roadway and provide a safe and cost-effective transportation facility.

## 4.2 INDIRECT AND CUMULATIVE EFFECTS

As required by the Council of Environmental Quality (CEQ) regulations (CFR Regulations, Title 40, Section 1502.16), a discussion of both the direct and indirect effects of the proposed action must be addressed in this document. Direct effects are those effects that are caused by the action and occur at the same time and place. Direct effects are those effects that are primarily discussed throughout the Environmental Consequences section of this document.

Indirect or secondary effects are those effects, "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Examples of indirect effects may include growth inducing effects and other effects related to induced changes in land use patterns, population density or growth rate, and related effects on air, noise, water and other natural systems, including ecosystems.

A cumulative effect is defined as the "impact on the environment which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Cumulative impacts can result from individually minor actions, but collectively represent a significant impact over a longer period of time.

Indirect and cumulative effects are described in more detail in the Qualitative Indirect and Cumulative Effects (ICE) Assessment dated August 25<sup>th</sup>, 2008.

Overall, the improved roadway will result in mild stimulus for change in land use. The project will result in cross-county travel time savings, but will not serve specific development and will not likely influence intra-regional land development decisions. It may however stimulate some complementary development in the vicinity of new interchanges.

Near the town of Jackson, the project could increase the marketability of the Verona site. This former plantation is being marketed for industrial development, however the market for development in this area is modest. This may also result in increased property values. Although the bypass alternatives will open new land for development, controlled access is proposed. Coupled with zoning regulations, these controls will prevent significant changes in land use. However, given roadway access, the potential for development pressures exists. Land use changes are not expected unless local policy is revised. Increased development may impact water quality. Reduced access to existing businesses may eventually result in lower tax values.

Access to businesses along the existing corridor will be limited, as the divided median facility will restrict turning movements. The resulting cumulative impact may be a loss of business as customers find a more convenient alternative. Immediate changes are not expected, except during the construction phase. The absence of through traffic in the towns is also expected to impact businesses over time. However, businesses that are supported mostly by local customers should not be affected.

The overall character of the study area will be affected as the existing two-lane section changes to a four-lane median-divided facility.

#### 4.2.1 Existing Conditions

- Similar to other rural eastern North Carolina counties, Northampton County has experienced minimal population growth during recent years. Approximately 1,300 people were added to the County between 1990 and 2000 (a 6.2% population growth rate).
- Between 1990 and 2004, employment in Northampton County grew by over 26%, which is a net gain of over 1,000 jobs. Based on available employment sector data, more than 800 jobs were added to the retail trade industry during that time frame, while there was a loss of nearly 500 manufacturing jobs.
- Land throughout the Demographic Area and Northampton County is predominantly undeveloped or utilized for agricultural uses. Most of the residential development is located along Roanoke Rapids Lake, in the extreme northwestern portion of the Growth Impact Study Area (GISA). A number of paper mills, including two International Paper and two Georgia Pacific facilities, generate much of the activity in the area, and contribute to a substantial amount of truck traffic along US 158.
- There are no water supply watersheds within the GISA for this project. The GISA is located in portions of both the Chowan River and Roanoke River basins. These river basins have no buffer regulations.
- A search of DWQ's 2006 Draft 303(d) List reveals that Painter Swamp is an impaired water body within the GISA with an unknown source of impairment. There are also numerous wetlands scattered throughout the GISA and the Roanoke River is considered an anadromous fish spawning area

#### 4.2.2 Potential Indirect and Cumulative Effects

- This project should improve regional access from I-95 in Northampton County eastward to the Town of Murfreesboro. Cumulatively, these improvements with other TIP projects along US 158 could make this region more attractive for industries that rely upon the transportation of goods and services on a regional or national level.
- There may be increased potential for commercial development at various locations, particularly in the vicinity of new interchanges. Residential development may take place along feeder roads because of access to a four-lane highway. Due to the lack of development pressures, this development would likely be limited in scale.
- With the length of the project over 30 miles and a potential 10 mph increase in the speed limit along most sections of the new roadway, the travel time savings from one terminus to the other for most of the alternatives should approach the 10 minute level.

#### 4.2.3 Findings

- Based on an evaluation of GISA development conditions and the identification of human and/or environmental features that could be impacted, the potential for indirect effects associated with TIP R-2582/R-2584 is low.
- Existing land planning, the large amount of rural land, limited availability of utilities outside built-up areas (especially sewer), low population growth, and limited development pressures should minimize the potential for impacts to water quality.

4.2.4 Summary of Environmental Consequences

A summary of impacts for the LEDPA/Preferred alternative is shown in Table 4-9.

**Table 4-9: Summary of Impacts for LEDPA/Preferred Alternative**

Impacted Resource	Preferred Alternative
Segments Included	A1 B2 B3 C1 E2 E3 F2 F6 F10 G1 G6 G7 H1
Length (miles)	34.6
Interchanges	5
Railroad Crossings	3
Schools	1
Recreational Areas and Parks	1
Churches	1
Cemeteries	1
Major Utility Crossings	2
Historic Properties (Adverse Effect/No Adverse Effect)	4/4
Archaeological Sites <sup>(1)</sup>	Unknown
Federally Listed Species within Corridors	0
NRCS-Potential Farmland Conversion	Below Threshold
Residential Relocations	38
Business Relocations	4
Noise Receptors Impacted	73
Wetland Impacts (acres)	56.8
Stream Impacts (feet)	9142
Water Supply Watershed Protected Areas	0
Wildlife Refuges and Game Lands	0
Minority/ Low Income Populations (Adverse & Disproportionate Impacts)	No
Hazardous Material / Landfill Sites	0
Underground Storage Tank Sites	6
Construction Cost	\$240,901,257
Right of Way Cost	\$34,329,750
Mitigation	\$4,480,028
Utilities Cost	\$3,849,956
Total Cost	\$283,560,991

Note 1: Archeological surveys are underway.

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## Chapter 5

### LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATE FINAL ENVIRONMENTAL IMPACT STATEMENT ARE SENT

#### **Federal Agencies**

Environmental Protection Agency  
Department of Commerce  
Department of Agriculture  
Department of the Interior  
Department of Health and Human Services  
Federal Energy Regulatory Commission  
Advisory Council on Historic Preservation  
Soil Conservation Service  
US Army Corps of Engineers  
US Fish and Wildlife Service

#### **State Agencies**

NC Department of Human Resources  
NC Department of Environment and Natural Resources  
NC Department of Cultural Resources  
NC Department of Public Instruction  
State Clearinghouse

#### **Local Governments**

Upper Coastal Plain Council of Governments  
Peanut Belt Rural Planning Organization  
Chairman, Northampton County Board of Commissioners  
Northampton County Manager's Office  
Mayor of Garysburg  
Mayor of Jackson  
Mayor of Conway

#### **Libraries**

Northampton Memorial Library  
Murfreesboro Public Library

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## Chapter 6

### COORDINATION AND PUBLIC INVOLVEMENT

This section provides a summary of the agency coordination and public involvement processes that were carried out as a part of the preparation of this study.

#### 6.1 AGENCY COORDINATION

The following federal, state, and local agencies were consulted during the preparation of this State Final EIS. Written comments were received from agencies noted with an asterisk (\*).

##### Federal Agencies

- \* US Army Corps of Engineers (USACE)
- \* US Environmental Protection Agency (USEPA)
- \* US Fish and Wildlife Service (USFWS)
- \* National Marine Fisheries Service (NMFS)

##### State Agencies

- \* NC Department of Cultural Resources (DCR)
- \* NC Wildlife Resources Commission (WRC)
- \* NC Division of Soil and Water Conservation (DSWC)
- \* NC Division of Forest Resources
- \* NC Division of Water Quality (DWQ)
- \* NC Division of Environmental Health
- \* NC Department of Crime Control & Public Safety (NFIP)
- NC Division of Coastal Management (DCM)
- NC Division of Marine Fisheries (DMF)

##### Local Agencies

- Upper Coastal Plains Council of Governments
- \* Town of Garysburg
- Town of Conway
- \* Town of Jackson
- \* Town of Weldon
- Halifax County Commissioner
- Northampton County Commissioner
- \* Northampton County Schools

6.1.1 Merger Process Team

The Section 404/ NEPA Interagency Merger Process (Merger Process) was developed in 1997 to provide resource agencies with an early opportunity to be involved in major project decisions at key points in the planning process. It was amended in 2001 to include additional coordination points. The amended process includes the following decision points:

- Concurrence Point 1                      Purpose and Need and Study Area Defined
- Concurrence Point 2                      Detailed Study Alternatives Carried Forward
- Concurrence Point 2A                      Bridging Decisions and Alignment Review
- Concurrence Point 3                      LEDPA (Least Environmentally Damaging Practicable Alternative)
- Concurrence Point 4A                      Avoidance and Minimization
- Concurrence Point 4B                      30% Hydraulic Design Review
- Concurrence Point 4C                      Permit Drawing Review

Meetings are held with the resource agencies at these critical junctures to present information to the agencies, to discuss agency concerns relating to that concurrence point, and to ultimately gain agency agreement on the proposals made in regards to that concurrence point. In the current process, agencies all agree to the decisions made by signing a concurrence point form.

The following agencies/organizations have been involved in the Merger Process Team meetings for this project (i.e., the Merger Process Team):

- NC Department of Transportation (Co-chair)
- US Army Corps of Engineers (Co-chair)
- US Fish and Wildlife Service
- US Environmental Protection Agency
- National Marine Fisheries Service
- NC Department of Environment and Natural Resources, Division of Water Quality
- NC Wildlife Resources Commission
- NC Department of Cultural Resources (State Historic Preservation Office)
- Mid-Carolina Rural Planning Organization

The concurrence and precursor meetings held to date are summarized below.

Purpose and Need (Concurrence Point 1): The Merger Team met on February 9, 2000 and reached concurrence on Concurrence Point 1 (Purpose and Need) for the project. The Purpose and Need of the project was defined as:

## R-2582 & R-2584 State Final Environmental Impact Statement

- Improve traffic flow and level of service (LOS) on this section of US 158
- Improve safety along US 158
- Improve access to existing and future industry

### Detailed Study Alternatives (Concurrence Point 2):

March 10, 2005 – The Merger Team met on March 10, 2005 and reached concurrence on Concurrence Point 2 (Detailed Study Alternatives Carried Forward) for the project. The following alternatives were carried forward for detailed study:

#### Garysburg

- Widen on Existing
- Garysburg Northern Bypass
- Garysburg Southern Bypass 1
- Garysburg Southern Bypass 2

#### Jackson

- Old Jackson Bypass
- Extended Northern Jackson Bypass
- Northern Jackson Bypass
- Southern Jackson Bypass

#### Faison's Old Tavern

- Widen on Existing
- Faison's Old Tavern Northern Bypass
- Faison's Old Tavern Southern Bypass
- Faison's Old Tavern Northern Bypass & Conway Northern Bypass

#### Conway

- Northern Conway Bypass
- Southern Conway Bypass 1
- Southern Conway Bypass 2

The team also agreed to eliminate the following alternatives:

- Widen on existing US 158 in Jackson
- Widen on existing US 158 in Conway

August 18, 2005 Meeting – A supplemental Concurrence Point 2 meeting was held. The Merger Team met and concurred with dropping the Garysburg Widen on Existing Alternative. The elimination of this alternative moved the western project limit from the east of Weldon to the intersection of I-95 and NC 46 west of Garysburg. The remaining alternatives from the March 10<sup>th</sup> meeting were carried forward.

June 5 & June 18, 2007 – Merger Team members and NCDOT representatives met in the field on the two dates to view the wetland and stream locations to be discussed at the

Concurrence Point 2A meeting. The sites that were visited during the field meetings were all High Quality Waters with impacts greater than one acre.

Bridging Decisions (Concurrence Point 2A): The Merger Team met on June 19, 2007 and reached concurrence, on bridging options for high quality wetlands and major hydraulic crossings for the project. The team decided not to drop any other alternatives until after the public hearing.

Least Environmentally Damaging Practicable Alternative (LEDPA) (Concurrence Point 3): The Merger Team met on March 26, 2009 to discuss the results of detailed environmental studies completed for each of the alternatives carried forward from the March 10<sup>th</sup> 2005 meeting and the August 18<sup>th</sup> 2005 meeting. As a result of the discussion the Merger Team was able to concur on LEDPA for 3 of the 4 communities. The following alternatives were selected as a part of the LEDPA:

- Garysburg Southern Bypass 1
- Faison's Old Tavern Northern Bypass 2
- Conway Northern Bypass 2

The following Jackson alternatives were also eliminated from further consideration:

- Old Jackson Bypass
- Southern Jackson Bypass

As a result of the meeting, and at the request of the Merger Team, the Northern Jackson Bypass Alternative corridor was shifted north to minimize impacts to the Jackson Historic District. The Extended Northern Jackson Bypass Alternative corridor was also shifted slightly, near its egress from existing US 158, to reduce wetland impacts.

LEDPA / Avoidance and Minimization (Concurrence Point 3 Continued and 4A): The Merger Team met on October 19, 2010 to discuss the results of updated detailed environmental studies completed for each of the remaining Jackson Bypasses. As a result of the discussion the Merger Team was able to concur on a LEDPA for the Jackson Bypass alternatives. The result of the full LEDPA is as follows:

- Garysburg Southern Bypass 1
- Northern Jackson Bypass
- Faison's Old Tavern Northern Bypass 2
- Conway Northern Bypass 2

The Merger Team also discussed Avoidance and Minimization measures to be implemented both project wide and site specific. To allow time to adequately document Avoidance and Minimization measures it was determined that the final concurrence would be completed via email correspondence. Concurrence via email was reached on February 1, 2011.

A copy of the signed concurrence point forms are provided in Appendix F.



ensure that they concur with NCDOT's findings under the Executive Order 12898 on Environmental Justice."

Response: An Environmental Justice Technical Memorandum was completed on October 8, 2010. The findings of the report support an adverse and disproportionate impact to a minority/ low income population for the Garysburg Northern Bypass. A copy of the full Environmental Justice Technical Memorandum can be found in Appendix E.

### Jackson

Comment: "The Southern Jackson Bypass and the Northern Jackson Bypass alternatives have greater residential relocations than either the Old Jackson Bypass or the Northern Extended Jackson Bypass (i.e., 25, 11, 6 and 5, respectively). Wetland impacts are substantially less for the Northern Jackson Bypass (i.e., 16 acres) compared to the other three alternatives (i.e., 34, 40, and 43 acres). Stream impacts are least for the Northern Extended Jackson Bypass at 850 linear feet compared to 1,620 linear feet, and 2,110 linear feet for the Old Jackson Bypass, Northern Jackson Bypass, and the Southern Jackson Bypass, respectively."

Response: Comment noted. Impacts were discussed in detail at the Concurrence Point 3 meeting.

Comment: "Noise receptor impacts are a magnitude greater (i.e., 52 receptors) for the Northern Jackson Bypass than the other three alternatives (0, 4 and 11)."

Response: Comment noted.

Comment: "There are 10 eligible or listed historic properties for both the Northern Jackson Bypass and the Southern Jackson Bypass compared to 4 properties for the other two alternatives."

Response: Historic impacts associated with the Northern Jackson Bypass alternative were reduced by shifting the corridor north to avoid impacts to the Jackson historic district.

Comment: "It should be noted that there is potentially an invasive plant species issue for the Old Jackson Bypass route. Substantial colonies of Japanese knotweed (*Fallopia japonica*, et al.) have been identified within NCDOT right-of-way (ROW) along the existing Jackson Bypass Road, including NC 305, at Gumberry Creek and near St. John Church Road. EPA would be seeking avoidance and minimization measures and BMP's for this highly invasive plant species should the Old Jackson Bypass alternative be selected as the Least Environmentally Damaging Practicable Alternative (LEDPA)."

Response: Comment noted. Old Jackson Bypass was dropped from consideration at the Concurrence Point 3 (LEDPA) meeting.

Faison's Old Tavern

Comment: "The Southern Bypass alternatives appear to present a better balance between human impacts and natural resource impacts (e.g., Faison's Southern Bypass #2: 5 residential relocations, 9 acres of wetlands and 540 linear feet of stream impacts)."

Response: While the Southern Bypass alternatives had the fewest environmental impacts, the Northern Bypass alternative was selected because it provided a longer section of new location freeway with full control of access. The benefits of choosing a Northern Bypass would reduce indirect and cumulative impacts due to the project.

Comment: "There is a notation in the summary that the alternatives that improve/widen existing US 158 have a 'potential' adverse and disproportionate impact to low income/minority populations. An actual analysis is not presented on page 43 of the DEIS. This issue needs to be further evaluated and examined by the NCDOT and coordinated with the USACE."

Response: While no formal Environmental Justice Technical Memorandum was completed for the Faison's Old Tavern community the Widen on Existing alternatives were dropped due to high relocation impacts.

Conway

Comment: "It should be noted by EPA that there is also an invasive plant species issue for the Northern Bypass alternatives. Substantial colonies of Japanese knotweed (*Fallopia japonica*, et al.) have been identified along local roadways, NC 35 at Kirby's Creek, Tower Road, and others. EPA would be seeking avoidance and minimization measure and Best Management Practices (BMPs) for this highly invasive plant species should one of the Northern Bypass alternatives be selected as the LEDPA."

Response: Comment noted. Conway Northern Bypass 2 was selected as the LEDPA for this section of the project. Best Management Practices will be implemented where applicable.

Comment: "The total impact to farmland from the proposed project is substantial (i.e., approximately 800 acres) and NCDOT should work closely with local officials and landowners to minimize impacts where practicable."

Response: NCDOT understands the concern with impacts to farmland, as this has been a topic of concern at many of the public meetings. NCDOT is currently investigating possible solutions to help minimize impacts and to reduce the amount of isolated un-farmable land. NCDOT will continue to work closely with landowners and local officials to minimize these impacts.

Comment: "EPA also requests that NCDOT consider steepening side slopes to 2:1 in wetland areas and potentially reducing the 46-foot median width at bridge crossings."

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Response: As agreed upon by the Merger Team, 3:1 side slopes will be utilized in all jurisdictional areas; however, NCDOT will utilize 2:1 slopes where feasible and practicable.

Comment: “The DEIS evaluated 4 potential on-site mitigation opportunities (Pages 95 and 96). There is a detailed discussion concerning each potential mitigation site location. Ms. Kathy Matthews of EPA’s Wetlands Section should be requested to conduct on-site feasibility visits with NCDOT and other Merger team members at a later date in the Merger 01 process.”

Response: Comment noted.

Comment: “EPA recognizes that NCDOT may seek to obtain compensatory mitigation through the Ecosystem Enhancement Program (EEP) for impacts that cannot be found on-site. EPA and other resource agencies have previously identified some streams and wetlands along the proposed corridors that may be enhanced or restored from past agricultural activities through on-site mitigation efforts. EPA recommends that NCDOT continue to explore on-site mitigation opportunities along the selected highway alignment once a ‘LEDPA selection’ is made by the Merger team.”

Response: Comment noted.

**Agency: North Carolina Department of Environmental and Natural Resources**

**Letter Date: July 2, 2008**

**Comments/Responses:**

Comment: “There continue to be a number of concerns identified by the NC Wildlife Resources Commission in relation to secondary and cumulative impacts. We ask that the Department of Transportation continue to work with state and federal agencies in order to adequately address project concerns prior to finalizing plans.”

Response: The NCDOT will continue to work with state and federal agencies through the Merger Process and Permit Applications.

**Agency: North Carolina Wildlife Resource Commission**

**Letter Date: July 1, 2008**

**Comments/Responses:**

Comment: “Direct impacts to streams and wetland for a project of this scope can be significant with potential wetland impacts of 119 acres and potential stream impacts of 10,610 linear feet. Although not quantitatively documented in the DEIS the project will also have extensive impacts to upland natural systems. These direct impacts in addition to the indirect effects of habitat fragmentation caused by new location segments and

increased fragmentation due to widening the existing facility will cause considerable impacts to the fish and wildlife resources in the project area.”

Response: Comment noted.

Comment: “Additional natural resource minimization efforts will be assessed during concurrence point 4a once the Merger Team has selected a LEDPA. At this time we concur with the DEIS for this project. We will continue to assess the impacts associated with the remaining alternatives in preparation for the selection of the LEDPA.”

Response: Comment noted. NCWRC concurred with the final selection of LEDPA at the Merger Team meeting October 19, 2010. Avoidance and Minimization measures were agreed upon February 1, 2011.

**Agency: North Carolina Division of Water Quality**

**Letter Date: June 16, 2008**

**Project Specific Comments/Responses:**

Comment: “This project is being planned as part of the 404/NEPA Merger Process. As a participating team member, the NCDWQ will continue to work with the team.”

Response: Comment noted.

Comment: “All waters in the Chowan River Basin, with exception of Paddie’s Delight Creek are class C; NSW waters of the State. Paddies Delight Creek is a class B; NSW water of the State. The DWQ is very concerned with sediment and erosion impacts that could result from this project. The DWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff in the Chowan River Basin. The DWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NC DWQ *Stormwater Best Management Practices*.”

Response: Protective sediment and erosion control BMP’s will be implemented to reduce the risk of nutrient runoff in the Chowan River Basin.

Comment: “Page V of the summary indicated that right-of-way (ROW) acquisition will begin in the State Fiscal Year (FY) 2012, while page 1 states ROW acquisition will begin in FY 2011.”

Response: Since the publication of the DEIS the right-of-way acquisition date has moved from State FY 2012 to FY 2014.

Comment: “Discussions in Section VI (Human Environmental Effects) include many statistics, most of which came from the US Census Bureau. Table 6-3 (Income Levels and

Poverty Status for 1989) and the associated text, include data from 1989, which is 19 years old. It would seem the Census Bureau has newer data pertaining to poverty levels. Updated data may be available for much of the other data discussed in the document as well.”

Response: The latest Census update (2000) did not include Poverty Status updates for the project study area. While a 2010 Census has been completed, updated data is currently unavailable.

Comment: “The DWQ is pleased that the NCDOT has already investigated potential onsite mitigation possibilities for this project. The DWQ prefers on-site mitigation to off-site mitigation. The NCDOT is encouraged to consult further with the DWQ and other regulatory agencies as necessary to make sure that any on-site mitigation pursued is as successful as possible.”

Response: The NCDOT will continue to consult with the DWQ and other regulatory agencies for possible on-site mitigation sites.

Comment: “A map showing the location of UST’s and other GeoEnvironmental (corresponding to Table 6-9) sites should be included. These could be shown on the alternative maps.”

Response: UST’s have been added to the alternative vicinity maps.

### **General Comments/ Responses**

Comment: “Future documentation, including the 401 Water Quality Certification Application, should continue to include an itemized listing of the proposed wetland and stream impacts with corresponding mapping.”

Response: Itemized wetland and stream impacts are presented in Table 4-6 of this document.

Comment: “If mitigation is necessary as required by 15A NCAC 2H.0506(h), it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. Appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.”

Response: Additional information on avoidance and minimization measures for the Preferred Alternative is presented in the signed Concurrence Point 4A Form in Appendix F. A mitigation plan will be prepared as a part of the 401 Water Certification Application.

Comment: “Environmental assessment alternatives should consider design criteria that reduce the impacts to streams and wetlands from storm water runoff. These alternatives should include road designs that allow for treatment of the storm water runoff through best management practices as detailed in the most recent version of NC DWQ *Stormwater Best Management Practice*, such as grassed swales, buffer areas, preformed scour holes, retention basins, etc.”

Response: The NCDOT Best Management Practices for Protection of Surface Waters will be followed in order to reduce impacts to streams and wetland from storm water runoff.

Comment: “After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, the NCDOT is respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. In accordance with the Environmental Management Commission’s Rules (15A NCAC 2H.0506[h]), mitigation will be required for impacts of greater than 1 acre to wetlands. In the event that mitigation is required, the mitigation plan should be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as wetland mitigation.”

Response: Avoidance and minimization of impacts to wetlands and streams has been demonstrated during the Concurrence Point 4A meeting held on October 19, 2010. Merger Process Team members concurred with the avoidance/minimization measures via email on February 1, 2011. Additional measures may be identified during Concurrence Point 4B and 4C meetings to be held as further design is completed. Since wetland impacts are greater than one acre, wetland mitigation will be provided through both on-site mitigation, previously discussed in section 4.1.5.2.3.2 of this document, and the EEP.

Comment: “In accordance with the Environmental Management Commission’s Rules (15A NCAC 2H.0506[h]), mitigation will be required for impacts of greater than 150 linear feet to any single perennial stream. In the event that mitigation is required, the mitigation plan should be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.”

Response: Since impacts of greater than 150 linear feet are anticipated at several perennial streams, a mitigation plan will be prepared that is designed to replace appropriate lost functions and values. Onsite mitigation and EEP will be evaluated as options for mitigation.

Comment: “The DWQ is very concerned with sediment and erosion impacts that could result from this project. The NCDOT should address these concerns by describing the potential impacts that may occur to the aquatic environments and any mitigating factors that would reduce the impacts.”

Response: This information has been included in Section 4.1.5 of the FEIS.

Comment: “The NCDOT is respectfully reminded that all impacts, including but not limited to, bridging, fill, excavation and clearing, to jurisdictional wetlands, streams, and riparian buffers need to be included in the final impact calculations. These impacts, in addition to any construction impacts, temporary or otherwise, also need to be included as part of the 401 Water Quality Certification Application.”

Response: All impacts to jurisdictional wetlands, streams, and riparian buffers will be included in the final impact calculations and will be a part of the 401 Water Quality Certification Application.

Comment: “Where streams must be crossed, the DWQ prefers bridges be used in lieu of culverts. However, we realize that economic considerations often require the use of culverts. Please be advised that culverts should be countersunk to allow unimpeded passage by fish and other aquatic organisms. Moreover, in areas where high quality wetlands or streams are impacted, a bridge may prove preferable. When applicable, the NCDOT should not install the bridge bents in the creek, to the maximum extent practicable.”

Response: Culverts will be countersunk to allow unimpeded passage by fish and other aquatic organisms. Bridges will be used as agreed to by the Merger Process Team at the Concurrence Point 2A meeting held on June 19, 2007. Bridge bents will not be installed in creeks to the extent practicable under NCDOT structure design guidelines.

Comment: “Sediment and erosion control measures should not be placed in wetlands or streams.”

Response: Sediment and erosion control measures will not be placed in wetlands or streams to the maximum extent practicable.

Comment: “Borrow/waste areas should avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas will need to be presented in the 401 Water Quality Certification and could precipitate compensatory mitigation.”

Response: Borrow/ waste areas will avoid wetlands to the maximum extent practicable. Impacts to wetlands in borrow/ waste areas will be presented in the 401 Water Quality Certification and compensatory mitigation will be provided, if required.

Comment: “The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management. More specifically, stormwater should not be permitted to discharge directly into streams or surface waters.”

Response: The 401 Water Quality Certification application will specifically address the proposed methods for stormwater management. Stormwater will not be permitted to discharge directly into streams or surface waters.

Comment: “Based on the information presented in the document, the magnitude of impacts to wetlands and streams may require an Individual Permit (IP) application to the Corps of Engineers and corresponding 401 Water Quality Certification. Please be advised that a 401 Water Quality Certification requires satisfactory protection of water quality to ensure that water quality standards are met and no wetland or stream uses are lost. Final permit authorization will require the submittal of a formal application

by the NCDOT and written concurrence from the NCDWQ. Please be aware that any approval will be contingent on appropriate avoidance and minimization of wetland and stream impacts to the maximum extent practical, the development of an acceptable stormwater management plan, and the inclusion of appropriate mitigation plans where appropriate.”

Response: Based on currently anticipated impacts to wetlands and streams, an Individual Permit application will be submitted to the Corps of Engineers and the corresponding 401 Water Quality Certification will be submitted to the Division of Water Quality. The adequacy of avoidance and minimization of wetlands and stream impacts has already been discussed and agreed upon by the Merger Process Team at a Concurrence Point 4A meeting held on October 19, 2010 and concurred on via email on February 1, 2011. Information on avoidance and minimization of wetlands and stream impacts (as presented and discussed at the CP 4A meeting listed above), a stormwater management plan, and appropriate mitigation plans will be included in the permit application.

Comment: “Whenever possible, the DWQ prefers spanning structures. Spanning structures usually do not require work within the stream or grubbing of the stream banks and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allow for human and wildlife passage beneath the structure, do not block fish passage, and do not block navigation by canoeists and boaters.”

Response: Comments noted. Bridge bents will not be installed in creeks to the extent practicable under NCDOT structure design guidelines.

Comment: “Bridge deck drains should not discharge directly into the streams. Stormwater should be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NC DWQ *Stormwater Best Management Practices*.”

Response: Comment noted. Stormwater will likely be directed across the bridge and pre-treated through site-appropriate means before entering the stream. The most current version of NC DWQ *Stormwater Best Management Practices* will be used to determine appropriate measures to be taken. It is expected NC DWQ will continue coordination with NCDOT through upcoming Merger meetings as hydraulic design progresses.

Comment: “If concrete is used during construction, a dry work area should be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete should not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.”

Response: Comment noted. A dry work area will be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete will not be discharged to surface waters.

Comment: “If temporary access roads or detours are constructed, the site should be graded to its preconstruction contours and elevations. Disturbed areas should be seeded or mulched to stabilize the soil and appropriate native woody species should be planted. When using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact allows the area to re-vegetate naturally and minimize soil disturbance.”

Response: Comment noted. If temporary access roads or detours are constructed, the site will be graded to its preconstruction contours and elevations. Disturbed areas will be planted. When using temporary structures, the area will be cleared but not grubbed. The area will be cleared with chain saws, mowers, bush hogs, or other mechanized equipment leaving the stumps and root mat intact to allow the area to re-vegetate naturally and minimizing soil disturbance.

Comment: “Placement of culverts and other structures in waters, streams, and wetlands should be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures should not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by DWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the DWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.”

Response: Comment noted. Culverts with a diameter greater than 48 inches will be placed below the elevation of the streambed by one foot in waters, streams, and wetlands. Culverts having a diameter less than 48 inches will be placed below the elevation of the streambed by 20 percent of the culvert diameter in waters, streams, and wetlands, to allow flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures, will not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of those structures. NCDOT will provide evidence that the equilibrium is being maintained, if requested in writing by DWQ.

Comment: “If multiple pipes or barrels are required, they should be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.”

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Response: If needed, multiple pipes and barrels will be designed to mimic natural stream cross section as closely as possible. Widening the stream channel will be avoided whenever possible.

Comment: “If foundation test borings are necessary, it should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3494/Nationwide Permit No. 6 for Survey Activities.”

Response: Final design is underway and the need for test borings has not been established. In the event that they are needed, NCDOT will coordinate the permitting with the Division of Water Quality.

Comment: “Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.”

Response: Comment noted. Sediment and erosion control measures sufficient to protect water resources will be implemented and maintained in accordance with the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.

Comment: “All work in or adjacent to stream waters should be conducted in a dry work area. Approved BMP measures from the most current version of the NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures should be used to prevent excavation in flowing water.”

Response: Comment noted. All work in or adjacent to stream waters will be conducted in a dry work area. Approved BMP measures from the most current version of the NCDOT Construction and Maintenance Activities manual will be used to prevent excavation in flowing water.

Comment: “While the use of National Wetland Inventory (NWI) maps, NC Coastal Region Evaluation of Wetland Significance (NC-CREWS) maps and soil survey maps are useful tools, their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval.”

Response: Qualified wetland personnel have performed onsite wetland delineations. These delineations were approved by Corps of Engineers personnel during field reviews.

Comment: “Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.”

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Response: Comment noted. Heavy equipment will be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment will be inspected daily and maintained to prevent contamination of surface waters.

Comment: “Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.”

Response: Comment noted. Riprap will not be placed in active thalweg channel or placed in the streambed in a manner that would preclude aquatic life passage. Bioengineering boulders or structures will be properly designed, sized, and installed, if needed.

Comment: “Riparian vegetation (native trees and shrubs) should be preserved to the maximum extent possible. Riparian vegetation must be re-established within the construction limits of the project by the end of the growing season following completion of construction.”

Response: Comment noted. Riparian vegetation (native trees and shrubs) will be preserved to the maximum extent possible. Riparian vegetation will be reestablished within the construction limits by the end of the growing season, following completion of construction.

**Agency:** North Carolina Department of Cultural Resources

**Letter Date:** June 9, 2008

**Comments/Responses:**

Comment: “When a final roadway alternative is chosen, please notify our office in writing. The appropriate archaeological survey methodology can then be determined.”

Response: The NCDOT will continue to coordinate with the State Historic Preservation Office to ensure appropriate archaeological surveys are completed. Results of archaeological surveys will be documented in the Record of Decision.

Comment: “The document accurately reflects the status and effects for historic buildings and districts.”

Response: Comment noted.

**Agency:** North Carolina Department of Crime Control and Public Safety

**Letter Date:** June 4, 2008

**Comments/Responses:**

Comment: “The North Carolina Floodplain Mapping Program (NCFMP) is in general agreement with the information provided in Section VII. Natural Environment Effects A. Physical Effects 2. Water Resources b. Floodplain Management. Several of the streams within the project boundary have been studied with limited detail or detail study methods. As such the streams have special flood hazards areas (SFHAs), base flood elevations (BFEs), and floodways or non-encroachment areas. Construction within a floodway or a non-encroachment area requires, prior to construction, approval of either a no-rise study with a no-rise certification for projects that do not increase base flood elevations or for projects that result in an increase in base flood elevations the approval of a Conditional Letter of Map Revision.”

Response: Comment noted. Floodplain/ Floodways are discussed in Section 4.1.3.6 of this document. If required a no-rise study or Conditional Letter of Map Revision will be completed prior to construction.

Comment: “The NCFMP and the North Carolina Department of Transportation (NCDOT) have entered into a Memorandum of Agreement that includes NCDOT no-rise studies and Letter of Map Revisions. Please contact Dr. David Chang, NCDOT Assistant Hydraulics Engineer for further information and guidance.”

Response: Comment noted.

**Agency:** United States Department of the Interior Fish and Wildlife Service

**Letter Date:** May 29, 2008

**Comments/Responses:**

Comment: “Overall, the project will have very significant impacts on fish and wildlife resources, including impacts to streams, wetlands, upland forest and other habitat types. These impacts will be in the form of direct loss of habitat and habitat fragmentation effects on remaining habitat. Although these habitats are already fragmented by the predominantly agricultural land use of the project area, additional cumulative habitat fragmentation effects will occur.

Response: Comment noted. NCDOT has worked with the Merger Team to minimize these impacts.

Comment: “The effects of forest habitat fragmentation usually extend well beyond the project footprint and can lead to local extirpation of forest interior species and wildlife species which require large home ranges or that travel extensive distances for all or part of their life history. Roads often act as physical barriers to wildlife movement and/or cause significant wildlife mortality in the form of road-killed animals. Forest fragmentation can lead to increased predation of some species and increased brown-headed cowbird (*Molothrus ater*) parasitism of the nests of neotropical migrant birds. Habitat fragmentation can also facilitate invasive and/or nonnative species colonization of fragmented lands.”

Response: Comment noted.

Comment: “The red-cockaded woodpecker (RCW) (*Picoides borealis*) is the only federally threatened or endangered species listed for Northampton County. The SDEIS renders a biological conclusion of “no effect” for this species on page 98. However, there is insufficient treatment of the subject within the SDEIS for us to understand how you arrived at that conclusion. Page 98 states that suitable habitat is present, but there is no indication as to whether that habitat was surveyed for RCW cavity trees. While we believe that the occurrence of RCWs within the study area is unlikely, additional documentation would be prudent.”

Response: An additional Red-cockaded Woodpecker (Picoides Borealis) Survey Report was completed by the NCDOT in October 2007. A discussion of the findings can be found in Section 4.1.5.2.5. A copy of the full report should have been forwarded to your office.

Comment: “Our input has been incorporated into the SDEIS. At this time we do not have a preferred alternative. We will defer that decision until Concurrence Point 3 in the Merger Process, and we will provide additional comments and recommendations for further avoidance and minimization to fish and wildlife resources as appropriate.”

Response: Comment noted.

## **6.2 PUBLIC INVOLVEMENT**

### **6.2.1 Citizen Informational Workshops**

A series of Citizens Informational Workshops were held on April 4, 9 and 11, 2002 in Garysburg, Jackson, and Conway, respectively. The presentation at the three workshops was the same for each location. The purpose of these workshops was to introduce the project to the public, and involve the public in the project planning process by obtaining suggestions and comments on the project from the people it will affect most.

Numerous comments received indicated there was a great need for the project, specifically to aid in economic development of northeastern North Carolina. There were also several other comments from residents opposed to widening alternatives near their residence.

A Citizens Informational Workshop was held on July 12, 2004 at the County Administration Building in Jackson. A single workshop was held because the majority of the project had not changed since it was first presented in a series of previous workshops in 2002; the only changes that were made were the addition of two new alternatives in the Jackson vicinity.

### 6.2.2 Corridor Public Hearings

A series of Corridor Public Hearings were held. The purpose of the corridor hearing was for NCDOT to share with the public all of the routes under consideration when a highway location may be changed, and to accept feedback regarding the available choices. This process of accepting comments helps to inform the NCDOT and Merger Teams decision-making process.

The proceedings of the hearing were recorded and transcribed into written record. The moderator briefly reviewed the Corridor Public Hearing Map and several other aspects of the project, and then entertained comments from the attendees.

Both verbal comments made at the Corridor Public Hearing and written statements received during the post hearing comment period form the formal public comment record for the project.

Garysburg: A Public Hearing was held on September 22, 2008 at the Garysburg Town Hall. Approximately 80 citizens attended the Hearing. The overwhelming majority of comments received were opposed to the Garysburg Northern Bypass due to its anticipated impact on the Garysburg community. Of those who noted a preference, Southern Bypass 1 was slightly favored over Southern Bypass 2.

Jackson: A Public Hearing was held on September 25, 2008 at the Jackson Cultural Wellness Center. Approximately 95 citizens attended the Hearing. Of those who noted a preference, the Extended Northern Jackson Bypass was slightly favored over the Old Jackson Bypass. Little to no support was shown for the Northern Jackson Bypass and Southern Jackson Bypass.

Conway & Faison's Old Tavern: A Public Hearing was held on September 30, 2008 at Conway Middle School. Approximately 123 citizens attended the Hearing. A majority of the comments were opposed to widening on existing US 158 through Faison's Old Tavern, mainly due to the high impact it would have on the surrounding community. No preference was shown for the Northern Bypass or the Southern Bypass of Faison's Old Tavern or Conway. Property owners impacted by the Northern Bypass were in support of the Southern Bypass and vice versa.

Jackson (Revised Alternatives): An additional Public Hearing was held on July 19, 2010 at the Jackson Cultural Wellness Center. To notify the public of changes made to the Extended Northern Jackson Bypass and Northern Jackson Bypass corridor alignments. Approximately 114 citizens attended the Hearing. Approximately 150 written comments were received following the Hearing. A majority of comments received were opposed to the Northern Jackson Bypass and favored the Extended Northern Jackson Bypass. Other comments received were mainly about other sections of the project and noted concerns about access to farmland that is impacted by sections of roadway on new location.

The Town of Jackson also sent correspondence in favor of a bypass located north of the “County Complex”. The Town of Jackson feels that the Northern Jackson Bypass will create a sense of separation between the town and the county complex, and therefore will have an adverse impact on the cohesiveness of the greater Jackson community. A copy of the correspondence can be found in Appendix B.

### 6.2.3 Design Public Hearing

A Design Public Hearing will be held following the circulation of this document. This public hearing will provide more detailed information to the public about the LEDPA and associated impacts. The public will be invited to make additional comments or voice concerns regarding the proposed project.

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## Chapter 7

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